

### **Appendix B**

**Field Investigations** 







General			
Location ID No.:	1002		
Date:	2012-06-13		
Time:	3:44 PM		
Field Staff:	LJ SBN		
Weather:	Sunny		
Watershed:	Kizell Drain		
Watercourse:	Main Branch		
Crossing Location:	Road		
Name:	Legget Drive		
Latitude:	45.342597	Location: Downstream Face	
Longitude:	-75.901563	Direction: Facing East	
		Photo 2	
Crossing Details			
Cell:	East		
Туре:	Culvert		
Material:	СМР		
Shape:	Circular		
Invert:	Closed Footing		
Rise / Diam. (mm):	900		
Span (mm)	900		
Approx. Length (m):	12		
Inlet Type:	Projecting		
Flow Depth (mm):	0	Location: Upstream Face	
Flow (L/s):	0	Direction: Facing West	
Call		Janu Flann Channal Dataila	
Cell:		Low Flow Channel Details	_
Туре:		Location: Downstream	
Type: Material:		Location: Downstream Dist (m): 2	
Type: Material: Shape:		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal	
Type: Material: Shape: Invert:		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1	
Type: Material: Shape: Invert: Rise / Diam. (mm):		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1 Avg. Width (m): 2	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1 Avg. Width (m): 2 Avg. Depth (m): 0.1	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1 Avg. Width (m): 2 Avg. Depth (m): 0.1 Channel Roughness: Clean, straight, veg.	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1 Avg. Width (m): 2 Avg. Depth (m): 0.1	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Downstream 2 Trapezoidal R: 3:1 2 0.1 Clean, straight, veg. Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Downstream  Dist (m): 2  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): 0.1  Channel Roughness: Clean, straight, veg.  Overbank Roughness: Medium-dense brush  Location: Upstream Face	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):		Location: Downstream  Dist (m): 2  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): 0.1  Channel Roughness: Clean, straight, veg.  Overbank Roughness: Medium-dense brush  Location: Upstream Face  Dist (m): 2	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Location: Downstream  Dist (m): 2  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): 0.1  Channel Roughness: Clean, straight, veg.  Overbank Roughness: Medium-dense brush  Location: Dist (m): 2  Low Flow Shape: Trapezoidal	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Location: Downstream  Dist (m): 2  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): 0.1  Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Dist (m): 2  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 3:1 R: 1:1	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Location: Downstream  Dist (m): 2  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): 0.1  Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Dist (m): 2  Low Flow Shape: Trapezoidal  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 2	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1 Avg. Width (m): 2 Avg. Depth (m): 0.1 Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Upstream Face Dist (m): 2 Low Flow Shape: Trapezoidal Location: Ustream Face Dist (m): 2 Low Flow Shape: Side Slope (H:V): L: 3:1 R: 1:1 Avg. Width (m): 2 Avg. Depth (m): 0.1	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Location: Downstream  Dist (m): 2  Low Flow Shape: Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): O.1  Channel Roughness: Clean, straight, veg.  Medium-dense brush  Location: Dist (m): 2  Low Flow Shape: Side Slope (H:V): L: 3:1 R: 1:1  Avg. Width (m): Avg. Depth (m): Clean, straight, veg.  Countries of the	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Location: Downstream Dist (m): 2 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 1:1 R: 3:1 Avg. Width (m): 2 Avg. Depth (m): 0.1 Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Upstream Face Dist (m): 2 Low Flow Shape: Trapezoidal Location: Ustream Face Dist (m): 2 Low Flow Shape: Side Slope (H:V): L: 3:1 R: 1:1 Avg. Width (m): 2 Avg. Depth (m): 0.1	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Location: Downstream Dist (m): 2  Low Flow Shape: Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): O.1  Channel Roughness: Clean, straight, veg.  Medium-dense brush  Location: Upstream Face Dist (m): 2  Low Flow Shape: Trapezoidal  Low Flow Shape: Side Slope (H:V): L: 3:1 R: 1:1  Avg. Width (m): Avg. Depth (m): Channel Roughness: Clean, straight, veg.  Overbank Roughness: Clean, straight, veg.  Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Downstream  Dist (m): 2  Low Flow Shape: Trapezoidal  Avg. Width (m): 2  Avg. Depth (m): 0.1  Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Dist (m): 2  Low Flow Shape: Trapezoidal  Location: Upstream Face  Dist (m): 2  Low Flow Shape: Trapezoidal  L: 3:1 R: 1:1  Avg. Width (m): Avg. Width (m): 2  Avg. Depth (m): O.1  Channel Roughness: Overbank Roughness: Overbank Roughness: Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Downstream Dist (m): 2  Low Flow Shape: Side Slope (H:V): L: 1:1 R: 3:1  Avg. Width (m): 2  Avg. Depth (m): O.1  Channel Roughness: Clean, straight, veg.  Medium-dense brush  Location: Upstream Face Dist (m): 2  Low Flow Shape: Trapezoidal  Low Flow Shape: Side Slope (H:V): L: 3:1 R: 1:1  Avg. Width (m): Avg. Depth (m): Channel Roughness: Clean, straight, veg.  Overbank Roughness: Clean, straight, veg.  Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Dist (m): Low Flow Shape: Side Slope (H:V): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Overbank Roughness: Clean, straight, veg.  Dist (m): Clean, Straight, veg. Dist (m): Clean, Straight, veg. Medium-dense brush  Additional Comments Culvert is perched at both ends. No flow at this	





#### Photo 3



Location: Downstream Face
Direction: Facing North

#### Photo 4

# Photo Here

Location: Direction:

#### Photo 5



Location: Downstream Face Direction: Facing East

#### Photo 6

# Photo Here

Location:
Direction:

#### Photo 7

# Photo Here

Location: Direction:

#### Photo 8

# Photo Here





General			
Location ID No :	117060		The second
Date:	2012-06-13		
Time:	11:09 AM	Post and	
Field Staff:	SBN LJ		A CONTRACTOR OF THE PARTY OF TH
Weather:	Sunny	4	
Watershed:	Kizell Drain		KINE DE LE
Watercourse:	Main Branch		
Crossing Location:	Road		
Name:	Carling Road		
Latitude:	45.339874	Location:	Downstream Face
Longitude:	-75.892550		Facing North
\·g	70,002000		Photo 2
Crossing Details			
Cell:	Centre		3/4
Туре:	Culvert	20 to	
Material:	Concrete		
Shape:	Box / Rectangular		
Invert:	Open Footing		
Rise / Diam. (mm):	1.2	A PARTY	
Span (mm)	4.8		
Approx. Length (m):	29	think no	
Inlet Type:	Head Wall		
Flow Depth (mm):	300	Location	Downstream Face
Flow (L/s):	180		Facing South
11011 (173).	100	Direction.	r acing count
Cell:		Low Flow Channel Detail	s
Туре:			Downstream
Material:		Dist (m):	
Shape:		Low Flow Shape:	
Invert:		Side Slope (H:V):	
Rise / Diam. (mm):		Avg. Width (m):	
Span (mm)		Avg. Depth (m):	
•		Channel Roughness:	
Approx. Length (m):			
Inlet Type:		Overbank Roughness:	Snort grass
Flow Depth (mm):		الممطأعت	Harton and English
Flow (L/s):			Upstream Face
0.0		Dist (m):	
Cell:		Low Flow Shape:	
Type:		Side Slope (H:V):	
Material:		Avg. Width (m):	
Shape:		Avg. Depth (m):	
Invert:			Clean, straight, veg.
Rise / Diam. (mm):		Overbank Roughness:	Medium-dense brush
Span (mm)		A 1 12:2	
Approx. Length (m):		Additional Comments	
Inlet Type:			
Flow Depth (mm):			
Flow (L/s):			
` '			l





Photo 3



Location: Upstream Face
Direction: Facing South

Photo 4



Location: Upstream Face
Direction: Facing North

Photo 5

## Photo Here

Location: \_\_\_\_\_

#### Photo 6

# Photo Here

Location: Direction:

#### Photo 7

# Photo Here

Location: Direction:

#### Photo 8

# Photo Here





General		
Location ID No.:	117100	
Date:	2012-06-13	
Time:	2:55 PM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Herzberg Road	
Latitude:	45.340888	Location: Upstream Face
Longitude:	-75.898378	Direction: Facing East
zongitudo.	70,000070	Photo 2
Crossing Details		There I
Cell:	Centre	
Type:	Culvert	
Material:	Concrete	- The state of the
Shape:	Box / Rectangular	
Invert:	Closed Footing	
Rise / Diam. (mm):	2000	
Span (mm)	3000	
Approx. Length (m):	30	
Inlet Type:	Projecting	
Flow Depth (mm):	100	Location: Upstream Face
Flow (L/s):	60	Direction: Facing West
110W (L/3).	00	Direction. I acing west
Cell:		Low Flow Channel Details
Туре:		Location: Upstream
Material:		Dist (m): 5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 5:1 R: 3:1
Rise / Diam. (mm):		Avg. Width (m): 2.7
		Avg. Width (iii). 2.7 Avg. Depth (m): 0.1
Span (mm)		
Approx. Length (m):		Channel Roughness: Gravel/Cobble
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		Location D 1 5
Flow (L/s):		Location: Downstream Face
Call		Dist (m): 6
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 7:1 R: 5:1
Material:		Avg. Width (m): 5.3
Shape:		Avg. Depth (m): 0.5
Invert:		Channel Roughness: Clean, winding, veg.
Rise / Diam. (mm):		Overbank Roughness: High grass
Span (mm)		4
Approx Length (m):		Additional Comments
Inlet Type:		1
Flow Depth (mm):		1
Flow (L/s):		1 1
11011 (173).		





Photo 3



Location: Upstream Face
Direction: Facing East

Photo 4



Location: Downstream Face
Direction: Facing West

Photo 5



Location: Downstream Face Direction: Facing West

Photo 6



Location: Downstream Face
Direction: Facing East

Photo 7

# Photo Here

Location:
Direction:

#### Photo 8

# Photo Here





General		<b>3</b>
Location ID No :	640800	
Date:	2012-06-13	Service Management
Time:	6:20 PM	
Field Staff:	LJ SBN	240 A 280 A 280 A
Weather:	Sunny	ALC: NO.
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Legget Drive	
Latitude:	45.342852	Location: Upstream Face
Longitude:	-75.912356	Direction: Facing North
3		Photo 2
Crossing Details		
Cell:	West	- Salara
Туре:	Culvert	
Material:	Concrete	The second secon
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1150	MININ TO SAI
Span (mm)	1150	
Approx. Length (m):	32	
Inlet Type:	Head Wall	
Flow Depth (mm):	200	Location: Upstream Face
Flow (L/s):	70	Direction: Facing South
110W (L/3).	70	Direction. Facing South
Cell:	East	Low Flow Channel Details
Type:	Culvert	Location: Upstream
Material:	Concrete	Dist (m): 6
	Circular	Low Flow Shape: Trapezoidal
Shape: Invert:		Side Slope (H:V): L: 2:1 R:4:1
Rise / Diam. (mm):	Closed Footing 1200	
		Avg. North (m): 3
Span (mm)	1200	Avg. Depth (m): 0.2
Approx. Length (m):	32	Channel Roughness: Cobble
Inlet Type:	Head Wall	Overbank Roughness: High grass
Flow Depth (mm):	200	Lasakian D. / E
Flow (L/s):	70	Location: Downstream Face
0.11		Dist (m): 5
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 3:1 R: 2:1
Material:		Avg. Width (m): 3
Shape:		Avg. Depth (m): 0.2
Invert:		Channel Roughness: Cobble
Rise / Diam. (mm):		Overbank Roughness: High grass
Span (mm)		
Approx Length (m):		Additional Comments
Inlet Type:		Armorstone wing wall on the upstream end.
Flow Depth (mm):		There is sediment buildup on the downstream end of 0.3 m.
Flow (L/s):		0.3    .





Photo 3



Location: Downstream Face

Direction: Facing East

#### Photo 4



Location: Downstream Face

Direction: Facing West

#### Photo 5

## **Photo** Here

Location: Direction:

#### Photo 6

## **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

## **Photo** Here





Location ID No:	General				1 1 (A - ) A - )
Field Staff:   LJ   SBN	Location ID No.:	640830		A CITY OF THE PARTY OF THE PART	
Field Staff: Weather:   Sunny   Sunny   Watershed:   Kizell Drain   Watercourse:   Road   R	Date:	2012-06-14			
Watershed: Watershed: Watercourse: Miscell Drain   Watershed: Watercourse: Miscell Drain   Road   Station Roa	Time:	9:35 AM			
Watershed: Watercourse: Main Branch   Road   Station Road Road Road Road Road Road Road Road	Field Staff:	LJ SBN	l l		The same of the sa
Watershed:   Main Branch   Main Branch   Main Branch   Main Branch   Station Road   Station Ro	Weather:	Sunny	<b>'</b>		
Crossing Location:   Road	Watershed:				
Name: Latitude: 45,336667	Watercourse:	Main Branch			
Latitude: Longitude: -75.917293  Crossing Details Cell: Type: Material: Chype: Material: Colsed Footing Inlet Type: Flow Depth (mm): Flow (L/s): Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Span (mm) Approx. Length (m): Flow (L/s): Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Flow (L/s): Cell: Type: Material: Cell: Type: Material: Cell: Cell: Type: Material: Cell: C	Crossing Location:	Road			
Latitude: Longitude: -75.917293	Name:	Station Road			
Photo 2	Latitude:			Location:	Upstream Face
Photo 2	Longitude:	-75.917293		Direction:	Facing North
Cell:   Culvert   Culver	· ·				
Cell:   Culvert	<b>Crossing Details</b>			MANVER STATE	2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
Material: CMP Shape: Circular Invert: Closed Footing Rise / Diam. (mm): 1200 Span (mm) 1200 Approx. Length (m): 1200 Inlet Type: Projecting Flow Depth (mm): 150  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Approx. Length (m): 150  Cell: Type: Shape: Shape: Span (mm) Span (mm) Span (mm) Span (mm): Span (mm)		Centre			ACCEPTANT OF THE PROPERTY OF T
Material: CMP Shape: Circular Invert: Closed Footing Rise / Diam. (mm): 1200 Span (mm) 1200 Approx. Length (m): 1200 Inlet Type: Projecting Flow Depth (mm): 150  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Approx. Length (m): 150  Cell: Type: Shape: Shape: Span (mm) Span (mm) Span (mm) Span (mm): Span (mm)	Type:	Culvert			
Invert:   Closed Footing   1200   1200   1200     1200		CMP			- Transfer
Invert:   Closed Footing   1200   1200   1200     1200	Shape:	Circular			
Rise / Diam. (mm):		Closed Footing			
Span (mm)	Rise / Diam. (mm):				
Approx. Length (m):		1200			
Inlet Type: Flow Depth (mm): 150	•	20			
Coling   C		Projecting			
Flow (L/s): 110 Direction: Facing West  Cell: Low Flow Channel Details  Location: Downstream  Dist (m): 2  Low Flow Shape: Low Flow Shape: Irregular  Invert: Side Slope (H:V): Fr:1 R: 7:1  Rise / Diam. (mm): Avg. Width (m): 0.15  Span (mm) Avg. Depth (m): 0.15  Channel Roughness: Gravel  High grass  Flow Depth (mm): Location: Upstream Face  Dist (m): 2  Location: Upstream Face  Dist (m): 2  Low Flow Shape: Trapezoidal  Location: Upstream Face  Dist (m): 2  Avg. Width (m): 1.2  Avg. Width (m): 1.2  Avg. Width (m): 1.2  Avg. Width (m): 1.2  Avg. Depth (m): 1.3  Avg. Depth (m): 1.4  Avg. Width (m): 1.5  Gravel/Cobble  Medium-dense brush				Location:	Upstream Face
Type:         Location:         Downstream           Material:         Dist (m):         2           Shape:         Low Flow Shape:         Irregular           Invert:         Side Slope (H:V):         L: 7:1 R: 7:1           Rise / Diam. (mm):         Avg. Width (m):         1.9           Span (mm)         Avg. Depth (m):         0.15           Channel Roughness:         Gravel         High grass           Flow Depth (mm):         Flow (L/s):         Location:         Upstream Face           Flow (L/s):         Low Flow Shape:         Trapezoidal         Trapezoidal           Type:         Side Slope (H:V):         L: 5:1 R: 5:1         R: 5:1           Material:         Avg. Width (m):         1.2         Avg. Depth (m):         0.15           Shape:         Avg. Depth (m):         0.15         Channel Roughness:         Gravel/Cobble           Rise / Diam. (mm):         Overbank Roughness:         Medium-dense brush	Flow (L/s):	110			
Type:         Location:         Downstream           Material:         Dist (m):         2           Shape:         Low Flow Shape:         Irregular           Invert:         Side Slope (H:V):         L: 7:1 R: 7:1           Rise / Diam. (mm):         Avg. Width (m):         1.9           Span (mm)         Avg. Depth (m):         0.15           Channel Roughness:         Gravel         High grass           Flow Depth (mm):         Flow (L/s):         Location:         Upstream Face           Flow (L/s):         Low Flow Shape:         Trapezoidal         Trapezoidal           Type:         Side Slope (H:V):         L: 5:1 R: 5:1         R: 5:1           Material:         Avg. Width (m):         1.2         Avg. Depth (m):           Shape:         Avg. Depth (m):         0.15         Gravel/Cobble           Rise / Diam. (mm):         Overbank Roughness:         Medium-dense brush					
Dist (m): 2   Low Flow Shape:   Irregular   Li. 7:1   R: 7:1	Cell:			Low Flow Channel Detail	S
Shape: Invert: Invert: Side Slope (H:V): Span (mm): Span (mm) Approx. Length (m): Inlet Type: Flow (L/s): Flow (L/s): Cell: Type: Span (may) Avg. Width (m): Avg. Width (m): Channel Roughness: Overbank Roughness: Bise Slope (H:V): Cell: Avg. Width (m): Avg. Width (m): Channel Roughness: Bise Slope (H:V): Location: Upstream Face Dist (m): Cell: Side Slope (H:V): Side Slope (H:V): Listin R:5:1 R:5:1 Avg. Width (m): Avg. Width (m): Channel Roughness: Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush	Туре:			Location:	Downstream
Invert:   Side Slope (H:V):   L: 7:1   R: 7:1	Material:				
Rise / Diam. (mm): Span (mm) Span (mm) Avg. Depth (m): Channel Roughness: Gravel High grass  Flow Depth (mm): Flow (L/s):  Cell: Type: Side Slope (H:V): Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Avg. Width (m): Avg. Width (m): Location: Upstream Face Dist (m): Location: Upstream Face Dist (m): Cell: Low Flow Shape: Side Slope (H:V): Avg. Width (m): L: 5:1 R: 5:1 Avg. Depth (m): Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush	Shape:			Low Flow Shape:	Irregular
Span (mm) Approx. Length (m): Inlet Type: Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:  Cell: Type: Side Slope (H:V): Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Avg. Depth (m): Channel Roughness: Gravel High grass  Location: Upstream Face Dist (m): 2  Low Flow Shape: Trapezoidal R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush	Invert:			Side Slope (H:V):	L: 7:1 R: 7:1
Approx. Length (m):	Rise / Diam. (mm):			Avg. Width (m):	1.9
Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:  Material: Shape: Invert:  Rise / Diam. (mm): Span (mm)  Overbank Roughness: High grass  Location: Upstream Face Dist (m):  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 5:1 R: 5:1 R: 5:1 Avg. Width (m): 1.2 Avg. Depth (m): Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush				Avg. Depth (m):	0.15
Flow Depth (mm): Flow (L/s):  Cell: Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Location: Upstream Face Dist (m): 2  Low Flow Shape: Side Slope (H:V): L: 5:1 R: 5:1 R: 5:1 Avg. Width (m): 1.2 Avg. Depth (m): Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush	Approx. Length (m):				
Flow (L/s):  Cell:  Cell:  Low Flow Shape:  Trapezoidal  Type:  Material:  Shape:  Invert:  Rise / Diam. (mm):  Span (mm)  Location:  Upstream Face  2  Low Flow Shape:  Side Slope (H:V):  L: 5:1  R: 5:1  Avg. Width (m):  1.2  Avg. Depth (m):  Channel Roughness:  Gravel/Cobble  Medium-dense brush	Inlet Type:			Overbank Roughness:	High grass
Dist (m): 2	Flow Depth (mm):				
Cell:         Low Flow Shape:         Trapezoidal           Type:         Side Slope (H:V):         L: 5:1         R: 5:1           Material:         Avg. Width (m):         1.2           Shape:         Avg. Depth (m):         0.15           Invert:         Channel Roughness:         Gravel/Cobble           Rise / Diam. (mm):         Overbank Roughness:         Medium-dense brush	Flow (L/s):				
Type:         Side Slope (H:V):         L: 5:1         R: 5:1           Material:         Avg. Width (m):         1.2           Shape:         Avg. Depth (m):         0.15           Invert:         Channel Roughness:         Gravel/Cobble           Rise / Diam. (mm):         Overbank Roughness:         Medium-dense brush					
Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush					
Shape: Avg. Depth (m): 0.15 Invert: Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush Span (mm)	Туре:				
Invert: Channel Roughness: Gravel/Cobble  Rise / Diam. (mm): Overbank Roughness: Medium-dense brush  Span (mm)	Material:				
Rise / Diam. (mm): Span (mm) Overbank Roughness: Medium-dense brush	Shape:				
Span (mm)					
Span (mm)	, ,			Overbank Roughness:	Medium-dense brush
Approx. Length (m): Additional Comments	Span (mm)				<u></u>
	Approx. Length (m):			Additional Comments	
Inlet Type: Culvert depth is 0.3 m in the u/s end				Culvert depth is 0.3 m in	the u/s end
Flow Depth (mm):					
Flow (L/s):	Flow (L/s):				





Photo 3



Location: Downstream Face Direction: Facing North

#### Photo 4



Location: Downstream Face
Direction: Facing South

#### Photo 5

# Photo Here

Location:
Direction:

#### Photo 6

# Photo Here

Location: \_\_\_\_

#### Photo 7

# Photo Here

Location: Direction:

#### Photo 8

## Photo Here





Location ID No.:	641020	
Date:	2012-06-14	
Time:	9:56 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Railway	
Name:	Station Road	
Latitude:	45.336461	Location: Downstream Face
Longitude:	-75.917305	Direction: Facing South
<b>_</b>		Photo 2
Crossing Details		
Cell:	Centre	
Type:	Culvert	
Material:	CMP	
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1200	
Span (mm)	1200	
Approx. Length (m):	25	
Inlet Type:	Projecting	
Flow Depth (mm):	400	Location: Downstream Face
Flow (L/s):	130	Direction: Facing North
110W (L/3).	130	Direction. Facing North
Cell:		Low Flow Channel Details
Type:		
IVDE		
		Location: Downstream
Material:		Dist (m): 1
Material: Shape:		Dist (m): 1 Low Flow Shape: Rectangular
Material: Shape: Invert:		Dist (m): 1   Rectangular   Side Slope (H:V): L: 5:1   R:5:1
Material: Shape: Invert: Rise / Diam. (mm):		Dist (m): 1   Rectangular   Side Slope (H:V):   L: 5:1   R: 5:1   Avg. Width (m):   1.2
Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Dist (m): 1 Low Flow Shape: Rectangular Side Slope (H:V): L: 5:1 R: 5:1 Avg. Width (m): 1.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Dist (m): Low Flow Shape: Rectangular Side Slope (H:V): L: 5:1 R: 5:1 Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Upstream Face
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Dist (m): 2
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Dist (m): Low Flow Shape: Rectangular Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Location: Dist (m): Low Flow Shape: Trapezoidal
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Dist (m): Low Flow Shape: Side Slope (H:V): L: 2:1 R: 3:1
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Upstream Face  Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 2
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Medium-dense brush  Location: Upstream Face Dist (m): 2  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 2  Avg. Depth (m): 0.15
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Dist (m):  Low Flow Shape: Rectangular  Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Gravel/Cobble  Wedium-dense brush  Location: Trapezoidal Li 2:1 R: 3:1 Avg. Width (m): Avg. Width (m): Channel Roughness: Gravel/Cobble
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Dist (m): 1  Low Flow Shape: Rectangular  Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Medium-dense brush  Location: Upstream Face Dist (m): 2  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 2  Avg. Depth (m): 0.15
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Dist (m):  Low Flow Shape: Rectangular  Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Gravel/Cobble  Wedium-dense brush  Location: Trapezoidal Li 2:1 R: 3:1 Avg. Width (m): Avg. Width (m): Channel Roughness: Gravel/Cobble
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Dist (m):  Low Flow Shape: Rectangular  Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Gravel/Cobble  Wedium-dense brush  Location: Trapezoidal Li 2:1 R: 3:1 Avg. Width (m): Avg. Width (m): Channel Roughness: Gravel/Cobble
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Dist (m):  Low Flow Shape: Rectangular  Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Upstream Face Dist (m): Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Overbank Roughness: Medium-dense brush
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Dist (m): Low Flow Shape: Rectangular Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Overbank Roughness: Medium-dense brush  Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Dist (m): Low Flow Shape: Rectangular Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Overbank Roughness: Medium-dense brush  Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush





Photo 3



Location: Upstream Face
Direction: Facing North

Photo 4



Location: Upstream Face
Direction: Facing South

#### Photo 5

## Photo Here

Location:
Direction:

#### Photo 6

## Photo Here

#### Photo 7

# Photo Here

Location:
Direction:

#### Photo 8

### Photo Here

Location: \_\_\_\_\_





General		
Location ID No.:	640820	
Date:	2012-06-14	
Time:	10:03 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Steacie Drive	
Latitude:	45.336268	Location: Upstream Face
Longitude:	-75.917286	Direction: Facing North
· ·		Photo 2
<b>Crossing Details</b>		
Cell:	Centre	
Type:	Pedestrian bridge	
Material:	Steel Frame	
Shape:	N/A	
Invert:	Open Footing	
Rise / Diam. (mm):	2600	
Span (mm)	12300	
Approx. Length (m):	2.5	
Inlet Type:	N/A	74
Flow Depth (mm):	200	Location: Upstream Face
Flow (L/s):	70	Direction: Facing South
Cell:		Low Flow Channel Details
Type:		Location: Upstream
Material:		Dist (m): 1
iviateriai.		Dist (III). I
Shape:		
		Low Flow Shape: Irregular
Shape:		Low Flow Shape: Irregular
Shape: Invert: Rise / Diam. (mm):		Low Flow Shape:   Irregular
Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape:   Irregular
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape:   Irregular
Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape: Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): 0.2 Channel Roughness: Boulders
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): 0.2 Channel Roughness: Boulders
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Low Flow Shape: Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): 0.2 Channel Roughness: Boulders Overbank Roughness: Medium-dense brush
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Low Flow Shape: Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): 0.2 Channel Roughness: Boulders Overbank Roughness: Medium-dense brush  Location: Downstream Face
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):		Low Flow Shape: Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): 0.2 Channel Roughness: Boulders Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 1
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Low Flow Shape: Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): 0.2 Channel Roughness: Boulders Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 1 Low Flow Shape: Irregular
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Medium-dense brush  Location:  Dist (m):  Low Flow Shape: Side Slope (H:V):  Irregular  Irregular  R: 3:1
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Medium-dense brush  Location:  Downstream Face  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  1 Irregular  R: 3:1  R: 3:1
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Avg. Depth (m):  O.2  Boulders  Medium-dense brush  Irregular  Irregular  Li 4:1  R: 3:1  Avg. Width (m):  Avg. Depth (m):  O.1
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Bulders  Irregular  Irregular  L: 4:1  R: 3:1  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Boulders
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Bulders  Irregular  Irregular  L: 4:1  R: 3:1  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Boulders
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Downstream Face  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Medium-dense brush
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Downstream Face 1 Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:  Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush  Location: Downstream Face 1 Irregular Side Slope (H:V): L: 4:1 R: 3:1 Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Medium-dense brush





Photo 3



Location: Downstream Face Direction: Facing South

Photo 4



Location: Downstream Face
Direction: Facing North

Photo 5



Location: Upstream Face Direction: Facing South

#### Photo 6

# Photo Here

Location:	
Direction:	

Photo 7

# Photo Here

Location:
Direction:

#### Photo 8

### Photo Here



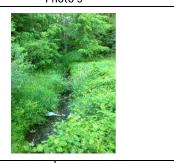


General		
Location ID No.:	641030	
Date:	2012-06-13	
Time:	7:19 PM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Walden Drive	
Latitude:	45.333620	Location: Upstream Face
Longitude:	-75.917029	Direction: Facing North
	7 010 17 020	Photo 2
Crossing Details		
Cell:	Centre	
Type:	Pedestrian bridge	
Material:	Steel Frame	
Shape:	N/A	
Invert:	Open Footing	
Rise / Diam. (mm):	2000	
Span (mm)	9000	
Approx. Length (m):	2	
Inlet Type:	N/A	
Flow Depth (mm):	250	Location: Upstream Face
Flow (L/s):	110	Direction:   Opstream Face
110W (L/3).	110	Direction: Facing South
Cell:		Low Flow Channel Details
Туре:		Location: Upstream
Material:		Dist (m): 4
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 2:1 R: 2:1
Rise / Diam. (mm):		Avg. Width (m): 2.2
Span (mm)		Avg. Width (iii): 2.2  Avg. Depth (m): 0.25
•		Channel Roughness: Cobble
Approx. Length (m):		
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		Location
Flow (L/s):		Location: Downstream Face
0-11		Dist (m): 4
Cell:	<u> </u>	Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 2:1 R: 2:1
Material:		Avg. Width (m): 2
Shape:		Avg. Depth (m): 0.2
Invert:		Channel Roughness: Cobble
Rise / Diam. (mm):		Overbank Roughness: Medium-dense brush
Span (mm)		
Approx Length (m):		Additional Comments
Inlet Type:		_
Flow Depth (mm):		
Flow (L/s):		





Photo 3



Location: Downstream Face

Direction: Facing North

#### Photo 4



Location: Downstream Face

Direction: Facing South

#### Photo 5

## **Photo** Here

Location: Direction:

#### Photo 6

## **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

## **Photo** Here





Location ID No.:   Date   2012-08-13	General		
Time:   Field Staff:   LU   SBN	Location ID No.:	647300-2647300-1	VV
Field Staff: Weather: Watershed: Kizell Drain   Main Branch   Main Bra	Date:	2012-06-13	
Weather:         Watershed:         Kizeli Drain           Watershed:         Kizeli Drain           Watercourse:         Man Branch           Road         Legget Drive           Latitude:         4.342284           Longitude:         -75.900785           Crossing Details         Cell:           Cell:         North           Shape:         Circular           Invert:         Closed Footing           Shape:         Circular           Inlet Type:         Projecting           Flow L(Js):         15           Cell:         North           Type:         Culvert           Material:         CMP           Flow Depth (mm):         15           Direction:         Downstream Face           Direction:         Facing South           Location:         Downstream Face           Direction:         Facing South           Low Flow Channel Details         Low Flow Channel Details           Low Flow Shape:         Inception:           Invert:         Closed Footing           Shape:         Side Slope (H-V):         List (Fire Pacing South           Avg. Depth (mi):         Low Flow Shape:         High grass	Time:	3:20 PM	100 May 100 Ma
Watershed:   Main Branch   Road   Legget Drive   Location:   Upstream Face   Direction:   Facing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Facing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Facing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Facing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Facing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Facing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Upstream Face   Direction:   Upstream   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream Face   Direction:   Upstream   Pace   Direction:   Upstream   Pace   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream   Pace   Direction:   Pacing South   Photo 2   Projecting   Location:   Upstream   Pace   Direction:   Upstream   Pace   Direction:   Upstream   Pace   Direction:   Pacing South   Photo 2   Projecting   P	Field Staff:	LJ SBN	
Watershed:   Main Branch   M	Weather:	Sunny	
Mater   Material:   Main Branch   Road	Watershed:		
Road	Watercourse:		The Control of the Co
Legget Drive	Crossing Location:		
Latitude:	•		
Crossing Details   Cell:   North   Circular   Invert:   Collsed Footing   Type:   Culvert   Culvert   Type:	Latitude:		Location: Upstream Face
Crossing Details   Cell:   North   Type:   Culvert   Closed Footing   Span (mm)   1500	Lonaitude:		<u> </u>
Crossing Details Cell: Type: Material: Comp Shape: Invert: Closed Footing Invert: Clow Flow Shape: Integular Invert: Invert: Channel Roughness: Inligh grass Overbank Roughness: Inligh grass Additional Comments Armourstone wing walls.	<b>g</b>		
Cell: Type: Culvert	Crossing Details		
Type:   Culvert   CMP   Circular   Closed Footing   Shape:   Circular   Closed Footing   Span (mm)   1500   Span (mm)   1500   Span (mm)   1500   Span (mm)   1600	_	North	
Material: CMP Shape: Circular Invert: Closed Footing  Rise / Diam. (mm): 1500 Approx. Length (m): 32 Inlet Type: Flow U/s): 15  Cell: North Culvert Direction: Facing South  Type: Circular Invert: Closed Footing  Material: CMP Shape: Circular Invert: Closed Footing  Rise / Diam. (mm): 1500 Approx. Length (m): 32 Invert: Closed Footing Span (mm) 1500 Approx. Length (m): 32 Ayu. Width (m): 3 Ayu. Width (m): 3 Ayu. Depth (mm): 1500 Approx. Length (m): 1500 Flow (L/s): 15  Cell: Downstream Face Downstream F			
Shape:   Invert:   Ciosed Footing			No.
Invert:   Closed Footing   1500   1500     150			The same of the sa
Rise / Diam. (mm):   1500   1500     1500	-		
Span (mm)			
Approx. Length (m):			(A)
Inlet Type:   Projecting   100	-		
Compound			
Cell: North Type: Culvert Material: CMP Shape: Circular Invert: Closed Footing Span (mm) Approx. Length (mm): 100 Flow (L/s): 15  Cell: Cell: Cell: Cell: Cell: Shape: Interting Flow (H.V): Elisin Rise (Mise) Avg. Width (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Avg. Depth (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Depth (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Width (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Depth (m): Dourstream Face Dist (m): Avg. Depth (m)			Location: Downstroam Faco
Cell: North Type: Culvert  Material: CMP Shape: Circular Invert: Closed Footing Span (mm): 1500 Approx. Length (m): 1500 Flow (L/s): 15  Cell: Type: Cell: Type: Side Slope (H:V): Loation: Downstream Face Dist (m): 4  Low Flow Channel Details Location: Upstream Dist (m): 4  Low Flow Shape: Irregular Side Slope (H:V): Li 3:1 R: 3:1  R: 3:1  Avg. Width (m): 3  Avg. Depth (m): 0.1  Channel Roughness: High grass  Overbank Roughness: High grass  Dist (m): 4  Low Flow Shape: Irregular Side Slope (H:V): Li 3:1 R: 3:1  Location: Downstream Face Dist (m): 4  Low Flow Shape: Irregular Side Slope (H:V): Li 3:1 R: 3:1  Avg. Width (m): 1  Avg. Width (m): 1  Avg. Depth (m): 0.1  Channel Roughness: High grass  Overbank Roughness: High grass  Overbank Roughness: High grass  Additional Comments  Additional Comments  Armourstone wing walls.			
Type: Culvert CMP  Shape: Circular Invert: Closed Footing  Rise / Diam. (mm): 5500  Approx. Length (m): 1500  Flow Lergh (mm): 1500  Cell: Type: Cell: Shape: Diam. (mm): 55de Slope (H:V): 15  Cell: Avg. Width (m): 1500  Channel Roughness: High grass  Overbank Roughness: High grass  Inlet Type: Side Slope (H:V): 15  Location: Downstream Face Dist (m): 4  Low Flow Shape: Side Slope (H:V): 15  Location: Downstream Face Dist (m): 4  Low Flow Shape: Side Slope (H:V): 15  Avg. Width (m): 1  Avg. Depth (m): 0.1  Channel Roughness: High grass  Overbank Roughness: High grass  Overbank Roughness: High grass  Avg. Depth (m): 0.1  Avg. Depth (m): 0.1  Avg. Depth (m): 0.1  Channel Roughness: High grass  Overbank Roughness: High grass  Additional Comments  Additional Comments  Armourstone wing walls.	110W (L/3).	13	Direction: 1 acing South
Type: Culvert CMP  Shape: Circular Invert: Closed Footing  Rise / Diam. (mm): 5500  Approx. Length (m): 1500  Flow Lergh (mm): 1500  Cell: Type: Cell: Shape: Dist (m): 4  Cell: Shape: Circular  Invert: Closed Footing  Side Slope (H:V): L: 3:1 R: 3:1  Avg. Width (m): 3  Avg. Depth (m): 3  Channel Roughness: High grass  High grass  Overbank Roughness: High grass  Overbank Roughness: Dist (m): 4  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 1  Avg. Depth (m): 0.1  Channel Roughness: High grass  Overbank Roughness: High grass  Overbank Roughness: High grass  Avg. Depth (m): 0.1  Additional Comments  Armourstone wing walls.	Cell·	North	low Flow Channel Details
Material: CMP Shape: Circular Invert: Closed Footing Rise / Diam. (mm): 1500 Span (mm) 1500 Approx. Length (m): 32 Inlet Type: Projecting Flow Uc/s): 15 Cell: Low Flow Shape: Irregular Avg. Width (m): 3 Avg. Width (m): 3 Avg. Depth (m): 0.1 Channel Roughness: High grass Overbank Roughness: High grass  Overbank Roughness: High grass  Location: Downstream Face Dist (m): 4 Location: Downstream Face Dist (m): 4 Location: Downstream Face Dist (m): 4 Low Flow Shape: Irregular Location: Downstream Face Dist (m): 4 Location: Dow			
Shape:   Circular   Low Flow Shape:   Irregular   Side Slope (H:V):   L: 3:1   R: 3:			
Invert: Closed Footing Rise / Diam. (mm): 1500			
Rise / Diam. (mm): Span (mm) Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Cell: Type: Type: Side Slope (H:V): Avg. Depth (m): Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Span (mm) Approx. Length (m): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Insert:  Avg. Width (m): Additional Comments  Armourstone wing walls.	•		
Span (mm)			
Approx. Length (m):     Inlet Type:     Flow Depth (mm):     Flow (L/s):     Inlet Type:     Flow Out (L/s):     Inlet Type:     Flow (L/s):     Inlet Type:     Inlet Type:			
Inlet Type: Projecting Overbank Roughness: High grass  Flow Depth (mm): 100  Flow (L/s): 15  Cell: Low Flow Shape: Irregular  Type: Side Slope (H:V): L: 3:1 R: 3:1  Material: Avg. Width (m): 1  Shape: Avg. Depth (m): 0.1  Invert: Channel Roughness: High grass  Overbank Roughness: High grass  Avg. Width (m): 1  Overbank Roughness: High grass  Avg. Width (m): 1  Avg. Depth (m): 0.1  High grass  Overbank Roughness: High grass  Additional Comments  Additional Comments  Armourstone wing walls.			
Flow Depth (mm):  Flow (L/s):  15  Location:  Downstream Face  Dist (m):  4  Low Flow Shape:  Irregular  Side Slope (H:V):  Avg. Width (m):  Shape:  Invert:  Channel Roughness:  Rise / Diam. (mm):  Span (mm)  Approx. Length (m):  Inlet Type:  Flow Depth (mm):  Flow Depth (mm):  Action:  Location:  Downstream Face  Dist (m):  Avg. Width (m):  Avg. Width (m):  Channel Roughness:  High grass  Additional Comments  Armourstone wing walls.			
Flow (L/s): 15  Cell: Dist (m): 4  Low Flow Shape: Irregular  Type: Side Slope (H:V): L: 3:1 R: 3:1  Material: Avg. Width (m): 1  Shape: Avg. Depth (m): 0.1  Invert: Channel Roughness: High grass  Naparox. Length (m): Additional Comments  Flow Depth (mm): Armourstone wing walls.			Overbank Roughness. High grass
Cell: Cell: Cell: Type: Side Slope (H:V): Avg. Width (m): Shape: Invert: Channel Roughness: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Cell: Low Flow Shape: Irregular Avg. Width (m): Avg. Width (m): Channel Roughness: High grass Overbank Roughness: High grass Additional Comments Additional Comments Armourstone wing walls.	-		Location: Downstroom Food
Cell: Type: Side Slope (H:V):  Material: Shape: Invert: Channel Roughness: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Clow Flow Shape: Irregular  Avg. Width (m): Avg. Width (m): Channel Roughness: High grass Overbank Roughness: High grass Additional Comments  Armourstone wing walls.	110W (L/3).	15	
Type:  Material:  Shape:  Invert:  Rise / Diam. (mm):  Span (mm)  Approx. Length (m):  Inlet Type:  Flow Depth (mm):  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  High grass  Overbank Roughness:  High grass  Additional Comments  Armourstone wing walls.	Calle		
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Avg. Width (m): Avg. Depth (m): Channel Roughness: High grass Overbank Roughness: High grass Additional Comments Armourstone wing walls.			
Shape: Invert: Channel Roughness: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Avg. Depth (m): Channel Roughness: High grass  Overbank Roughness: Additional Comments  Armourstone wing walls.			
Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Channel Roughness: High grass Overbank Roughness: High grass Additional Comments  Armourstone wing walls.			
Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Overbank Roughness: High grass Additional Comments Armourstone wing walls.			
Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Additional Comments  Armourstone wing walls.			
Approx. Length (m):  Inlet Type: Flow Depth (mm):  Additional Comments  Armourstone wing walls.	, ,		Overbank kougnness: High grass
Inlet Type: Armourstone wing walls.	Con a sa / saa sr - \		
Flow Depth (mm):			Additional Comments
	Approx. Length (m):		
FIOW (L/S):	Approx. Length (m): Inlet Type:		
	Approx. Length (m): Inlet Type: Flow Depth (mm):		





Photo 3



Location: Upstream Face

Direction: Facing North

#### Photo 4



Location: Downstream Face

Direction: Facing North

#### Photo 5

### **Photo** Here

Location: Direction:

#### Photo 6

# **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

## **Photo** Here



Flow Depth (mm): Flow (L/s):



### Shirley's Brook and Watt's Creek Phase 2 SWM Study Hydraulic Structure Inventory Sheet

General		
Location ID No.:	647390-2647390-1	
Date:	2012-06-13	
Time:	4:07 PM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Marsh Sparrow Private	
Latitude:	45.344504	
Longitude:	-75,902971	
Longitude.	-75,902971	
Crossing Details		
Cell:	West	
Type:	Culvert	
Material:	CMP	
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1500	
Span (mm)	1500	
Approx. Length (m):	30	
Inlet Type:	Projecting	
Flow Depth (mm):	200	
Flow (L/s):	20	
110W (L/3).	20	
Cell:	East	
Type:	Culvert	
Material:	CMP	
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1500	
Span (mm)	1500	
Approx. Length (m):	30	
Inlet Type:	Projecting	
Flow Depth (mm):		
Flow (L/s):	0	
110W (L/3).	V	
(۱۱۰		
Cell: Type:		
Material:		
Shape:		
Invert:		
Rise / Diam. (mm):		
Span (mm)		
Approx Length (m):		
Inlet Type:		



Location: Upstream Face
Direction: Facing North
Photo 2



Location: Upstream Face
Direction: Facing South

#### Low Flow Channel Details

Location:	Upstream	
Dist (m):	4	
Low Flow Shape:	Trapezoidal	
Side Slope (H:V):	L: 3:1 R: 3:1	
Avg. Width (m): 1.7		
Avg. Depth (m):		
Channel Roughness:	ess: Cobble	
Overbank Roughness:	Medium-den	se brush

Location: Downstream Face	
Dist (m): 4	
Low Flow Shape: Trapezoidal	
Side Slope (H:V): L: 3:1 R: 3:1	
Avg. Width (m): 1.6	
Avg. Depth (m): 0.25	
Channel Roughness: Cobble	
Overbank Roughness: Medium-dense brush	

#### **Additional Comments**

East culvert invert 0.5 m above west culvert invert.





Photo 3



Location: Downstream Face

Direction: Facing South

#### Photo 4



Location: Downstream Face

Direction: Facing North

#### Photo 5

## **Photo** Here

Location: Direction:

#### Photo 6

## **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

### **Photo** Here





General		
Location ID No.:	647960	A Design of the Control of the Contr
Date:	2012-06-14	
Time:	10:35 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Goulbourn Forced Road	
Latitude:	45.328180	Location: Upstream Face
Longitude:	-75.930133	Direction: Facing South
Longitude.	70,000 100	Photo 2
Crossing Details		THOUSE
Cell:	Centre	
Type:	Culvert	
Material:	CMP	
		· · · · · · · · · · · · · · · · · · ·
Shape: Invert:	Circular	
	Closed Footing	
Rise / Diam. (mm):	800	
Span (mm)	800	
Approx Length (m):	25	
Inlet Type:	Projecting	
Flow Depth (mm):	0	Location: Downstream Face
Flow (L/s):	0	Direction: Facing North
		7
Cell:		Low Flow Channel Details
Туре:		Location: Upstream
Material:		Dist (m): N/A
Shape:		Low Flow Shape: Irregular
Invert:		Side Slope (H:V): L: 7:1 R: 7:1
Rise / Diam. (mm):		Avg. Width (m): N/A
Span (mm)		Avg. Depth (m): N/A
Approx Length (m):		Channel Roughness: Cobble
Inlet Type:		Overbank Roughness: High grass
Flow Depth (mm):		]
Flow (L/s):		Location: Downstream Face
, ,		Dist (m): N/A
Cell:		Low Flow Shape: Irregular
Type:		Side Slope (H:V): L: 7:1 R: 7:1
Material:		Avg. Width (m): N/A
Shape:		Avg. Depth (m): N/A
Invert:		Channel Roughness: Cobble
Rise / Diam. (mm):		Overbank Roughness: High grass
		Overbank Kouginiess. High grass
Span (mm)		Additional Comments
Approx. Length (m):	į	Auditional Comments
Inlat Turns		
Inlet Type:		Wetland on both sides.
Inlet Type: Flow Depth (mm): Flow (L/s):		





Photo 3



Location: Downstream Face Direction: Facing West

Photo 4

Photo Here

Location: Direction:

Photo 5

Photo Here

Location: Direction:

Photo 6

Photo Here

Location: \_\_\_\_

Photo 7

Photo Here

Location: Direction:

Photo 8

Photo Here



Flow Depth (mm): Flow (L/s):



concrete box culvert.

		Photo 1
General		
Location ID No.:	648310	
Date:	2012-06-14	
Time:	8:36 AM	Bit inner
Field Staff:	LJ SBN	
Weather:	Sunny	10 No. 10
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	March Road	
Latitude:	45.340923	Location: Downstream Face
Longitude:	-75,914636	Direction: Facing South
Longitude.	-73.314000	Photo 2
Crossing Details		- 11000 <u>-</u>
Cell:	Centre	
Type:	Culvert	
Material:	Concrete	
Shape:	Box / Rectangular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1200	
Span (mm)	2400	
Approx. Length (m):	49	
Inlet Type:		
	Projecting	Location B
Flow Depth (mm):	200	Location: Downstream Face
Flow (L/s):	70	Direction: Facing North
Cell:	Centre	Low Flow Channel Details
Type:	Culvert	Location: Downstream
Material:	CMP	Dist (m): 3
		Low Flow Shape: Trapezoidal
Shape:	Circular	
Invert:	Closed Footing	Side Slope (H:V): L: 3:1 R: 7:1
Rise / Diam. (mm):	1.2	Avg. Width (m): 3.4
Span (mm)		Avg. Depth (m): 0.2
Approx. Length (m):	15	Channel Roughness: Clean, straight, veg.
Inlet Type:	Projecting	Overbank Roughness: High grass
Flow Depth (mm):	100	
Flow (L/s):	200	Location: Upstream Face
		Dist (m): 1.2
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 4:1 R: 1:1
Material:		Avg. Width (m): 2
Shape:		Avg. Depth (m): 0.1
Invert:		Channel Roughness: Sediment
Rise / Diam. (mm):		Overbank Roughness: Light brush
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Armorstone head wall downstream. Circular CMP joins





Photo 3



Location: Upstream Face

Direction: Facing North

#### Photo 4



Location: Upstream Face

Direction: Facing South

#### Photo 5

### **Photo** Here

Location: Direction:

#### Photo 6

## **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

### **Photo** Here





		Photo 1
General		
Location ID No.:	648450	
Date:	2012-06-13	
Time:	6:30 PM	T anotion
Field Staff:	SBN LJ	<b>Location</b>
Weather:	Sunny	T
Watershed:	Kizell Drain	Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Marshes Golf Club	
Latitude:	45.346117	Location:
Longitude:	-75,903708	Direction:
Longitudo.	70,000700	Photo 2
Crossing Details		111010 2
Cell:		
Type:		
туре. Material:		Disate
Shape:		Photo
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		HICIC
Approx. Length (m):		
Inlet Type:		Lacation
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
0-11		Law Flam Observed Datable
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
<u>.</u> .		Dist (m):
Cell:		Low Flow Shape:
Туре:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Structure located on Marshes Golf Club property, could
Flow Depth (mm):		not access.
Flow (L/s):		
. ,		





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





Contain   DN Dr.   East   Ea			FIIOTO
Date:			
Time:   SBN   LJ   Location   SBN   LJ   Location   Inaccessible	Location ID No.:	648460	
Field Staff:   Weather:   Sunny	Date:	2012-06-13	
Waetshed:   Sunny		6:30 PM	Location
Matershed:   Main Branch   Main Branch   Main Branch   Marchouse   Marchouse   Marshes Golf Club   Marshes Golf Club property, could not access.   Marshes Golf Club property, could not access.		SBN LJ	Location
Watercourse: Crossing Location: Name: Latitude: Latitude: Latitude: Longitude: 45.346043   -75.905893   Direction:   Photo 2	Weather:	Sunny	Inggoggible
Pedestrian   Marshes Golf Club   Direction:   Photo 2	Watershed:	Kizell Drain	maccessible
Name: Latitude:	Watercourse:	Main Branch	
Latitude: Longitude: -75,905893	Crossing Location:	Pedestrian	
Crossing Details		Marshes Golf Club	
Photo 2			
Crossing Details   Cell:   Type:   Material:   Shape:   Invert:   Span (mm)   Material:   Shape:   Invert:   Shape:	Longitude:	-75,905893	
Cell: Type:			Photo 2
Type:   Material:   Shape:			
Material:   Shape:			
Trivert:   Rise / Diam. (mm):   Span (mm)   Approx. Length (m):   Inlet Type:   Flow Depth (mm):   Flow (L/s):   Location:   Direction:   Location:   Location:   Location:   Location:   Location:   Location:   Location:   Location:   Direction:   Location:   Location:   Direction:   Location:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Direction:   Location:   Direction:   Direction:   Location:   Direction:   Direction:   Direction:   Location:   Direction:   Direction:   Location:   Location:   Direction:   Location:   Location:   Location:   Location:   Direction:   Location:   Loc			
Trivert:   Rise / Diam. (mm):   Span (mm)   Approx. Length (m):   Inlet Type:   Flow Depth (mm):   Flow (L/s):   Location:   Direction:   Location:   Location:   Location:   Location:   Location:   Location:   Location:   Location:   Direction:   Location:   Location:   Direction:   Location:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Location:   Direction:   Direction:   Location:   Direction:   Direction:   Location:   Direction:   Direction:   Direction:   Location:   Direction:   Direction:   Location:   Location:   Direction:   Location:   Location:   Location:   Location:   Direction:   Location:   Loc			Photo
Rise / Diam. (mm):	•		1 11010
Span (mm)   Approx. Length (m):			Howe
Span (mm)   Approx. Length (m):	Rise / Diam. (mm):		Here
Inlet Type:			
Countries   Coun	Approx. Length (m):		
Cell:   Low Flow Channel Details   Location:   Dist (m):   Low Flow Shape:   Low Flow Lendth (m):   Low Flow Shape:	Inlet Type:		
Cell:	Flow Depth (mm):		Location:
Type:	Flow (L/s):		Direction:
Type:			
Material:         Shape:         Low Flow Shape:         Rise / Diam. (mm):         Low Flow Shape:         Rise / Diam. (mm):         Li:         R:           Rise / Diam. (mm):         Avg. Width (m):         Avg. Depth (m):         Avg. Width (m):         Avg. Width (m):         Avg. Depth (m):	Cell:		Low Flow Channel Details
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Cell: Type: Side Slope (H:V): Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Cell: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Sourch Additional Comments Structure located on Marshes Golf Club property, could not access.	Flow (L/s):		
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Flow Depth (mm): not access.			Structure located on Marshes Golf Club property, could





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





Location ID No.   Date:   2012-06-13	General		
Field Staff: LJ SBN   Weather: Sunny   Watershed: Kizell Drain   Watercourse: Crossing Location: Legget Drive   Latitude: Latitude: Longitude: -75.910278   Crossing Details   Cell: Type: Pedestrian bridge   Material: Steel Frame   Shape: Invert: Open Footing   Rise / Diam. (mm): 2000   Span (mm)   Approx. Length (m): 20   Flow (L/s): Go    Cell: Type: Material: Steel Frame   Shape: Invert: Open Footing   Cell: Type: Material: Steel Frame   Shape: Invert: Open Footing   Cell: Type: Material: Steel Frame   Shape: Invert: Open Footing   Cell: Type: Material: Steel Frame   Shape: Invert: Cell: Centre   Cell: Type: Material: Steel Frame   Shape: Invert: Open Footing   Cell: Type: Material: Steel Frame   Shape: Invert: Open Footing   Cell: Cell: Centre	Location ID No :	648470	
Field Staff: Weather: Watershed: Kizell Drain Main Branch Pedestrian Legget Drive Latitude: Longitude: -75,910278  Crossing Details Cell: Type: Material: Shape: Inlet Type: Flow (Lrs): Flow (Lrs):  Cell: Type: Material: Shape: Inlet Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Inlet Type: Flow Depth (mm): Flow (L/s): Inlet Type: Flow Depth (mm): Flow Uc/s): Inlet Type: Flow Dep	Date:	2012-06-13	
Weather: Watershed: Watershed: Watersourse: Crossing Location: Name: Legget Drive Latitude: Latitude: Longitude: Crossing Details Cell: Type: Material: Shape: Invert: Plow (L/s): Flow (L/s): Span (mm) Approx. Length (m): Shape: Invert: Shape: Inv	Time:	6:41 PM	
Watershed: Watercourse: Crossing Location: Name: Legget Drive Latitude: Latitude: Longitude: -75,910278  Crossing Details Cell: Type: Marerial: Shape: N/A Invert: Plow (L/s): Flow (L/s):  Cell: Type: Marerial: Shape: Location: Upstream Face Direction: Facing West Photo 2  Location: Upstream Face Direction: Facing West Photo 2  Location: Upstream Face Direction: Facing West Photo 2  Location: Upstream Face Direction: Facing East  Location: Upstream Face Facing East  Location: Upstream Face Direction: Facing East  Location: Upstream Face Facing West Photo 2	Field Staff:	LJ SBN	
Watershed: Watercourse: Crossing Location: Name: Latitude: Latitude: Latitude: Longitude: -75,910278  Crossing Details Cell: Type: Mare Pedestrian bridge Material: Shape: N/A Invert: Rise / Diam. (mm): Flow (L/s):  Cell: Type: Material: Shape: Location: Upstream Face Direction: Facing West Photo 2  Location: Upstream Face Direction: Facing West Photo 2  Location: Upstream Face Direction: Facing East  Low Flow Channel Details Location: Upstream Face Direction: Facing East  Location: Upstream Acc Direction: Facing East  Location: Upstream Cocation: Upstream Cocation	Weather:	Sunny	
Watercourse: Crossing Location: Name: Legget Drive Latitude: 45,344095 Longitude: -75,910278  Crossing Details Cell: Type: Pedestrian bridge Material: Shape: Invert: Open Footing Span (mm) Approx. Length (m): Flow (L/s):  Cell: Type: Material: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Joan (Legget Drive Location: Jupstream Face Direction: Facing West Photo 2  Location: Upstream Face Direction: Facing East  Low Flow Channel Details Location: Upstream Face Direction: Facing East  Low Flow Channel Details Low Flow Channel Details Low Flow Shape: Side Slope (H:V): Side Slope (H:V): Side Slope (H:V): Span (mm) Approx. Length (m): Span (mm) Approx. Length (m): Inlet Type: Inlet Type: Flow Location: Jupstream Dist (m): Location: Upstream Dist (m): Low Flow Channel Details Low Flow Shape: Side Slope (H:V): Side	Watershed:		
Crossing Location: Name: Latitude: Latitude: Longitude: -75.910278  Crossing Details Cell: Type: Pedestrian bridge Material: Shape: Inlet Type: Material: Shape: Invert: Invert: Shape: Invert: Invert	Watercourse:		
Name: Latitude: 45.344095 Longitude: -75.910278  Crossing Details Cell: Type: Pedestrian bridge Steel Frame N/A Invert: Open Footing Span (mm) Approx. Length (m): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Shape: Invert:	Crossing Location:		
Latitude: Longitude: 45.344095   Location: Upstream Face   Photo 2    Crossing Details   Cell: Type: Pedestrian bridge   Steel Frame   N/A   Dopen Footing   Direction: Facing West   Photo 2    Rise / Diam. (mm): Span (mm)   10000   Approx. Length (m): Elow (L/s): Flow (L/s): Flow (L/s): Shape: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Span (mm)   Approx. Length (m): Span (mm)   Approx. Length (m): Span (mm)   Approx. Length (m): Flow (L/s): Flow (L/s): Span (mm)   Approx. Length (m): Intel Type: Span (mm)   Approx. Length (m): Intel Type: Flow Depth (mm): Flow (L/s): Span (mm)   Channel Roughness: Overbank Roughness: Overbank Roughness: Overbank Roughness: Dist (m): Intel Type: Flow Depth (mm): Flow (L/s): Downstream Face Dist (m): Intel Type: Flow Depth (mm): Flow (L/s): Downstream Face Dist (m): Intel Type: Flow Depth (mm): Flow (L/s): Intel Type: Flow Depth (mm): Flow Channel Roughness: Flow Depth (mm): Flow (L/s): Flow Depth (mm):	•		
Longitude: -75.910278  Crossing Details  Cell: Type: Pedestrian bridge  Material: Span (mm) Approx. Length (m): Shape: Material: Shape: Invert: Shape: Material: Shape: Flow (L/s): Flow Depth (mm): Shape: Material: Shape: Mile Type: Material: Shape: Material:			Location: Unstream Face
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Crossing Details  Cell: Type: Pedestrian bridge Steel Frame N/A Invert: Shape: Invert: Span (mm): Span (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Shape: Invert: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Flow (L/s): Centre Pedestrian bridge  N/A  Location: Upstream Face Facing East  Low Flow Channel Details Location: Dist (m): Location: Upstream Dist (m): Low Flow Shape: Side Slope (H:V): Li 5:1 R: 5:1 R: 5:1 Avg. Width (m): Avg. Width (m): Clean, winding, veg. Overbank Roughness: High grass Flow (L/s): Dist (m): Location: Downstream Face Dist (m): Location: Dist (m): Location: Downstream Face Dist (m): Location: Dist (m): Location: Dist (m): Location: Downstream Face Dist (m): Location: Dist (m): Locati	Longitudo.	70,010270	
Cell: Type: Pedestrian bridge  Steel Frame N/A Open Footing  Span (mm): Span (mm): Plow (L/s):  Cell: Type: N/A  Open Footing  2000  2.6 N/A  N/A  Open Footing  2000  Location: Dist ream Face Direction: Facing East  Low Flow Channel Details  Location: Dist (m): Location: Upstream Face Direction: Facing East  Low Flow Channel Details  Location: Upstream Dist (m): Location: Upstream Dist (m): Location: Dist (m): Location: Upstream Dist (m): Location: Upstream Dist (m): Location: Dist (m): Location: Dist (m): Location: Upstream Dist (m): Location: Dist (m): Location: Cell:	Crossing Details		
Type: Material: Steel Frame Shape: Invert: Open Footing  Rise / Diam. (mm): Span (mm) Approx. Length (m): Loation: Flow (L/s): Bape: Invert: Shape: Invert: Page (mm): Shape: Invert: Page (mm): Shape: Invert: Shape: Invert: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Channel Roughness: Overbank Roughness: Flow (L/s): Steel Frame  Pedestrian bridge Steel Frame N/A  Dopen Footing 2000  Location: Upstream Face Direction: Facing East  Low Flow Channel Details  Low Flow Channel Details  Low Flow Shape: Trapezoidal Side Slope (H:V): List 1 Rist 1  Avg. Width (m): 2.2  Channel Roughness: Overbank Roughness: Overbank Roughness: High grass  Flow Depth (mm): Flow (L/s): Downstream Face Dist (m): 4  Downstream Face Downstream Face Dist (m): Downstream Face Dist (m): 4	_	Centre	
Material:         Steel Frame           Shape:         N/A           Invert:         Open Footing           Rise / Diam. (mm):         2000           Span (mm)         10000           Approx. Length (m):         2.6           Inlet Type:         N/A           Flow Depth (mm):         200           Flow (L/s):         60           Cell:         Location: Upstream Face           Type:         Low Flow Channel Details           Low Flow Channel Details         Location: Upstream           Low Flow Shape:         Location: Upstream           Low Flow Shape:         Location: Upstream Face           Low Flow Shape:         Low Flow Shape: Trapezoidal           Side Slope (H:V):         L: 5:1 R: 5:1           Avg. Width (m):         2.2           Avg. Depth (mm)         Avg. Depth (m)           Channel Roughness:         Clean, winding, veg.           High grass           Flow (L/s):         Location: Downstream Face			
Shape: Invert: Open Footing 2000 Span (mm): 2000 Approx. Length (m): 2.6 Inlet Type: N/A Flow Depth (mm): 200 Flow (L/s): 60  Cell: Type: Material: Shape: Invert: Shape: Invert: Span (mm) Approx. Length (m): 2.6  Cell: Type: Material: Shape: Invert: Shape: Invert: Span (mm) Approx. Length (m): Avg. Width (m): 2.2 Approx. Length (m): Inlet Type: Overbank Roughness: Clean, winding, veg. Inlet Type: Flow Depth (mm): Flow (L/s): Location: Downstream Face  Shape: Channel Roughness: Clean, winding, veg. Dist (m): 4  Location: Downstream Face Dist (m): 4			
Invert: Open Footing  Rise / Diam. (mm): 2000 Span (mm) 10000 Approx. Length (m): 2.6 Inlet Type: N/A  Flow Depth (mm): 200			Child Charles of the Control of the
Rise / Diam. (mm):	•		Charles Control of the Control of th
Span (mm)         10000           Approx. Length (m):         2.6           Inlet Type:         N/A           Flow Depth (mm):         200           Flow (L/s):         60           Cell:         Location:           Type:         Location:           Material:         Dist (m):           Shape:         Low Flow Channel Details           Location:         Upstream           Location:         Trapezoidal           Invert:         Side Slope (H:V):         L: 5:1         R: 5:1           Rise / Diam. (mm):         Avg. Width (m):         2.2           Span (mm)         Avg. Depth (m):         0.20           Approx. Length (m):         Channel Roughness:         Clean, winding, veg.           Inlet Type:         Overbank Roughness:         High grass           Flow Depth (mm):         Location:         Downstream Face           Flow (L/s):         Dist (m):         4	*********		
Approx. Length (m): Inlet Type: N/A  Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow (L/s): Flow (L/s):  Cell: Cell: Cell: Direction: Location: Upstream Dist (m): Location: Dist (m): Location: Dist (m): Li. 5:1 R: 5:1 R: 5:1 R: 5:1 Rype: Avg. Width (m): Avg. Width (m): Cell: Cell: Coverbank Roughness: Cell: Cell: Cell: Cell: Coverbank Roughness: Cell:			
Inlet Type: N/A Flow Depth (mm): 200 Flow (L/s): 60  Cell: Low Flow Channel Details Type: Location: Upstream Material: Dist (m): 4  Shape: Low Flow Shape: Trapezoidal Invert: Side Slope (H:V): L: 5:1 R: 5:1  Rise / Diam. (mm): Avg. Width (m): 2.2  Span (mm) Approx. Length (m): Inlet Type: Overbank Roughness: Flow Depth (mm): Flow (L/s): Location: Downstream Face  Flow Location: Downstream Face Dist (m): 4	•		
Flow Depth (mm): Flow (L/s): F			
Flow (L/s): 60  Direction: Facing East  Cell: Type: Location: Upstream Dist (m): 4  Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow (L/s): Flow (L/s):  Biology Channel Details  Low Flow Channel Details  Location: Upstream  Dist (m): 4  Low Flow Shape: Side Slope (H:V): Listin R:5:1  Rise / Diam. (mm): Avg. Width (m): 2.2  Avg. Depth (m): Channel Roughness: Overbank Roughness: Flow Depth (mm): Flow (L/s):  Location: Downstream Face Dist (m):  Location: Downstream Face			
Cell: Type:  Material: Shape: Invert:  Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow (L/s):  Cell: Low Flow Channel Details  Location: Upstream  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 5:1 R: 5:1 R: 5:1 R: 5:1  Avg. Width (m): 2.2 Channel Roughness: Overbank Roughness: Flow (L/s): Location: Downstream Face Dist (m):  Location: Downstream Face Dist (m):  Location: Downstream Face			
Type: Location: Upstream  Material: Dist (m): 4  Shape: Low Flow Shape: Trapezoidal  Invert: Side Slope (H:V): L: 5:1 R: 5:1  Rise / Diam. (mm): Avg. Width (m): 2.2  Span (mm) Approx. Length (m): Channel Roughness: Overbank Roughness: Overbank Roughness: High grass  Flow Depth (mm): Flow (L/s): Location: Downstream Face  Dist (m): 4	FIOW (L/S):	60	Direction: Facing East
Type: Location: Upstream  Material: Dist (m): 4  Shape: Low Flow Shape: Trapezoidal  Invert: Side Slope (H:V): L: 5:1 R: 5:1  Rise / Diam. (mm): Avg. Width (m): 2.2  Span (mm) Approx. Length (m): Channel Roughness: Overbank Roughness: Overbank Roughness: High grass  Flow Depth (mm): Flow (L/s): Location: Downstream Face  Dist (m): 4	0 - 11		The state of the s
Material:  Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow (L/s):  Material: Dist (m): Low Flow Shape: Trapezoidal L: 5:1 R: 5:1 R: 5:1  Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: High grass Location: Downstream Face Dist (m): 4			
Shape:         Low Flow Shape:         Trapezoidal           Invert:         Side Slope (H:V):         L: 5:1         R: 5:1           Rise / Diam. (mm):         Avg. Width (m):         2.2           Span (mm)         Avg. Depth (m):         0.20           Approx. Length (m):         Channel Roughness:         Clean, winding, veg.           Inlet Type:         Overbank Roughness:         High grass           Flow Depth (mm):         Location:         Downstream Face           Flow (L/s):         Dist (m):         4			
Invert:   Side Slope (H:V): L: 5:1   R: 5:1			
Rise / Diam. (mm): Span (mm) Avg. Width (m): Avg. Depth (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: High grass  Flow (L/s): Location: Downstream Face Dist (m):  4	•		
Span (mm) Approx. Length (m): Inlet Type: Flow (L/s): Approx. Length (m): Channel Roughness: Overbank Roughness: High grass  Location: Downstream Face Dist (m):  4			
Approx. Length (m): Inlet Type: Flow (L/s): Channel Roughness: Clean, winding, veg. Overbank Roughness: High grass  Location: Downstream Face Dist (m): 4	, ,		
Inlet Type: Overbank Roughness: High grass Flow Depth (mm): Flow (L/s): Location: Downstream Face Dist (m): 4	•		
Flow Depth (mm):  Flow (L/s):  Location: Downstream Face Dist (m): 4			
Flow (L/s):  Location: Downstream Face Dist (m): 4			Overbank Roughness: High grass
Dist (m): 4			
	Flow (L/s):		
Cell: Low Flow Shape: Trapezoidal			
Type: Side Slope (H:V): L: 4:1 R: 5:1			
Material: Avg. Width (m): 2.5	Material:		
Shape: Avg. Depth (m): 0.25	Shape:		
Invert: Channel Roughness: Clean, straight, veg.	Invert:		
Rise / Diam. (mm): Overbank Roughness: High grass	Rise / Diam. (mm):		Overbank Roughness: High grass
Span (mm)	Span (mm)		
Approx. Length (m): Additional Comments			Additional Comments
Inlet Type:			
Flow Depth (mm):			7
Flow (L/s):			7
	. ,		-





Photo 3



Location: Downstream Face

Direction: Facing East

#### Photo 4



Location: Downstream Face

Direction: Facing West

#### Photo 5

## **Photo** Here

Location: Direction:

#### Photo 6

## **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

## **Photo** Here





General		
Location ID No.:	K1	
Date:	2012-06-13	
Time:	11:52 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Burke Road	
Latitude:	45.340552	Location: Downstream Face
Longitude:	-75.885036	Direction: Facing South
ŭ		Photo 2
<b>Crossing Details</b>		
Cell:	North	
Type:	Pedestrian Bridge	
Material:	Steel Frame	
Shape:	N/A	
Invert:	Open Footing	
Rise / Diam. (mm):	2300	
Span (mm)	14400	
Approx. Length (m):	2.5	
Inlet Type:	N/A	
Flow Depth (mm):	400	Location: Downstream Face
Flow (L/s):	100	Direction: Facing North
(=, 0).	100	2 code   Tability Horar
Cell:		Low Flow Channel Details
Type:		Location: Upstream
1,00.		Edution: Opstream
		Dist (m): 1.4
Material:		Dist (m): 1.4
Material: Shape:		Low Flow Shape: Trapezoidal
Material: Shape: Invert:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1
Material: Shape: Invert: Rise / Diam. (mm):		Low Flow Shape:   Trapezoidal
Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush Location: Downstream Face
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 5
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 5 Low Flow Shape: Trapezoidal
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 5 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 5 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1 Avg. Width (m): 2.5
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 5 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1 Avg. Width (m): 2.5 Avg. Depth (m): 0.45
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Medium-dense brush  Location:  Downstream Face  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Channel Roughness:  Gravel/Cobble  Medium-dense brush
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1 Avg. Width (m): 3.2 Avg. Depth (m): 0.4 Channel Roughness: Gravel/Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face Dist (m): 5 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1 Avg. Width (m): 2.5 Avg. Depth (m): 0.45
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1  Avg. Width (m): 3.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face 5  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1  Avg. Width (m): 2.5  Avg. Depth (m): 0.45  Channel Roughness: Gravel/Cobble  Overbank Roughness: Gravel/Cobble  High grass
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Medium-dense brush  Location:  Downstream Face  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Channel Roughness:  Gravel/Cobble  Medium-dense brush
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1  Avg. Width (m): 3.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face 5  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1  Avg. Width (m): 2.5  Avg. Depth (m): 0.45  Channel Roughness: Gravel/Cobble  Overbank Roughness: Gravel/Cobble  High grass
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1  Avg. Width (m): 3.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face 5  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1  Avg. Width (m): 2.5  Avg. Depth (m): 0.45  Channel Roughness: Gravel/Cobble  Overbank Roughness: Gravel/Cobble  High grass
Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 5:1  Avg. Width (m): 3.2  Avg. Depth (m): 0.4  Channel Roughness: Gravel/Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face 5  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 3:1 R: 7:1  Avg. Width (m): 2.5  Avg. Depth (m): 0.45  Channel Roughness: Gravel/Cobble  Overbank Roughness: Gravel/Cobble  High grass





Photo 3



Location: Downstream Face
Direction: Facing North

#### Photo 4



Location: Upstream Face
Direction: Facing South

Photo 5



Location: Facing West

#### Photo 6



Location:
Direction:

#### Photo 7

# Photo Here

Location: Direction:

#### Photo 8

## Photo Here





Photo 1

General		
Location ID No :	K3	
Date:	2012-09-18	
Time:	12:12 PM	
Field Staff:	GAF SE	
Weather:	Rain	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	A Sac By
Crossing Location:	Pedestrian	
Name:	Nordion	
Latitude:		Location: Upstream Face
Longitude:		Direction: Facing East
		Photo 2
Crossing Details		
Cell:	South	
Туре:	Bridge	
Material:	Wood	The second secon
Shape:	Irregular	
Invert:	Open Footing	
Rise / Diam. (mm):	1.45	
Span (mm)	6.4	
Approx. Length (m):	1.2	
Inlet Type:	N/A	
Flow Depth (mm):	0.34	Location: Downstream Face
Flow (L/s):	5	Direction: Facing West
		<u></u>
Cell:	North	Low Flow Channel Details
Type:	Bridge	Location: Downstream
Material:	Wood	Dist (m): 5
Shape:	Irregular	Low Flow Shape: Trapezoidal
Invert:	Open Footing	Side Slope (H:V): L: 1:1 R: 2:1
Rise / Diam. (mm):	1.1	Avg. Width (m): 1.5
Span (mm)	5.2	Avg. Depth (m): 0.3
Approx. Length (m):	1.2	Channel Roughness: Clean, straight, veg.
Inlet Type:	N/A	Overbank Roughness: High grass
Flow Depth (mm):	0	
F <b>l</b> ow (L/s):	0	Location: Upstream Face
		Dist (m): 5
Cell:		Low Flow Shape: Trapezoidal
Туре:		Side Slope (H:V): L: 1:1 R: 3:1
Material:		Avg. Width (m): 1.5
Shape:		Avg. Depth (m): 0.3
Invert:		Channel Roughness: Clean, straight
Rise / Diam. (mm):		Overbank Roughness: High grass
Span (mm)		<u> </u>
Approx. Length (m):		Additional Comments
Inlet Type:		Armorstone on north bank through south crossing.
Flow Depth (mm):		North bridge crossing broken, no low flow through
Flow (L/s):		channel.





Photo 3



Location: Upstream Face Direction: Facing West

Photo 4



Location: Downstream Face
Direction: Facing East

Photo 5

### Photo Here

Location:
Direction:

#### Photo 6

# Photo Here

Location: Direction:

#### Photo 7

# Photo Here

Location:
Direction:

#### Photo 8

# Photo Here





		Photo 1
General		
Location ID No :	K4	
Date:	2012-09-18	
Time:	12:37 PM	
Field Staff:	GAF SE	
Weather:	Rain	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Nordion	
Latitude:		Location: Upstream Face
Longitude:		Direction: Facing East
· ·		Photo 2
Crossing Details		
Cell:	Centre	
Type:	Culvert	
Material:	CMP	
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1.2	
Span (mm)		
Approx. Length (m):	10.7	
Inlet Type:	Mitered	
Flow Depth (mm):	0.25	Location: Downstream Face
Flow (L/s):	5	Direction: Facing East
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 5:1 R: 3:1
Rise / Diam. (mm):		Avg. Width (m): 3
Span (mm)		Avg. Depth (m): 0.3
Approx. Length (m):		Channel Roughness: Clean, straight
Inlet Type:		Overbank Roughness: High grass
Flow Depth (mm):		
Flow (L/s):		Location: Upstream Face
	-	Dist (m): 5
Ce <b>ll</b> :		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 3:1 R: 3:1
Material:		Avg. Width (m): 2
Shape:		Avg. Depth (m): 0.3
Invert:		Channel Roughness: Clean, straight, veg.
Rise / Diam. (mm):		Overbank Roughness: Short grass
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		2 m mitre on upstream and downstream face. Drop of
Flow Depth (mm):		0.25 m on downstream end. Approx. 0.75 m cover to top
Flow (L/s):		of path.





Photo 3



Location: Upstream Face Direction: Facing West

Photo 4

Photo Here

Photo 5

Photo Here

Location: Direction:

Photo 6

Photo Here

Photo 7

Photo Here

Location:
Direction:

Photo 8

Photo Here

Location:
Direction:





		Photo 1
General		
Location ID No.:	K5	
Date:	2012-09-18	
Time:	12:37 PM	
Field Staff:	GAF SE	
Weather:	Rain	
Watershed:	Kizell Drain	
Watercourse:	Main Branch	
Crossing Location:	Utility Crossing	
Name:	Nordion	
Latitude:	Nordion	Location: Downstream Face
Longitude:		Direction: Facing West
Longitual	L	Photo 2
Crossing Details		11000 _
Ce <b>ll</b> :	Centre	
Туре:	Culvert	
туре. Material:	Concrete	
Shape:	Box / Rectangular	
Snape: Invert:		
	Open Footing	
Rise / Diam. (mm):	0.5	
Span (mm)	3.0	
Approx. Length (m):	14.2	
Inlet Type:	Projecting	
Flow Depth (mm):	0.16	Location: Upstream Face
Flow (L/s):	5	Direction: Facing East
0.411	<u> </u>	¬
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 3:1 R: 3:1
Rise / Diam. (mm):		Avg. Width (m): 3
Span (mm)		Avg. Depth (m): 0.3
Approx. Length (m):		Channel Roughness: Clean, straight, veg.
Inlet Type:		Overbank Roughness: Short grass
Flow Depth (mm):		<u></u> _
Flow (L/s):		Location: Upstream Face
		Dist (m): 5
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 3:1 R: 3:1
Material:		Avg. Width (m): 3
Shape:		Avg. Depth (m): 0.3
Invert:		Channel Roughness: Clean, straight, veg.
Rise / Diam. (mm):		Overbank Roughness: Scattered brush
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Cast in place structure to accommodate sub-surface
Flow Depth (mm):		utility crossing above. Approx 4 to 5 m of fill to top of
Flow Deptit (IIIII): Flow (L/s):	<u> </u>	structure. Concrete casing across top of crossing (refer
FIOW (L/S).		to photo 3).





Photo 3



Location:
Direction: Facing North

Photo 4



Location: Upstream Face
Direction: Facing West

Photo 5

### Photo Here

Location:
Direction:

#### Photo 6

### Photo Here

Location: \_\_\_\_\_

Photo 7

## Photo Here

Location:
Direction:

#### Photo 8

## Photo Here

Location: Direction:





General			<b>以及和性有效</b> (10)	
Location ID No.:	640550		<b>为多有意意</b>	<b>美国人工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工工</b>
Date:	2012-06-	14	外包,是这个	THE RESERVE OF THE PARTY OF THE
Time:	2:14 PM			
Field Staff:	LJ	SBN	1 ( ) ( ) ( ) ( ) ( )	
Weather:	Sunny			
Watershed:	Shirley's	Brook		
Watercourse:	Main Bra			<b>美国美国</b>
Crossing Location:	Road			
Name:	Legget D	rive		The state of the state of
Latitude:	45.34522	0	Location:	Downstream Face
Longitude:	-75.9164	35	Direction:	Facing West
				Photo 2
Crossing Details				
Cell:	Centre			
Туре:	Culvert			
Material:	Concrete			<b>一种人们,这个时候</b>
Shape:	Box / Red	ctangular		<b>《</b>
Invert:	Closed F	ooting		# date of the second
Rise / Diam. (mm):	1000			
Span (mm)	1900			
Approx. Length (m):	40			
Inlet Type:	Mitered			<b>经验的股份的</b>
Flow Depth (mm):	50		Location:	Downstream Face
Flow (L/s):	10		Direction:	Facing East
Cell:			Low Flow Channel Detail	ls
Type:			Location:	Downstream
Material:			Dist (m):	
Shape:			Low Flow Shape:	
Invert:			Side Slope (H:V):	
Rise / Diam. (mm):			Avg. Width (m):	
Span (mm)			Avg. Depth (m):	
Approx. Length (m):			Channel Roughness:	
Inlet Type:			Overbank Roughness:	High grass
Flow Depth (mm):				
Flow (L/s):				Upstream Face
			Dist (m):	
Cell:			Low Flow Shape:	
Туре:			Side Slope (H:V):	
Material:			Avg. Width (m):	
Shape:			Avg. Depth (m):	
Invert:			Channel Roughness:	
Rise / Diam. (mm):			Overbank Roughness:	High grass
Span (mm)				
Approx. Length (m):			Additional Comments	
Inlet Type:			U/s side channel lined wi	th straw matting
Flow Depth (mm):				
Flow (L/s):	1		I I	





Photo 3



Location: Upstream Face Direction: Facing West

Photo 4



Location: Upstream Face
Direction: Facing East

#### Photo 5

## Photo Here

Location: Direction:

#### Photo 6

## Photo Here

#### Photo 7

## Photo Here

Location:
Direction:

#### Photo 8

# Photo Here

Location: \_\_\_\_





General			
Location ID No.:	640810		
Date:	2012-06-14		
Time:	1:56 PM		
Field Staff:	LJ SBN		
Weather:	Sunny	10000000000000000000000000000000000000	**************************************
Watershed:	Shirley's Brook	AND AND THE SECOND SECOND	The Market
Watercourse:	Main Branch	<b>的数据工人意识的</b>	Man J V
Crossing Location:	Road		
Name:	Hines Road		
Latitude:	45.342400	Location: Downstrean	n Face
Longitude:	-75.920103	Direction: Facing East	
zongitudo.	70,020100	Photo 2	
Crossing Details		が200mmの対抗性を持つてこのとう。 100mmの対抗性を対してこのとう。 100mmの対抗性を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を対している。 100mmの可能を可能を可能を可能を可能を可能を可能を可能を可能を可能を可能を可能を可能を可	of the section and
Cell:	Centre		
Type:	Culvert		
Material:	CMP		
Shape:	Arch		Terries !
Invert:	Closed Footing		1112
Rise / Diam. (mm):	1700		
Span (mm)	2300		
Approx. Length (m):	20		
Inlet Type:	Mitered	Maria Maria	
Flow Depth (mm):	100	Location: Upstream F	200
Flow (L/s):	20	Direction: Facing Wes	
110W (L/3).	20	Direction. I acing wes	ι
Cell:		Low Flow Channel Details	
Type:		Location: Downstrean	2
Material:		Dist (m): 3	•
Shape:		Low Flow Shape: Trapezoidal	
Invert:		Side Slope (H:V): L: 6:1	R: 6:1
Rise / Diam. (mm):		Avg. Width (m): 1	[K. 0. 1
Span (mm)		Avg. Width (iii). 1 Avg. Depth (m): 0.10	
•			
Approx. Length (m):		Channel Roughness: Boulders	
Inlet Type:		Overbank Roughness: Medium-der	ise brush
Flow Depth (mm): Flow (L/s):		<u></u>	
		Location, Li	
110W (L/3).		Location: Upstream F	ace
		Dist (m): 4	
Cell:		Dist (m): 4  Low Flow Shape: Trapezoidal	
Cell: Type:		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1	
Cell: Type: Material:		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2	
Cell: Type: Material: Shape:		Dist (m): 4 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1 Avg. Width (m): 1.2 Avg. Depth (m): 0.4	
Cell: Type: Material: Shape: Invert:		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Cobble	
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Dist (m): 4 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1 Avg. Width (m): 1.2 Avg. Depth (m): 0.4	
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Cobble  Overbank Roughness: High grass	
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Cobble	
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Cobble  Overbank Roughness: High grass	
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Cobble  Overbank Roughness: High grass	
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Dist (m): 4  Low Flow Shape: Trapezoidal Side Slope (H:V): L: 2:1  Avg. Width (m): 1.2  Avg. Depth (m): 0.4  Channel Roughness: Cobble  Overbank Roughness: High grass	





Photo 3



Direction: Facing West

Location: Upstream Face

#### Photo 4



Location: Upstream Face Direction: Facing East

#### Photo 5

## **Photo** Here

Location: Direction:

#### Photo 6

## **Photo** Here

Location: Direction:

#### Photo 7

### **Photo** Here

Location: Direction:

#### Photo 8

### **Photo** Here

Location: Direction:





		Photo 1
General		
Location ID No.:	641230	
Date:	2012-06-14	
Time:	12:30 PM	Photo
Field Staff:	SBN LJ	FIIOLO
Weather:	Sunny	7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
Watershed:	Shirley's Brook	Here
Watercourse:	Main Branch	TICIC
Crossing Location:	Pedestrian	
Name:	Innovation Drive	
Latitude:	45.338070	Location:
Longitude:	-75.925258	Direction:
J		Photo 2
Crossing Details		
Cell:		
Type:		
Material:		Photo
Shape:		FIIOLO
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		11010
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
, ,		
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx. Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		-
Flow (L/s):		Location:
		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Could not locate at time of field investigation.
Flow Depth (mm):		
Flow (L/s):		
, ,	,	





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 5 Photo 6 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





			Photo 1	
General				
Location ID No.:	645000			
Date:	2012-06-14	1		
Time:	11:25 AM		Tooston	
Field Staff:	LJ	SBN	Location	
Weather:	Sunny	102	T	
Watershed:	Shirley's Bi	rook	Inaccessible	
Watercourse:	Main Brand			
Crossing Location:	Railway	<i>7</i> 11		
Name:		Forced Road		
Latitude:	45.333910		Location:	
	-75.930840		Direction:	
Longitude:	-75,930640	)	Photo 2	
Crassina Dataila			PHOLO Z	
Crossing Details				
Cell:				
Type:				
Material:			Photo	
Shape:			11100	
Invert:			Llava	
Rise / Diam. (mm):			Here	
Span (mm)				
Approx. Length (m):				
Inlet Type:				
Flow Depth (mm):			Location:	
Flow (L/s):			Direction:	
Cell:			Low Flow Channel Details	
Туре:			Location:	
Material:			Dist (m):	
Shape:			Low Flow Shape:	
Invert:			Side Slope (H:V): L: R:	
Rise / Diam. (mm):			Avg. Width (m):	
Span (mm)			Avg. Depth (m):	
Approx. Length (m):			Channel Roughness:	
Inlet Type:			Overbank Roughness:	
Flow Depth (mm):				
Flow (L/s):			Location:	
, ,	<u> </u>		Dist (m):	
Cell:			Low Flow Shape:	
Type:			Side Slope (H:V): L: R:	
Material:			Avg. Width (m):	
Shape:			Avg. Depth (m):	
Invert:			Channel Roughness:	
Rise / Diam. (mm):			Overbank Roughness:	
Span (mm)			5 vor barne (vougrintoss)	
Approx. Length (m):			Additional Comments	
Inlet Type:			Could not access due to close proximity to CN	l rail and
Flow Depth (mm):			guard dogs on private property.	i i allu
Flow Deptit (IIIII): Flow (L/s):			Same and an humana brokers.	
Flow (L/S):				





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





Control   DN   Dot   East   Collect   Concrete   Conc			Photo 1
Date:	General		A STATE OF THE STA
Field Staff: Weather: Watershed: Watercourse: Crossing Location: Railway  Crossing Details Cell: Type: Material: Shape: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Box / Rectangular Invert: Concrete Shape: Box / Rectangular Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Box / Rectangular Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Box / Rectangular Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Box / Rectangular Flow Depth (mm): Span (mm) Approx. Length (m): Shape: Box / Rectangular Flow Depth (mm): Shape: Flow Cell: Concrete Box / Rectangular Flow Depth (mm): Span (mm) Approx. Length (m): Span (mm) Approx. Length (m): Shape: Flow Cell: Concrete Box / Rectangular Flow Depth (mm): Span (mm) Approx. Length (m): Flow (L/s):  Cell: Concrete Box / Rectangular Flow Depth (mm): Span (mm) Approx. Length (m): Flow (L/s): Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Flow Depth (mm): Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Flow Depth (mm): Flow Depth (mm): Flow Depth (mm): Flow Closed Footing Avg. Width (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Flow Depth (m): Channel Roughness: Flow Depth (m): Span (mm) Approx. Length (m): Flow (L/s): Flow Depth (m): Span (mm) Approx. Length (m): Flow (L/s): Flow Depth (m): Flow Depth (m): Flow Depth (m): Flow Overbank Roughness: Flow Depth (m): Flow Overbank Roughness: Cobbile Overbank Roughness: Flow Depth (m): Flow Depth	Location ID No.:	645030	
Field Staff:   Weather:   Watershed:   Sunny	Date:	2012-06-15	
Watershed: Waterouse: Interview of the proof	Time:	9:32 AM	
Watershed: Watercourse: Crossing Location: Name: Latitude: Longitude: Longitude: Lorgitude: Lorgitude: Lorgitude: Lorgitude: Lorgitude: Crossing Details Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Flow Light (m): Shape: Invert: Shape: Row / Rectangular Invert: Concrete  West Location: Upstream Face Direction: Facing East Photo 2  Location: Upstream Face Direction: Facing East Photo 2  Location: Upstream Face Direction: Facing East Photo 2  Location: Upstream Face Direction: Facing West Location: Upstream Face Direction: Facing East Photo 2  Location: Upstrea	Field Staff:	LJ SBN	
Main Branch   Railway   Railway   Main Branch   Railway   Railway   Main Branch   Railway	Weather:	Sunny	
Railway   Klondike Road   Location:   Upstream Face   Direction:   Facing East   Photo 2	Watershed:	Shirley's Brook	The Sales of the S
Name:	Watercourse:	Main Branch	The state of the s
Latitude:	Crossing Location:	Railway	
Crossing Details	Name:	Klondike Road	
Crossing Details   Cell:   East   Type:   Culvert   Concrete   Shape: Box / Rectangular   Invert:   Culsed Footing   Shape: Box / Rectangular   Concrete   Culsed Footing   Culvert   Colsed Footing   Culvert   Culsed Footing   Culvert   Culsed Footing   Culvert   C	Latitude:	45.361678	Location: Upstream Face
Crossing Details   Cell:	Longitude:	-75,925249	
Cell: Type: Culvert	Crossing Details		Photo 2
Type:   Material:   Concrete		Fast	
Material:   Concrete   Shape:   Box / Rectangular			
Shape:   Invert:   Closed Footing			
Invert:   Closed Footing   1360     2700     2700			
Rise / Diam. (mm):	·		
Span (mm)			
Approx. Length (m):			
Inlet Type:   Wing Wall   D.02   Location:   Upstream Face   Facing West			
Flow Depth (mm): Flow (L/s):  Cell:  West  Type: Culvert  Concrete  Box / Rectangular  Closed Footing  Approx. Length (m): Inlet Type: Wing Wall  Cell:  Cell:  Cell:  West  Low Flow Channel Details  Low Flow Shape: Side Slope (H:V): Side Slope (H			
Cell:   West			Location: Unstream Face
Cell: Type: Culvert   Concrete   Concrete   Shape: Box / Rectangular   Cosed Footing   Side Slope (H:V): L: 5:1   R:5:1   R:			
Type: Culvert Concrete  Material: Concrete  Shape: Box / Rectangular Invert: Closed Footing  Rise / Diam. (mm): 1360  Approx. Length (m): 7  Inlet Type: Flow Depth (mm): Type: Shape: Dist (m): Shape: Avg. Width (m): Dist (m):	11011 (2/3).	23	Direction. I doing west
Type: Culvert Concrete  Material: Concrete  Shape: Box / Rectangular Invert: Closed Footing  Rise / Diam. (mm): 1360  Approx. Length (m): 7  Inlet Type: Flow Depth (mm): Type: Shape: Dist (m): Shape: Avg. Width (m): Dist (m):	Cell:	West	Low Flow Channel Details
Material: Concrete Shape: Box / Rectangular Invert: Closed Footing Rise / Diam. (mm): 1360 Span (mm) 2700 Approx. Length (m): 7 Inlet Type: Flow Depth (mm): 5 Shape: Diam. (mm): 0.02  Rise / Diam. (mm): 0.02  Cell: Cell: Shape: Side Slope (H:V): L: 5:1 R: 5:1  Low Flow Shape: Cobble  Avg. Width (m): 3.2  Avg. Depth (m): 0.3  Channel Roughness: Cobble High grass  Verbank Roughness: Dist (m): 20  Location: Upstream Face Dist (m): 20  Low Flow Shape: Side Slope (H:V): L: 5:1 R: 5:1  Avg. Width (m): 5  Channel Roughness: Cobble High grass  Avg. Depth (m): 0.3  Channel Roughness: Cobble High grass  Avg. Depth (m): 0.3  Avg. Width (m): 5  Avg. Width (m): 5  Avg. Depth (m): 0.3  Channel Roughness: Cobble High grass  Additional Comments		-	
Shape:			
Invert: Closed Footing  Rise / Diam. (mm): 1360 Span (mm) 2700 Approx. Length (m): 7 Inlet Type: Wing Wall O.02 Flow (L/s): 25 Cell: Cell: Shape: Side Slope (H:V): L: 5:1 R: 5:1  Material: Avg. Width (m): 0.3 Channel Roughness: Cobble Overbank Roughness: High grass  Flow Shape: Side Slope (H:V): L: 5:1 R: 5:1  Material: Avg. Width (m): 5 Shape: Avg. Width (m): 5 Avg. Width (m): 5 Avg. Width (m): 5 Avg. Width (m): 5 Cobble  Rise / Diam. (mm): Channel Roughness: Overbank Roughness: Overbank Roughness: Additional Comments  Additional Comments  Additional Comments			
Rise / Diam. (mm):   1360	•		
Span (mm) 2700 Avg. Depth (m): 0.3  Approx. Length (m): 7 Channel Roughness: Cobble  Inlet Type: Wing Wall Overbank Roughness: High grass  Flow Depth (mm): 0.02  Flow (L/s): 25 Location: Upstream Face Dist (m): 20  Cell: Low Flow Shape: Trapezoidal Type: Side Slope (H:V): L: 5:1 R: 5:1  Material: Avg. Width (m): 5  Shape: Avg. Depth (m): 0.3  Invert: Channel Roughness: Cobble  Rise / Diam. (mm): Overbank Roughness: Cobble  Additional Comments  Additional Comments			
Approx. Length (m): Inlet Type: Wing Wall Overbank Roughness: Flow Depth (mm): O.02  Flow (L/s): Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Inlet Type: Flow Depth (mm):  O.02  Location: Upstream Face Dist (m): Augustream Face Dist (m): Cobble Instruct: Avg. Width (m): Channel Roughness: Cobble Overbank Roughness: Additional Comments  Additional Comments		-	
Inlet Type: Wing Wall			
Flow Depth (mm):			
Coll			o verbunk Kougriness. Trigit grass
Dist (m): 20	•		Location: Unstream Face
Cell:         Low Flow Shape:         Trapezoidal           Type:         Side Slope (H:V):         L: 5:1         R: 5:1           Material:         Avg. Width (m):         5           Shape:         Avg. Depth (m):         0.3           Invert:         Channel Roughness:         Cobble           Rise / Diam. (mm):         Overbank Roughness:         High grass           Span (mm)         Additional Comments           Inlet Type:         Flow Depth (mm):	11000 (2/3).	25	
Type:  Material: Shape: Invert:  Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Side Slope (H:V): Avg. Width (m):  Avg. Width (m):  Channel Roughness: Cobble High grass  Additional Comments	راا∙		
Material: Shape: Avg. Width (m): 5  Avg. Depth (m): 0.3  Invert: Channel Roughness: Cobble  Overbank Roughness: High grass  Span (mm)  Approx. Length (m): Inlet Type: Flow Depth (mm):			
Shape: Invert: Channel Roughness: Cobble Cobble Overbank Roughness: Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Avg. Depth (m): Cobble Overbank Roughness: High grass Additional Comments			. , ,
Invert: Channel Roughness: Cobble  Rise / Diam. (mm): Overbank Roughness: High grass  Span (mm)  Approx. Length (m): Additional Comments  Inlet Type: Flow Depth (mm):			
Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Overbank Roughness: High grass  Additional Comments	-		
Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Additional Comments			
Approx. Length (m):  Inlet Type: Flow Depth (mm):  Additional Comments			Overbank kougniness: High grass
Inlet Type: Flow Depth (mm):			Additional Comments
Flow Depth (mm):			Additional Comments
FIOW (L/S):			
	FIOW (L/S):		





Photo 3



Location: Downstream Face Direction: Facing West

#### Photo 4



Location: Downstream Face
Direction: Facing East

#### Photo 5



Location: Upstream Face
Direction: Facing North

#### Photo 6

## Photo Here

Location: Direction:

#### Photo 7

## Photo Here

Location: Direction:

#### Photo 8

## Photo Here

Location: \_\_\_\_\_ Direction:





General			
Location ID No.:	647310	111111111111111111111111111111111111111	
Date:	2012-06-14		THE PROPERTY OF THE PERSON OF
Time:	1:24 PM	(A)	A STATE OF THE STA
Field Staff:	LJ SBN		( \$100 B)
Weather:	Sunny	111.75	
Watershed:	Shirley's Brook		
Watercourse:	Main Branch		
Crossing Location:	Road		
Name:	March Road		
Latitude:	45.343726	Location.	Downstream Face
Longitude:	-75.918131		Facing East
Longitude.	70,010101		Photo 2
Crossing Details			1101.0 2
Cell:	Centre		
Type:	Culvert		THE RESERVE TO SERVE
Material:	Concrete	San	
Shape:	Box / Rectangular		The second second
Invert:	Closed Footing		<b>人</b> 特别,
Rise / Diam. (mm):	1500		
Span (mm)	3100		<b>一种"拉林"的人</b> 企
Approx. Length (m):	40		
Inlet Type:			
Flow Depth (mm):	Projecting	Location	Linetus en Fass
Flow Depth (IIIII). Flow (L/s):	250 70		Upstream Face Facing West
110W (L/3).	10		Facility West
Cell:		Low Flow Channel Detail	ç
Type:			Upstream
туре. Material:		Dist (m):	
Shape: Invert:		Low Flow Shape:	
		Side Slope (H:V):	
Rise / Diam. (mm):		Avg. Width (m):	
Span (mm)		Avg. Depth (m):	
Approx Length (m):		Channel Roughness:	
Inlet Type:		Overbank Roughness:	Medium-dense brush
Flow Depth (mm):		┥	
Flow (L/s):			Downstream Face
		Dist (m):	13
^ ···			
Cell:		Low Flow Shape:	Trapezoidal
Туре:		Low Flow Shape: Side Slope (H:V):	Trapezoidal L: 2:1 R: 2:1
Type: Material:		Low Flow Shape: Side Slope (H:V): Avg. Width (m):	Trapezoidal L: 2:1 R: 2:1 1.4
Type: Material: Shape:		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m):	Trapezoidal L: 2:1 R: 2:1 1.4 0.7
Type: Material: Shape: Invert:		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness:	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel
Type: Material: Shape: Invert: Rise / Diam. (mm):		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m):	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness:	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness:	Trapezoidal L: 2:1 R: 2:1 1.4 0.7 Gravel





Photo 3



Location: Downstream Face Direction: Facing West

#### Photo 4



Location: Downstream Face Direction: Facing East

#### Photo 5

## Photo Here

Location: Direction:

#### Photo 6

## Photo Here

Location: Direction:

#### Photo 7

## Photo Here

Location:
Direction:

#### Photo 8

## Photo Here

Location: Direction:





General		
Location ID No.:	647320	
Date:	2012-06-14	
Time:	4:21 PM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Shirley's Brook	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Terry Fox Drive	
Latitude:	45.350758	Location: Upstream Face
Longitude:	-75.918167	Direction: Facing North
J		Photo 2
<b>Crossing Details</b>		
Cell:	Centre	
Type:	Culvert	
Material:	Concrete	
Shape:	Box / Rectangular	
Invert:	Closed Footing	
Rise / Diam. (mm):	900	
Span (mm)	3100	
Approx. Length (m):	40	
Inlet Type:	Mitered	
Flow Depth (mm):	200	Location: Upstream Face
Flow (L/s):	110	Direction: Facing South
, ,		
Cell:		Low Flow Channel Details
Type:		Location: Upstream
Material:		Dist (m): 5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 2:1 R: 2:1
Rise / Diam. (mm):		Avg. Width (m): 11
Span (mm)		Avg. Depth (m): 0.2
Approx. Length (m):		Channel Roughness: Boulders
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		
Flow (L/s):		Location: Downstream Face
().	L	Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		D/S channel was too deep to measure.
Flow Depth (mm):		2.5 Sharmor was too doop to modedie.
Flow (L/s):		-
1 10 W (L/3).		





Photo 3



Location: Downstream Face Direction: Facing West

#### Photo 4



Location: Downstream Face
Direction: Facing North

#### Photo 5

## Photo Here

Location:
Direction:

#### Photo 6

## Photo Here

Location: Direction:

#### Photo 7

## Photo Here

Location: Direction:

#### Photo 8

### Photo Here

Location: Direction:





R: 2:1

R: 3:1

Photo 1

General		
Location ID No.:	647330	
Date:	2012-06-15	
Time:	7:59 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Shirley's Brook	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Shirley's Brook Drive	
Latitude:	45.352602	Location: Downstream Face
Longitude:	-75.923592	Direction: Facing South
		Photo 2
Crossing Details		
Cell:	North	
Туре:	Culvert	The second second
Material:	Concrete	College Colleg
Shape:	Box / Rectangular	
Invert:	Closed Footing	
Rise / Diam. (mm):	900	TO THE SECOND OF THE SECOND
Span (mm)	2400	
Approx. Length (m):	40	
Inlet Type:	Mitered	
Flow Depth (mm):	100	Location: Downstream Face
Flow (L/s):	10	Direction: Facing North
0 11	Fa	
Cell:	South	Low Flow Channel Details
Type:	Culvert	Location: Downstream
Material:	Concrete	Dist (m): 10
Shape:	Box / Rectangular	Low Flow Shape: Trapezoidal
Invert:	Closed Footing	Side Slope (H:V): L: 7:1 R: 2:1
Rise / Diam. (mm):	900	Avg. Width (m): 3.2
Span (mm)	2400	Avg. Depth (m): 0.1
Approx Length (m):	40	Channel Roughness: Gravel/Cobble
Inlet Type:	Mitered	Overbank Roughness: High grass
Flow Depth (mm):	100	Location II. / F
Flow (L/s):	20	Location: Upstream Face
Call.		Dist (m): 4
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 3:1 R: 3:1
Material:		Avg. Width (m): 2.4
Shape:		Avg. Depth (m): 0.02
Invert:		Channel Roughness: Boulders
Rise / Diam. (mm):		Overbank Roughness: Short grass
Span (mm)		Additional Comments
Approx. Length (m):		Additional Comments
Inlet Type:		U/S North cell 50% blocked with rip rap.
Flow Depth (mm):		<del> </del>
Flow (L/s):		





Photo 3



Location: Upstream Face
Direction: Facing South

#### Photo 4



Location: Upstream Face
Direction: Facing North

#### Photo 5



Location: Downstream Face
Direction: Facing North

#### Photo 6

# Photo Here

Location:	
Direction:	

#### Photo 7

## Photo Here

Location: Direction:

#### Photo 8

## Photo Here

Location:	
Direction:	





		Photo 1
General		MARINE THE RESERVE TO STATE OF THE PARTY.
Location ID No.:	647370	The same way and the sa
Date:	2012-06-15	
Time:	8:50 AM	Market Market Brown Street Street Street
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Shirley's Brook	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Maxwell Bridge Road	
Latitude:	45.359208	Location: Downstream Face
Longitude:	-75,934651	Direction: Facing East
J		Photo 2
<b>Crossing Details</b>		The state of the s
Cell:	Centre	
Type:	Culvert	
Material:	CMP	A COUNTY OF THE PARTY OF THE PA
Shape:	Arch	
Invert:	Open Footing	
Rise / Diam. (mm):	2100	2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
Span (mm)	7000	
Approx. Length (m):	20	
Inlet Type:	Projecting	<b>《到表》《多》《《其法》《</b>
Flow Depth (mm):	0.1	Location: Downstream Face
Flow (L/s):	15	Direction: Facing West
, ,		
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 6
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 5:1 R: 5:1
Rise / Diam. (mm):		Avg. Width (m): 1.2
Span (mm)		Avg. Depth (m): 0.1
Approx. Length (m):		Channel Roughness: Cobble
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		
Flow (L/s):		Location: Upstream Face
		Dist (m): 5
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 5:1 R: 3:1
Material:		Avg. Width (m): 0.6
Shape:		Avg. Depth (m): 0.05
Invert:		Channel Roughness: Cobble
Rise / Diam. (mm):		Overbank Roughness: High grass
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Large corrugations (40 cm)
Flow Depth (mm):		Armorstone head wall
Flow (L/s):		
( 3).		





Photo 3



Location: Upstream Face
Direction: Facing East

Photo 4



Location: Upstream Face
Direction: Facing West

#### Photo 5

### Photo Here

Location:
Direction:

#### Photo 6

## Photo Here

Location: \_\_\_\_

#### Photo 7

## Photo Here

Location: Direction:

#### Photo 8

## Photo Here

Location: \_\_\_\_\_





		Photo 1
General		
Location ID No :	647380	
Date:	2012-06-15	Mark the second
Time:	9:04 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Shirley's Brook	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Marconi Avenue	
Latitude:	45.359775	Location: Upstream Face
Longitude:	-75,928733	Direction: Facing South
	. 0,020.00	Photo 2
Crossing Details		
Cell:	Centre	
Type:	Culvert	
Material:	CMP	
Shape:	Arch	
Invert:	Open Footing	
Rise / Diam. (mm):	2550	
Span (mm)	8000	
Approx. Length (m):	20	INC. THE CONTRACT OF THE CONTR
Inlet Type:	Wing Wall	
Flow Depth (mm):	150	Location: Unatroom Face
Flow (L/s):	50	Location: Upstream Face Direction: Facing North
110W (L/3).	50	Direction. Facing North
Cell:		Low Flow Channel Details
Type:		Location: Upstream
Material:		Dist (m): 6
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 7:1 R: 5:1
Rise / Diam. (mm):		Avg. Width (m): 3.2
Span (mm)		Avg. Depth (m): 0.15
Approx. Length (m):		Channel Roughness: Cobble
Inlet Type:		Overbank Roughness: Short grass
Flow Depth (mm):		Location Developer Face
Flow (L/s):		Location: Downstream Face
Call		Dist (m): 7
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 7:1 R: 2:1
Material:		Avg. Width (m): 4.1
Shape:		Avg. Depth (m): 0.4
Invert:		Channel Roughness: Cobble
Rise / Diam. (mm):		Overbank Roughness: High grass
Span (mm)		<u> </u>
Approx. Length (m):		Additional Comments
Inlet Type:		Skewed 45 degrees.
Flow Depth (mm):		Armorstone wing wall.
Flow (L/s):		Large corrugations (40 cm)





Photo 3



Location: Downstream Face
Direction: Facing South

Photo 4



Location: Downstream Face
Direction: Facing North

#### Photo 5

## Photo Here

Location:
Direction:

#### Photo 6

## Photo Here

Location: Direction:

#### Photo 7

## Photo Here

Location:
Direction:

#### Photo 8

## Photo Here

Location: Direction:





General		AND THE RESIDENCE OF THE PARTY
Location ID No.:	647650	
Date:	2012-06-15	
Time:	8:25 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Shirley's Brook	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Klondike Road	
Latitude:	45.355713	Location: Downstream Face
Longitude:	-75.931517	Direction: Facing South
· ·		Photo 2
<b>Crossing Details</b>		
Cell:	Centre	TAREST AND ADDRESS OF THE PARTY
Type:	Culvert	Control of the Contro
Material:	Concrete	
Shape:	Circular	
Invert:	Open Footing	
Rise / Diam. (mm):	1400	
Span (mm)	3000	
Approx. Length (m):	10	
Inlet Type:	Head Wall	
Flow Depth (mm):	0.05	Location: Downstream Face
Flow (L/s):	20	Direction: Facing North
Cell:		Low Flow Channel Details
		Low Flow Channel Details  Location: Downstream
Cell: Type: Material:		Location: Downstream Dist (m): 5
Type:		Location: Downstream Dist (m): 5
Type: Material:		Location: Downstream
Type: Material: Shape:		Location: Downstream  Dist (m): 5  Low Flow Shape: Trapezoidal
Type: Material: Shape: Invert:		Location: Downstream  Dist (m): 5  Low Flow Shape: Trapezoidal  Side Slope (H:V): E:5:1 R:2:1
Type: Material: Shape: Invert: Rise / Diam. (mm):		Location: Downstream  Dist (m): 5  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 1.8
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Location: Downstream  Dist (m): 5  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 1.8  Avg. Depth (m): 0.05
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Downstream Dist (m): 5 Low Flow Shape: Trapezoidal L: 5:1 R: 2:1 Avg. Width (m): 1.8 Avg. Depth (m): Channel Roughness: Gravel/Cobble
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Downstream Dist (m): 5 Low Flow Shape: Trapezoidal L: 5:1 R: 2:1 Avg. Width (m): 1.8 Avg. Depth (m): Channel Roughness: Gravel/Cobble
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Downstream  5 Trapezoidal L: 5:1 R: 2:1 1.8 0.05 Gravel/Cobble High grass
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Location: Downstream  Dist (m): 5  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 5:1 R: 2:1  Avg. Width (m): 1.8  Avg. Depth (m): 0.05  Channel Roughness: Gravel/Cobble  High grass  Location: Dist (m): 4  Low Flow Shape: Trapezoidal
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):		Location: Downstream  Dist (m): 5  Low Flow Shape: Side Slope (H:V): L: 5:1 R: 2:1  Avg. Width (m): 1.8  Avg. Depth (m): 0.05  Channel Roughness: Gravel/Cobble  High grass  Location: Dist (m): 4  Low Flow Shape: Side Slope (H:V): 3:1 R: 4:1
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Location: Downstream  Dist (m): 5  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 5:1 R: 2:1  Avg. Width (m): 1.8  Avg. Depth (m): 0.05  Channel Roughness: Gravel/Cobble  High grass  Location: Dist (m): 4  Low Flow Shape: Trapezoidal
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Location: Downstream  Dist (m): 5  Low Flow Shape: Side Slope (H:V): L: 5:1 R: 2:1  Avg. Width (m): 1.8  Avg. Depth (m): 0.05  Channel Roughness: Gravel/Cobble  High grass  Location: Upstream Face  Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 3.4  Avg. Depth (m): 0.3
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Location: Downstream  Dist (m): 5  Low Flow Shape: Side Slope (H:V):
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Location: Downstream Dist (m): 5  Low Flow Shape: Side Slope (H:V): L: 5:1 R: 2:1  Avg. Width (m): 0.05  Channel Roughness: Gravel/Cobble  Overbank Roughness: High grass  Location: Upstream Face Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 3.4  Avg. Depth (m): 0.3
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 4 Trapezoidal L: 3:1 R: 4:1 R: 4:1 R: 2:1 R: 2:1 R: 2:1 R: 2:1 R: 2:1 R: 2:1 R: 4:1
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 4 Trapezoidal L: 3:1 R: 4:1 R: 4:1 R: 2:1 R: 2:1 R: 2:1 R: 2:1 R: 2:1 R: 2:1 R: 4:1
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Overbank Roughness: Upstream Face Trapezoidal L: 3:1 R: 4:1 3.4 O.3 Channel Roughness: Overbank Roughness: Upstream Face High grass
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 3.4 Avg. Depth (m): Channel Roughness: Overbank Roughness: High grass  Trapezoidal L: 3:1 R: 4:1 Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: High grass
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: Upstream Face Dist (m): Location: Dist (m): Low Flow Shape: Side Slope (H:V): Avg. Width (m): 3.4 Avg. Depth (m): Channel Roughness: Overbank Roughness: High grass  Trapezoidal L: 3:1 R: 4:1 Avg. Width (m): Avg. Depth (m): Channel Roughness: Overbank Roughness: High grass





Photo 3



Location: Upstream Face
Direction: Facing North

Photo 4



Location: Upstream Face
Direction: Facing South

#### Photo 5

## Photo Here

Location: Direction:

#### Photo 6

## Photo Here

Location: Direction:

#### Photo 7

## Photo Here

Location:
Direction:

#### Photo 8

### Photo Here

Location: Direction:





General		_	
Location ID No.:	648620	]	
Date:	2013-07-12	]	
Time:		7	
Field Staff:		7	
Weather:		7	
Watershed:	Shirley's Brook	7	
Watercourse:	Main Branch	1	
<b>Crossing Location:</b>	Road	1	
Name:	March Valley Road	1	
Latitude:	45.365100	Location:	
Longitude:	-75.921649	Direction:	
g	10.021010	Photo 2	
Crossing Details			
Cell:	Centre	7	
Type:	Culvert	-	
Material:	Concrete	1	
Shape:	Box	1	
Invert:	Closed Footing	1	
Rise / Diam. (mm):	1500, embedded 150 mm	-	
Span (mm)	3000	-	
Approx. Length (m):	15	-	
Inlet Type:	Headwall	-	
	neadwall	Location:	
Flow Depth (mm):			
Flow (L/s):		Direction:	
0.11		1	
Cell:		Low Flow Channel Details	7
Type:		Location:	4
Material:		Dist (m):	_
Shape:		Low Flow Shape:	
Invert:		Side Slope (H:V):	
Rise / Diam. (mm):		Avg. Width (m):	4
Span (mm)		Avg. Depth (m):	
Approx. Length (m):		Channel Roughness:	
Inlet Type:		Overbank Roughness:	
Flow Depth (mm):			_
Flow (L/s):		Location:	
		Dist (m):	
Cell:		Low Flow Shape:	
Type:		Side Slope (H:V):	
Material:		Avg. Width (m):	
Shape:		Avg. Depth (m):	
Invert:		Channel Roughness:	
Rise / Diam. (mm):		Overbank Roughness:	7
Span (mm)		1	_
Approx. Length (m):		Additional Comments	
Inlet Type:		Culvert replaced in July 2013.	
Flow Depth (mm):		Structure information obtained from McIntosh Perry	,
Flow (L/s):		Contract No.: ISD13-7005, DWG No. 001 IFC	
(2/3)!	L	City of Ottawa (2013)	





Photo 3



Location: Downstream Face
Direction: Facing North

Photo 4



Location: Downstream Face
Direction: Facing South

Photo 5



Location: Downstream Face Direction: Facing East

Photo 6

## Photo Here

Location: \_\_\_\_\_

Photo 7

## Photo Here

Location: Direction:

Photo 8

# Photo Here

Location: \_\_\_\_\_





General		
Location ID No.:	648680	
Date:	2012-06-14	
Time:	11:00 AM	
Field Staff:	LJ SBN	
Weather:	Sunny	
Watershed:	Shirley's Brook	
Watercourse:	Main Branch	<b>大学、大学、新闻、</b> 对称:
Crossing Location:	Road	
Name:	Goulbourn Forced Road	
Latitude:	45.331983	Location: Downstream Face
Longitude:	-75,932785	Direction: Facing North
-		Photo 2
<b>Crossing Details</b>		
Cell:	Centre	
Type:	Culvert	
Material:	CMP	
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	1200	
Span (mm)	1200	
Approx. Length (m):	10	
Inlet Type:	Projecting	
Flow Depth (mm):	0.1	Location: Downstream Face
Flow (L/s):	4	Direction: Facing South
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 1.5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 7:1 R: 7:1
Rise / Diam. (mm):		Avg. Width (m): 1.2
Span (mm)		Avg. Depth (m): 0.5
Approx. Length (m):		Channel Roughness: Gravel/Cobble
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		
Flow (L/s):		Location: Upstream Face
		Dist (m): 1.5
Cell:		Low Flow Shape: Trapezoidal
Туре:		Side Slope (H:V): L: 3:1 R: 3:1
Material:		Avg. Width (m): 0.7
Shape:		Avg. Depth (m): 0.1
Invert:		Channel Roughness: Cobble
Rise / Diam. (mm):		Overbank Roughness: Medium-dense brush
Span (mm)		
Approx. Length (m):		Additional Comments
Approx. Length (m): Inlet Type:		Additional Comments
		Additional Comments
Inlet Type:		Additional Comments





Photo 3



Location: Upstream Face
Direction: Facing North

#### Photo 4



Location: Upstream Face
Direction: Facing South

#### Photo 5

## Photo Here

Location:
Direction:

#### Photo 6

## Photo Here

#### Photo 7

## Photo Here

Location:
Direction:

#### Photo 8

# Photo Here

Location: Direction:





		Photo 1
General		
Location ID No.:	SB1	
Date:	2012-06-14	
Time:	5:30 PM	Location
Field Staff:	SBN LJ	—   Location
Weather:	Sunny	
Watershed:	Shirley's Brook	- Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Marshes Golf Club	
Latitude:	45.350204	Location:
Longitude:	-75.915767	Direction:
Longitude.	73.313707	Photo 2
Crossing Details		THOUGE
Cell:		
Type:		
туре. Material:		Dhoto
Shape:		Photo
Snape: Invert:		
Rise / Diam. (mm):		Here
		Hele
Span (mm)		
Approx. Length (m):		
Inlet Type:		Lacation
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
0 - 11		Law Flam Observal Dataile
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
<u></u>		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Structure located on Marshes Golf Club property, could
Flow Depth (mm):		not access.
Flow (L/s):		





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





		111000 1
General		_
Location ID No.:	SB2	
Date:	2012-06-14	
Time:	5:30 PM	Location
Field Staff:	SBN LJ	Location
Weather:	Sunny	Inggoggible
Watershed:	Shirley's Brook	Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Marshes Golf Club	
Latitude:	45.349436	Location:
Longitude:	-75,914881	Direction:
		Photo 2
<b>Crossing Details</b>		
Cell:		
Type:		
Material:		Photo
Shape:		FIIOLO
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		11010
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
,		
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx. Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
. 10 10 (2/3).	L	Dist (m):
Cell:		Low Flow Shape:
Туре:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Volum (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		Overbank Roughiness.
		Additional Comments
Approx. Length (m):		
Inlet Type:		Structure located on Marshes Golf Club property, could not access.
Flow Depth (mm):		1100 400033.
Flow (L/s):		J





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





		Filoto I
General		
Location ID No.:	SB3	
Date:	2012-06-14	
Time:	5:30 PM	<b>Location</b>
Field Staff:	SBN LJ	Location
Weather:	Sunny	Inaccessible
Watershed:	Shirley's Brook	Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Pedestrian	
Name:	Marshes Golf Club	
Latitude:	45.350001	Location:
Longitude:	-75.914345	Direction:
		Photo 2
Crossing Details		
Cell:		
Type:		
Material:		Photo
Shape:		FIIOLO
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		11010
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
, ,		
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx. Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
, ,,		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Structure located on Marshes Golf Club property, could
Flow Depth (mm):		not access.
Flow (L/s):		
1 10 W (L/3).		





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





Location ID No.:   SB4	General		
Field Staff:   LJ   SBN   Sunny   Shirley's Brook   Main Branch   Pedestrian   Terry Fox Drive   Sa50195   -75,915776	Location ID No.:	SB4	
Field Staff: Weather:   Watershed:   Sunny	Date:	2012-06-14	A CANADA CONTRACTOR OF THE CON
Watershed: Watershed: Watercourse: Crossing Location: Name: Lattitude: Lattitude: Longitude: Crossing Details Cell: Type: Material: Shape: Invert: Plow Depth (mm): Flow (L/s): Flow (L/s)	Time:	5:18 PM	
Watershed:         Watercourse:           Crossing Location:         Name:           Latitude:         Longitude:           Longitude:         45.350195           Crossing Details         Cell:           Crossing Details         Cell:           Cell:         Pedestrian bridge           Material:         Shape:           Invert:         Open Footing           Shan (mm):         2300           Approx. Length (m):         10200           Approx. Length (m):         10200           Approx. Length (m):         40           Inlet Type:         Material:           Shape:         Low Flow Channel Details           Low Flow Channel Details         Low Flow Channel Details           Low Flow Shape:         Low Flow Shape:         Trapezoidal           Inlet Type:         Side Slope (HV):         1:2:1         R:2:1           Avg. Width (m):         2.25         Avg. Width (m):         2.25           Avg. Depth (mm):         Channel Roughness:         Grape:           Invert:         Shape:         Location:         Downstream Face           Inter Type:         Channel Roughness:         Avg. Depth (m):         2.25           Cell:         Type: </td <td>Field Staff:</td> <td>LJ SBN</td> <td></td>	Field Staff:	LJ SBN	
Watershed:   Shinley's Brook   Main Branch   Pedestrian   Terry Fox Drive   45.350195   Location:   Pedestrian   Facing East   Photo 2	Weather:	Sunny	
Main Branch	Watershed:		
Pedestrian   Terry Fox Drive   Location:   Downstream Face   Direction:   Facing East   Photo 2	Watercourse:		
Name: Latitude: 45.350195   Location: Downstream Face	Crossing Location:		
Latitude:	•	Terry Fox Drive	
Crossing Details   Cell:   Type:   Pedestrian bridge   Steel Frame   N/A   N	Latitude:		Location: Downstream Face
Photo 2	Longitude:		
Cell: Type: Material: Shape: N/A  Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Flow (L/s):	· ·		
Cell: Type: Material: Shape: N/A  Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Flow (L/s):	Crossing Details		
Material:   Steel Frame   N/A	=	Centre	
Material:   Steel Frame   N/A	Type:	Pedestrian bridge	
Invert:			
Invert:			
Rise / Diam. (mm):	-		
Span (mm)	Rise / Diam. (mm):		
Approx. Length (m):			
Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm): Flow (L/s): Flow (L/s):  Cell:  Type:  Material: Shape: Intertry: Rise / Diam. (mm): Flow (L/s): Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Intertry: Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)  Additional Comments  Additional Comments  Additional Comments			
Location:   Downstream Face   Facing West			
Cell:			Location: Downstream Face
Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Flow (L/s): Flow Depth (mm): Flow (L/s):  Cell: Type:  Material: Shape: Cell: Type: Channel Roughness: Downstream Face Dist (m): Loz5 Channel Roughness: Downstream Face Dist (m): Low Flow Channel Details Loz1 (Dystream Dist (m): Avg. Width (m): Avg. Width (m): Channel Roughness: Downstream Face Dist (m): Cell: Type: Side Slope (H:V): Li 3:1 Avg. Width (m): Avg. Width (m): Coz5 Channel Roughness: Flow Flow Shape: Cell: Avg. Width (m): Cell: Channel Roughness: Shape: Cell: Avg. Width (m): Avg. Width (m): Channel Roughness: Sand Avg. Depth (m): Channel Roughness: Sand Avg. Depth (m): Channel Roughness: Sand Avg. Depth (m): Channel Roughness: Sand Additional Comments  Additional Comments			
Type:	, ,		
Type:	Cell:		Low Flow Channel Details
Material:         Dist (m):         3           Shape:         Low Flow Shape:         Trapezoidal           Invert:         Side Slope (H:V):         L: 2:1         R: 2:1           Rise / Diam. (mm):         Avg. Width (m):         2         0.25           Approx. Length (m):         Channel Roughness:         Sand         High grass           Flow Depth (mm):         Flow Uc/s):         Location:         Downstream Face           Flow (L/s):         Downstream Face         Dist (m):         3           Cell:         Low Flow Shape:         Trapezoidal         L: 3:1         R: 3:1           Type:         Side Slope (H:V):         L: 3:1         R: 3:1         R: 3:1           Material:         Avg. Width (m):         1.5         O.25         Sand           Shape:         Avg. Depth (m):         0.25         Sand         High grass           Rise / Diam. (mm):         Overbank Roughness:         Sand         High grass           Additional Comments         Additional Comments			
Shape: Invert: Side Slope (H:V): Span (mm): Span (mm) Approx. Length (m): Inlet Type: Flow (L/s):  Cell: Shape: Invert: Side Slope (H:V): Avg. Width (m): Channel Roughness: Sand High grass  Location: Downstream Face Dist (m): Side Slope (H:V): Li 2:1 R: 2: R			
Invert:   Side Slope (H:V):   L: 2:1   R: 2:1     Rise / Diam. (mm):   Avg. Width (m):   2     Span (mm)			
Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Side Slope (H:V): Avg. Width (m): Cell: Side Slope (H:V): Avg. Width (m): Avg. Width (m): Cell: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Cell: Avg. Depth (m): Additional Comments Additional Comments	•		
Span (mm) Approx. Length (m): Inlet Type: Channel Roughness: Flow Depth (mm): Flow (L/s): Cell: Type: Side Slope (H:V): Avg. Depth (m): Cell: Avg. Width (m): Shape: Invert: Channel Roughness: Avg. Depth (m): Avg. Depth (m): Coverbank Roughness: Avg. Depth (m): Avg. Width (m): Cell: Avg. Width (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Avg. Width (m): Avg. Width (m): Avg. Width (m): Avg. Depth (m): Avg. Width (m): Avg. Depth (m): Avg. Width (m): Avg. Depth (m): Additional Comments  Additional Comments	Rise / Diam. (mm):		
Approx. Length (m):			
Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:  Material: Shape: Invert: Channel Roughness:  Rise / Diam. (mm): Span (mm)  Approx. Length (m): Inlet Type: Flow Depth (mm):  Inlet Type: Flow Depth (mm):  Flow Depth (mm):  Cell: Location: Downstream Face  Side Slope (H:V): L: 3:1 R: 3:1 Avg. Width (m): 1.5 Avg. Depth (m): O.25 Channel Roughness: Channel Roughness: Overbank Roughness: High grass  Additional Comments			
Flow Depth (mm): Flow (L/s):  Cell: Cell: Type: Side Slope (H:V): Avg. Width (m): Shape: Invert: Channel Roughness: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Flow (L/s):  Low Flow Shape: Side Slope (H:V): Avg. Width (m): 1.5 Avg. Width (m): 1.5 Channel Roughness: Sand High grass  Additional Comments			
Flow (L/s):  Cell:  Cell:  Type:  Material:  Shape:  Invert:  Rise / Diam. (mm):  Span (mm)  Approx. Length (m):  Inlet Type:  Flow (L/s):  Lox Flow Shape:  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  1.5  Channel Roughness:  Sand  Overbank Roughness:  High grass  Additional Comments  Additional Comments			Thigh glass
Dist (m):   3			Location: Downstream Face
Cell: Type: Side Slope (H:V): Material: Shape: Invert: Channel Roughness: Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Cell: Low Flow Shape: Side Slope (H:V): L: 3:1 R: 3:1 Avg. Width (m): Avg. Depth (m): Channel Roughness: Sand Overbank Roughness: High grass Additional Comments  Additional Comments	. 10 10 (2/3).	L	
Type:  Material:  Shape: Invert:  Rise / Diam. (mm):  Span (mm)  Approx. Length (m):  Inlet Type: Flow Depth (mm):  Side Slope (H:V):  Avg. Width (m):  1.5  Avg. Depth (m):  Channel Roughness:  Sand  Overbank Roughness:  High grass  Additional Comments	Cell·		
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Shape: Avg. Depth (m): 0.25 Invert: Channel Roughness: Sand Overbank Roughness: High grass  Additional Comments  Flow Depth (mm): Avg. Depth (m): 0.25  Channel Roughness: Sand Overbank Roughness: High grass  Additional Comments			
Invert: Channel Roughness: Sand  Rise / Diam. (mm): Overbank Roughness: High grass  Span (mm)  Approx. Length (m): Additional Comments  Inlet Type: Flow Depth (mm):			
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Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Additional Comments			
Approx. Length (m):  Inlet Type: Flow Depth (mm):  Additional Comments	• •		5 voi buille reagnitioss. [Tilgit grass
Inlet Type: Flow Depth (mm):			Additional Comments
Flow Depth (mm):			Additional comments
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Photo 3



Location: Upstream Face
Direction: Facing West

Photo 4



Location: Downstream Face
Direction: Facing West

#### Photo 5

# Photo Here

Location:
Direction:

#### Photo 6

# Photo Here

Location: \_\_\_\_

#### Photo 7

# Photo Here

Location: Direction:

#### Photo 8

# Photo Here

Location: Direction:





Location ID No.   SB5	General		
Field Staff: Weather: Watershed: Waterourse: Crossing Location: Name: Laitude: Laitude: Longitude: Celi: Type: Material: Shape: Intert Type: Material: Shape: Invert: Shape	Location ID No.:		
Field Staff: Weather: Watershed: Watercourse: Crossing Location: Name: Latitude: Longitude: Crossing Dotalis Cell: Type: Material: Shape: Invert: Inleit Type: Material: Shape: Material: Shape: Invert: Inleit Type: Material: Shape: Material: Shape: Invert: Rise / Diam. (mm): Flow (L/s): Flow Daysh (mm) Approx. Length (m): Span (mm) Approx. Length (m): Flow (L/s): Flow Depth (mm): Flow Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Flow Depth (mm): Flow (L/s): Flow (L/s): Flow (L/s): Gell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Flow Depth (mm): Flow (L/s): Gell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Flow Depth (mm): Flow (L/s): Gell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Flow Depth (mm): Flow (L/s): Gell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Flow Depth (mm): Inleit Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inleit Type: Flow Depth (mm): Additional Comments  Additional Comments	Date:	2012-06-14	
Watershed: Watershed: Watercourse: Crossing Location: Name: Latitude: Latitude: Longitude: Crossing Details Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Flow (L/s): Flow Depth (mm): Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Rise / Diam. (mm): Additional Comments	Time:	5:22 PM	
Watershed: Watercourse: Crossing location: Name: Latitude: Longitude: Longitude: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Invert: Rise / Diam. (mm): Additional Comments	Field Staff:	LJ SBN	
Main Branch   Pedestrian   Pe	Weather:	Sunny	
Watercourse:	Watershed:	Shirlev's Brook	
Pedestrian   Terry Fox Drive   Latitude:	Watercourse:		
Name: Latitude:			
Latitude:	-		
Crossing Details   Cell: Type: Pedestrian Bridge   Steel Frame   N/A   Dept (mm): Flow (L/s):   Facing North   Photo 2			Location: Unstream Face
Crossing Details Cell: Type: Material: Stae Frame N/A Inlet Type: Material: Shape: Invert: Plow Depth (mm): Shape: Invert: Shape: Invert: Cell: Type: Material: Shape: Invert: Shape: Inve			
Crossing Details Cell: Type: Material: Steel Frame Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Inlet Type: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Inlet Type: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Inlet Type: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Flow (L/s):  Cell: Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Flow (L/s): Cell: Cell: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Flow (L/s): Cell: Cell: Cell: Rise / Diam. (mm): Span (mm) Approx. Length (mi): Flow Length (mi): Flow (L/s): Cell: Cell: Cell: Cell: Cell: Cell: Span (mm) Approx. Length (mi): Flow (L/s): Cell: C	Longitude.	70.010270	
Cell:   Type:   Pedestrian Bridge   Steel Frame   Shape:   N/A	Crossing Details		111000 2
Type: Material: Steel Frame Shape: Invert: Open Footing Span (mm): 2500 Span (mm): 2600 Approx. Length (m): 13.6 Inlet Type: Material: Shape: Invert: Span (mm): Span (mm): Span (mm): Tiple (m): Inlet Type: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Invert: Shape: Span (mm): Inlet Type: Flow Depth (mm): Span (	•	Contro	
Material: Steel Frame Shape: N/A Invert: Open Footing Rise / Diam. (mm): 2500 Span (mm) 2600 Approx. Length (m): 13.6 Inlet Type: M/A Flow Depth (mm): 700  Cell: Location: Downstream Face Facing North  Location: Dist (m): Dist			
Shape:   Invert:			
Invert:   Rise / Diam. (mm):   2500			
Rise / Diam. (mm):	·		
Span (mm)			
Approx. Length (m):			
Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm): Flow (L/s):  Cell:  Cell: Type:  Material: Shape: Intertry: Rise / Diam. (mm): Span (mm): Approx. Length (m): Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Intertry: Cell: Type: Cell: Type: Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Flow (L/s):  Cell: Type: Cell: Type: Cell: Type: Cell: Cel			
County   C			
Cell:   Low Flow Channel Details   Location:   Upstream   Dist (m):   Shape:   Low Flow Shape:   Side Slope (H:V): L: 3:1   R:			
Cell: Type: Location: Upstream   Dist (m):			
Type:	Flow (L/s):	0	Direction: Facing North
Type:			
Material:         Dist (m):         0           Shape:         Low Flow Shape:         Trapezoidal           Invert:         Side Slope (H:V):         L: 3:1         R: 3:1           Rise / Diam. (mm):         Avg. Width (m):         9.7           Approx. Length (m):         Avg. Depth (m):         O.7           Channel Roughness:         Gravel/Cobble           Light brush         Light brush           Flow Depth (mm):         Location:         Downstream Face           Dist (m):         O         Trapezoidal           Low Flow Shape:         Light brush         Light brush           Side Slope (H:V):         L: 3:1         R: 3:1           Rise Slope (H:V):         R: 3:1         R: 3:1           Avg. Width (m):         9.7         Avg. Width (m):           Avg. Width (m):         9.7         Avg. Width (m):           Avg. Depth (m):         0.7         Channel Roughness:           Rise / Diam. (mm):         Overbank Roughness:         Light brush           Additional Comments         Light brush			
Shape:			
Invert:  Rise / Diam. (mm):  Span (mm)  Approx. Length (m):  Inlet Type:  Flow Depth (mm):  Cell:  Type:  Cell:  Type:  Side Slope (H.V):  Channel Roughness:  Overbank Roughness:  Light brush  Location:  Downstream Face  Dist (m):  Cell:  Type:  Side Slope (H.V):  Light brush  Location:  Downstream Face  Dist (m):  Cell:  Side Slope (H.V):  Light brush  Location:  Downstream Face  Outenstream Face  Outenstream Face  Dist (m):  Avg. Width (m):  Avg. Width (m):  Avg. Width (m):  Shape:  Avg. Depth (m):  Channel Roughness:  Channel Roughness:  Gravel/Cobble  Overbank Roughness:  Light brush  Additional Comments  Additional Comments			
Rise / Diam. (mm): Span (mm) Avg. Depth (m): Approx. Length (m): Inlet Type: Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Side Slope (H:V): Avg. Depth (m): Cell: Avg. Width (m): Downstream Face Dist (m): Trapezoidal Type: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Channel Ro	Shape:		
Span (mm) Approx. Length (m): Inlet Type: Overbank Roughness: Flow Depth (mm): Flow (L/s):  Cell: Type:  Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:  Inlet Type:  Avg. Depth (m): O.7 Channel Roughness: Light brush  Location: Downstream Face Dist (m):  Low Flow Shape: Trapezoidal Trapezoidal Trapezoidal Avg. Width (m): 9.7 Avg. Width (m): Channel Roughness: Gravel/Cobble Channel Roughness: Uight brush  Additional Comments  Additional Comments	Invert:		
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Flow Depth (mm):  Flow (L/s):  Cell:  Cell:  Type:  Material:  Shape:  Invert:  Rise / Diam. (mm):  Span (mm)  Approx. Length (m):  Inlet Type:  Flow Depth (mm):  Flow (L/s):  Lox Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Width (m):  Avg. Width (m):  Channel Roughness:  Gravel/Cobble  Light brush  Additional Comments  Additional Comments	Inlet Type:		Overbank Roughness: Light brush
Dist (m):   O     Cell:   Low Flow Shape:   Trapezoidal     Li 3:1   R: 3:1			
Dist (m):   O     Cell:   Low Flow Shape:   Trapezoidal     Li 3:1   R: 3:1	Flow (L/s):		Location: Downstream Face
Cell: Type: Side Slope (H:V): Avg. Width (m): Avg. Depth (m): Channel Roughness: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):  Cell: Low Flow Shape: Trapezoidal L: 3:1 R: 3:1 9.7 Avg. Depth (m): Channel Roughness: Gravel/Cobble Light brush  Additional Comments  Flow Depth (mm):			
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Invert: Channel Roughness: Gravel/Cobble  Rise / Diam. (mm): Overbank Roughness: Light brush  Span (mm)  Approx. Length (m): Additional Comments  Inlet Type: Flow Depth (mm):			
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Inlet Type: Flow Depth (mm):			Additional Comments
Flow Depth (mm):			Additional community
			<del> </del>
110W (L/3).			<del> </del>
ı	110W (L/3).		





Photo 3



Location: Upstream Face
Direction: Facing Southeast

Photo 4

Photo Here

Location: Direction:

Photo 5

Photo Here

Location: Direction:

Photo 6

Photo Here

Location: Direction:

Photo 7

Photo Here

Location:
Direction:

Photo 8

Photo Here

Location:
Direction:





General		
Location ID No.:	SB6	
Date:	2012-06-15	
Time:	8:47 AM	T anation
Field Staff:	LJ SBN	Location
Weather:	Sunny	T
Watershed:	Shirley's Brook	Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Klondike Road	
Latitude:	45.335713	Location:
Longitude:	-75.931517	Direction:
<b>g</b>		Photo 2
Crossing Details		
Cell:		
Type:		
Material:		Dhoto
Shape:		Photo
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		11616
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
110W (L/3).		Direction.
Cell:		Low Flow Channel Details
Type:		Location:
• • •		Dist (m):
Material:		
Shape:		Low Flow Shape:
Shape: Invert:		Low Flow Shape: Side Slope (H:V): L: R:
Shape: Invert: Rise / Diam. (mm):		Low Flow Shape: Side Slope (H:V): L: R: Avg. Width (m):
Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape: Side Slope (H:V): L: R: Avg. Width (m): Avg. Depth (m):
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape: Side Slope (H:V): L: R: Avg. Width (m): Avg. Depth (m):
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:
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Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V): L: R:
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V): L: R:  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Additional Comments
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:
Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Location:  Dist (m):  Low Flow Shape:  Side Slope (H:V):  Avg. Width (m):  Avg. Depth (m):  Channel Roughness:  Overbank Roughness:  Additional Comments





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





General		
Location ID No.:	SB7	
Date:	2012-06-15	
Time:	10:09 AM	Location
Field Staff:	LJ SBN	Location
Weather:	Sunny	T
Watershed:	Shirley's Brook	- Inaccessible
Watercourse:	Main Branch	Set Stream in registration assessments about the part of the production of the states.
Crossing Location:	Road	
Name:	Perimeter Road	
Latitude:	45.366581	Location:
Longitude:	-75,921340	Direction:
zongitadoi	70.021010	Photo 2
Crossing Details		
Cell:		
Туре:		
Material:		Dhata
Shape:		Photo
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		Пете
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
110W (L/3).		Direction.
Cell:		Low Flow Channel Details
Туре:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		
		Avg. North (m):
Span (mm)		Avg. Depth (m):
Approx Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
0. 11		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		_
Approx. Length (m):		Additional Comments
Inlet Type:		Could not access - DnD lands
Flow Depth (mm):		<u> </u>
Flow (L/s):		





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





		111010 1
General		_
Location ID No.:	SB8	
Date:	2012-06-15	
Time:	12:14 PM	Location
Field Staff:	LJ SBN	Location
Weather:	Sunny	I
Watershed:	Shirley's Brook	Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Road	1
Name:	Perimeter Road	1
Latitude:	45.377020	Location:
Longitude:	-75.935227	Direction:
<b>g</b>		Photo 2
Crossing Details		
Cell:		
Type:		
Material:		Dhoto
Shape:		Photo
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		- Hele
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
110W (L/3).		Direction.
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
		Low Flow Shape:
Shape: Invert:		
Rise / Diam. (mm):		
		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx. Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		Location
Flow (L/s):	L	Location:
0-"		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Could not access - DND lands.
Flow Depth (mm):		_
Flow (L/s):		<u></u>





Photo 3 Photo 4 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 6 Photo 5 **Photo Photo** Here Here Location: Location: Direction: Direction: Photo 7 Photo 8 **Photo Photo** Here Here Location: Location: Direction: Direction:





General		
Location ID No.:	117010	
Date:	2012-06-13	
Time:	10:40 AM	
Field Staff:	SBN LJ	
Weather:	Cloudy	
Watershed:	Watt's Creek	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Carling Road	
Latitude:	45.347632	Location: Downstream Face
Longitude:	-75.874408	Direction: Facing South
•		Photo 2
<b>Crossing Details</b>		
Cell:	Centre	
Type:	Bridge	
Material:	Concrete	
Shape:	Box / Rectangular	
Invert:	Open Footing	
Rise / Diam. (mm):	3700	
Span (mm)	9200	
Approx. Length (m):	11	
Inlet Type:	N/A	<b>《《《大学》</b> [1] [1] [2] [2] [2] [2] [2] [2] [2] [2] [2] [2
Flow Depth (mm):	0.25	Location: Downstream Face
Flow (L/s):	200	Direction: Facing North
, ,		
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 2:1 R: 2:1
Rise / Diam. (mm):		Avg. Width (m): 4.7
Span (mm)		Avg. Depth (m): 0.25
Approx. Length (m):		Channel Roughness: Cobble
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		
Flow (L/s):		Location: Upstream Face
		Dist (m): 5
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 2:1 R: 2:1
Material:		Avg. Width (m): 5.7
Shape:		Avg. Depth (m): 0.4
Invert:		Channel Roughness: Debris jam
Rise / Diam. (mm):		Overbank Roughness: Medium-dense brush
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Effective flow length is 2.5 m (debris jam).
Flow Depth (mm):		
Flow (L/s):		<b> </b>
(-, -).		





Photo 3



Location: Downstream Face
Direction: Facing Northeast

Photo 4



Location: Upstream Face
Direction: Facing South

Photo 5



Location: Upstream Face Direction: Facing North

#### Photo 6

# Photo Here

Location:	
Direction:	

Photo 7

# Photo Here

Location:
Direction:

#### Photo 8

# Photo Here

Location:
Direction:





General		
Location ID No.:	117110	
Date:	2012-06-13	
Time:	10:40 AM	
Field Staff:	SBN LJ	
Weather:	Cloudy	
Watershed:	Watt's Creek	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Carling Road	
Latitude:	45.347632	Location: Downstream Face
Longitude:	-75.874408	Direction: Facing South
		Photo 2
Crossing Details		
Cell:	Centre	
Туре:	Bridge	
Material:	Concrete	
Shape:	Box / Rectangular	
Invert:	Open Footing	
Rise / Diam. (mm):	3700	
Span (mm)	9200	
Approx. Length (m):	11	
Inlet Type:	N/A	
Flow Depth (mm):	0.25	Location: Downstream Face
Flow (L/s):	200	Direction: Facing North
		_
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 5
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 2:1 R: 2:1
Rise / Diam. (mm):		Avg. Width (m): 4.7
Span (mm)		Avg. Depth (m): 0.25
Approx. Length (m):		Channel Roughness: Cobble
Inlet Type:		Overbank Roughness: Medium-dense brush
Flow Depth (mm):		
Flow (L/s):		Location: Upstream Face
0.11		Dist (m): 5
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 2:1 R: 2:1
Material:		Avg. Width (m): 5.7
Shape:		Avg. Depth (m): 0.4
Invert:		Channel Roughness: Debris jam
Rise / Diam. (mm):		Overbank Roughness: Medium-dense brush
Span (mm)		Additional Community
Approx Length (m):		Additional Comments
Inlet Type:		Effective flow length is 2.5 m (debris jam).
Flow Depth (mm):		_
Flow (L/s):		<b>」</b>





Photo 3



Location: Downstream Face
Direction: Facing Northeast

Photo 4



Location: Upstream Face
Direction: Facing South

Photo 5



Location: Upstream Face Direction: Facing North

#### Photo 6

# Photo Here

Location:	
Direction:	_

Photo 7

# Photo Here

Location: Direction:

#### Photo 8

# Photo Here

Location:	
Direction:	





		Photo 1
General		
Location ID No.:	117120	
Date:	2012-06-13	
Time:	10:31 AM	Logation
Field Staff:	SBN LJ	Location
Weather:	Cloudy	T
Watershed:	Watt's Creek	<b>Inaccessible</b>
Watercourse:	Main Branch	destination require values with which destination is drawn to approve the body beautiful or tracks about
Crossing Location:	Road	
Name:	Shirley Road	
Latitude:	45.362425	Location:
Longitude:	-75.890775	Direction:
Longitude.	73,030773	Photo 2
Crossing Details		T HOLD Z
Cell:		
Type:		
Material:		Dhoto
Shape:		Photo
Snape: Invert:		
		Here
Rise / Diam. (mm):		I ICI C
Span (mm)		
Approx Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
Cell:		Low Flow Channel Details
Type:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx. Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Inside the DND lands, could not access.
Flow Depth (mm):		
Flow (L/s):		<del> </del>
FIGW/ II / Si		





Photo 3	Photo 4
Photo Here	
Location: Direction:	Location: Direction:
Photo 5	Photo 6
Photo Here  Location: Direction:	Photo Here  Location: Direction:
Photo 7	Photo 8
Photo Here	Photo Here
Location: Direction:	Location: Direction:





General		
Location ID No.:	117160	
Date:	2012-06-13	
Time:	9:42 AM	
Field Staff:	SBN LJ	
Weather:	Cloudy	
Watershed:	Watt's Creek	
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Malibar Road	the second second
Latitude:	45.361635	Location: Downstream Face
Longitude:	-75.890246	Direction: Facing West
	7 010002 10	Photo 2
Crossing Details		
Cell:	North	
Type:	Culvert	
Material:	CMP	
Shape:	Arch	
Invert:	Open Footing	
Rise / Diam. (mm):	2700	
Span (mm)	4100	
Approx. Length (m):	14.2	
Inlet Type:	Mitered	A PROPERTY OF THE PARTY OF THE
Flow Depth (mm):	250	Location: Downstream Face
Flow (L/s):	600	Direction: Facing South
110 (173).	000	Directions I doing Count
Cell:		Low Flow Channel Details
Type:		Location: Downstream
Material:		Dist (m): 6
Shape:		Low Flow Shape: Trapezoidal
Invert:		Side Slope (H:V): L: 1:1 R: 5:1
Rise / Diam. (mm):		Avg. Width (m): 7.4
Span (mm)		Avg. Depth (m): 0.5
Approx. Length (m):		Channel Roughness: Clean, straight, veg.
Inlet Type:		Overbank Roughness: Short grass
Flow Depth (mm):		Overbank Roughness. Short grass
Flow (L/s):		Location: Upstream Face
1 IUW (L/3).		Dist (m): 4
Cell:		Low Flow Shape: Trapezoidal
Type:		Side Slope (H:V): L: 5:1 R: 2:1
Material:		Avg. Width (m): 4
Shape:		Avg. Width (iii): 4  Avg. Depth (m): 0.25
Invert:		Channel Roughness: Clean, winding, veg.
Rise / Diam. (mm):		Overbank Roughness: Medium-dense brush
		Overbank Roughness. Medium-dense brush
Span (mm)		Additional Comments
Approx. Length (m):		Additional Comments
Inlet Type:		<b>⊣</b>
Flow Depth (mm):		<b>⊣</b>
Flow (L/s):	L	<b>┙</b> ┃





Photo 3



Location: Downstream Face Direction: Facing North

#### Photo 4



Location: Upstream Face Direction: Facing North

Photo 5



Location: Upstream Face Direction: Facing West

Photo 6



Location: Upstream Face
Direction: Facing South

#### Photo 7

# Photo Here

Location:
Direction:

#### Photo 8

# Photo Here

Location: \_\_\_\_\_





		Photo 1
General		
Location ID No.:	117270	
Date:	2012-06-13	
Time:	10:35 AM	Location
Field Staff:	SBN LJ	Location
Weather:	Cloudy	T
Watershed:	Watt's Creek	Inaccessible
Watercourse:	Main Branch	
Crossing Location:	Road	
Name:	Sandhill Road	
Latitude:	45.351393	Location:
Longitude:	-75,880624	Direction:
J		Photo 2
<b>Crossing Details</b>		
Cell:		
Type:		
Material:		Photo
Shape:		1 11010
Invert:		
Rise / Diam. (mm):		Here
Span (mm)		
Approx. Length (m):		
Inlet Type:		
Flow Depth (mm):		Location:
Flow (L/s):		Direction:
Cell:		Low Flow Channel Details
Туре:		Location:
Material:		Dist (m):
Shape:		Low Flow Shape:
Invert:		Side Slope (H:V): L: R:
Rise / Diam. (mm):		Avg. Width (m):
Span (mm)		Avg. Depth (m):
Approx. Length (m):		Channel Roughness:
Inlet Type:		Overbank Roughness:
Flow Depth (mm):		
Flow (L/s):		Location:
		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		
Approx. Length (m):		Additional Comments
Inlet Type:		Inside DND lands, could not access.
Flow Depth (mm):		
Flow (L/s):		





Photo 3	Photo 4
Photo Here	
Location: Direction:	Location: Direction:
Photo 5	Photo 6
Photo Here  Location: Direction:	Photo Here  Location: Direction:
Photo 7	Photo 8
Photo Here	Photo Here
Location: Direction:	Location: Direction:





General		
Location ID No.:	1001	
Date:	2012-06-13	
Time:	1:26 PM	
Field Staff:	SBN LJ	
Weather:	Sunny	
Watershed:	Watt's Creek	
Watercourse:	Main Branch	
Crossing Location:	Railway	
Name:	Unknown	
Latitude:	45.341051	Location: Downstream Face
Longitude:	-75.874172	Direction: Facing East
J		Photo 2
Crossing Details		
Cell:	West	
Type:	Culvert	
Material:	Concrete	
Shape:	Circular	
Invert:	Closed Footing	
Rise / Diam. (mm):	2500	
Span (mm)	N/A	
Approx. Length (m):	30	N 77 / (FS)
Inlet Type:	Projecting	
Flow Depth (mm):	150	Location: Downstream Face
Flow (L/s):	60	Direction: Facing North
,		
Cell:	East	Low Flow Channel Details
Type:	Culvert	Location: Downstream
Material:	Concrete	Dist (m): 17.5
Shape:	Circular	Low Flow Shape: Trapezoidal
Invert:	Closed Footing	Side Slope (H:V): L: 3:1 R: 3:1
Rise / Diam. (mm):	2500	Avg. Width (m): 4.3
Span (mm)	N/A	Avg. Depth (m): 0.15
Approx. Length (m):	30	Channel Roughness: Cobble
Inlet Type:	Projecting	Overbank Roughness: Medium-dense brush
Flow Depth (mm):	150	modelin delice stasii
Flow (L/s):	60	Location:
(=, -).		Dist (m):
Cell:		Low Flow Shape:
Type:		Side Slope (H:V): L: R:
Material:		Avg. Width (m):
Shape:		Avg. Depth (m):
Invert:		Channel Roughness:
Rise / Diam. (mm):		Overbank Roughness:
Span (mm)		5 vorbank Nougrinoss.
Approx. Length (m):		Additional Comments
Approx. Longin (III).		
Inlet Type		
Inlet Type:		U/S side could not be accessed.
Inlet Type: Flow Depth (mm): Flow (L/s):		





Photo 3



Location: Downstream Face

Direction: Facing South

Photo 4

**Photo** Here

Location:

Direction:

Photo 5

**Photo** Here

Location: Direction: Photo 6

**Photo** Here

Location: Direction:

Photo 7

**Photo** Here

Location: Direction: Photo 8

**Photo** Here

Location:

Direction:





General			
Location ID No.:	W4		
Date:	2012-06-13		
Time:	1:02 PM		
Field Staff:	SBN LJ		
Weather:	Sunny		
Watershed:	Watt's Creek		
Watercourse:	Main Branch		
Crossing Location:	Pedestrian		
Name:	Rifle Road		
Latitude:	45.341666	Location: Upstream Face	
Longitude:	-75.873754	Direction: Facing South	
<b>g</b>		Photo 2	
Crossing Details			
Cell:	Centre		
Type:	Pedestrian bridge		
Material:	Steel Frame		
Shape:	N/A		
Invert:	Open Footing		
Rise / Diam. (mm):	2400		
Span (mm)	13700		
Approx. Length (m):	2.5		
Inlet Type:	N/A		
Flow Depth (mm):	200	Location: Upstream Face	
Flow (L/s):	590	Direction: Facing North	
		T I I I I I I I I I I I I I I I I I I I	
Cell:		Low Flow Channel Details	
Cell: Type:		Low Flow Channel Details  Location: Upstream	7
Туре:		Location: Upstream	]
Type: Material:		Location: Upstream Dist (m): 7	
Type: Material: Shape:		Location: Upstream Dist (m): 7 Low Flow Shape: Trapezoidal	
Type: Material: Shape: Invert:		Location: Upstream Dist (m): 7 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 4:1 R: 1:1	
Type: Material: Shape: Invert: Rise / Diam. (mm):		Location: Upstream	- - -
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Location: Upstream	- - - -
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Upstream Dist (m): 7 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 4:1 R: 1:1 Avg. Width (m): 4.7 Avg. Depth (m): 0.20 Channel Roughness: Cobble	-
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Upstream	-
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm):		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Upstream Dist (m): 7 Low Flow Shape: Trapezoidal Side Slope (H:V): L: 4:1 R: 1:1 Avg. Width (m): 4.7 Avg. Depth (m): 0.20 Channel Roughness: Cobble Overbank Roughness: Medium-dense brush  Location: Downstream Face	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s): Cell:		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type:		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material:		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape:		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert:		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15  Channel Roughness: Cobble	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm):		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm)		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15  Channel Roughness: Overbank Roughness: Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Additional Comments	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type:		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15  Channel Roughness: Overbank Roughness: Medium-dense brush	
Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m): Inlet Type: Flow Depth (mm): Flow (L/s):  Cell: Type: Material: Shape: Invert: Rise / Diam. (mm): Span (mm) Approx. Length (m):		Location: Upstream  Dist (m): 7  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 4:1 R: 1:1  Avg. Width (m): 4.7  Avg. Depth (m): 0.20  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Location: Downstream Face  Dist (m): 3.6  Low Flow Shape: Trapezoidal  Side Slope (H:V): L: 2:1 R: 1:1  Avg. Width (m): 5.5  Avg. Depth (m): 0.15  Channel Roughness: Cobble  Overbank Roughness: Medium-dense brush  Additional Comments	





Photo 3



Direction: Facing North

Location: Downstream Face

Photo 4

**Photo** Here

Location: Direction:

Photo 5

**Photo** Here

Location: Direction: Photo 6

**Photo** Here

Location: Direction:

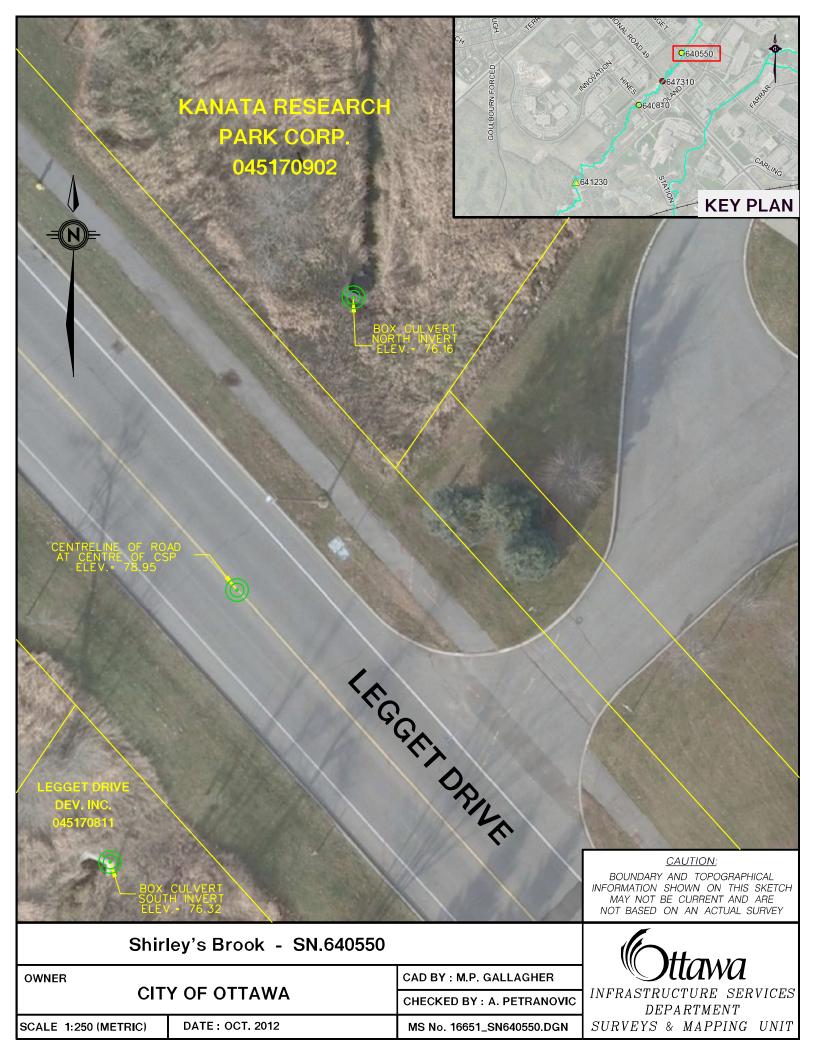
Photo 7

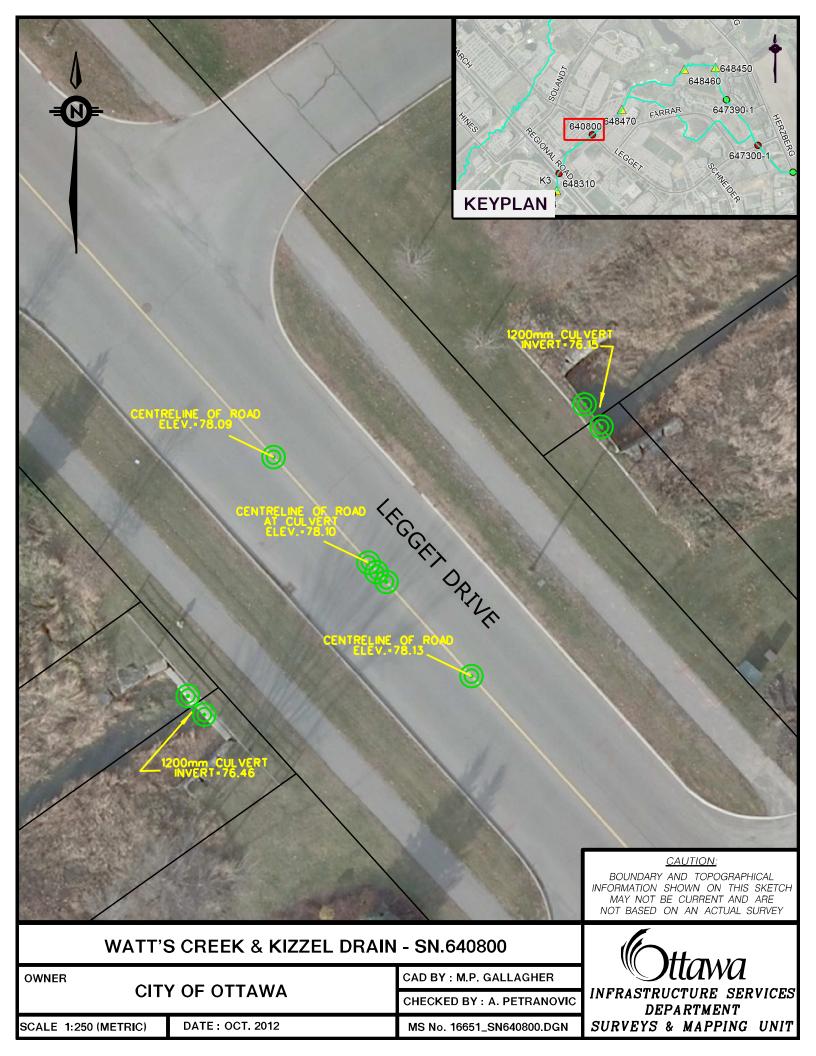
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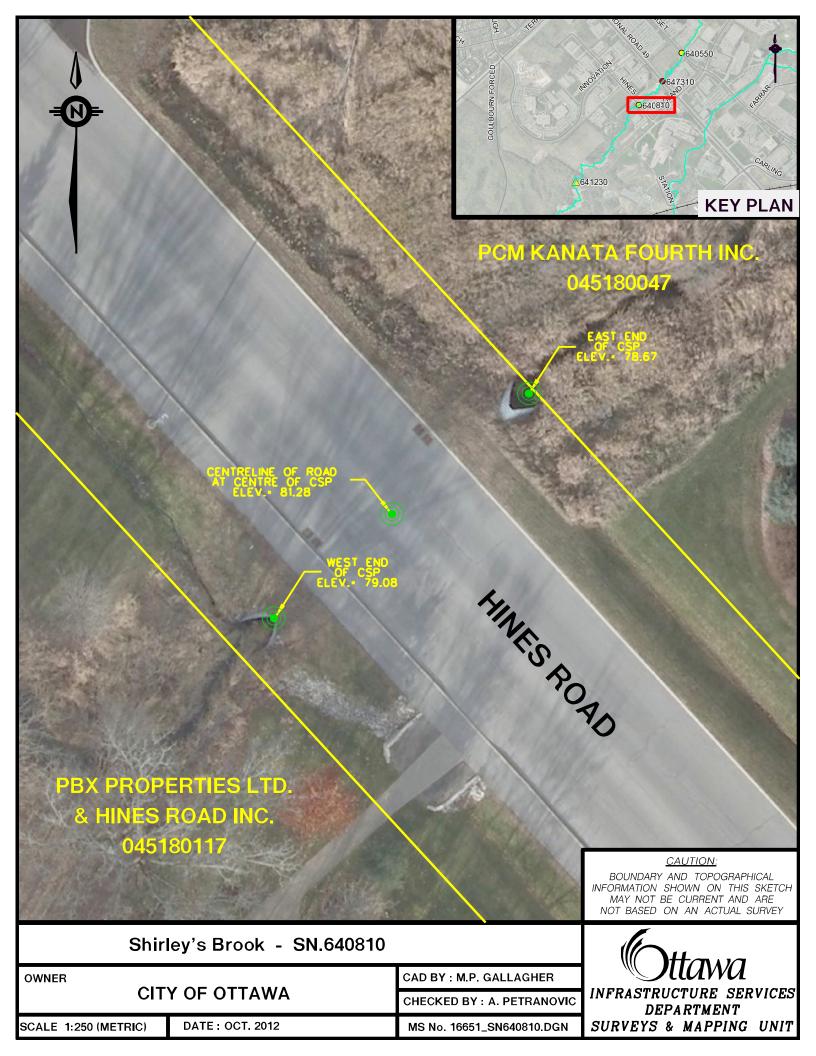
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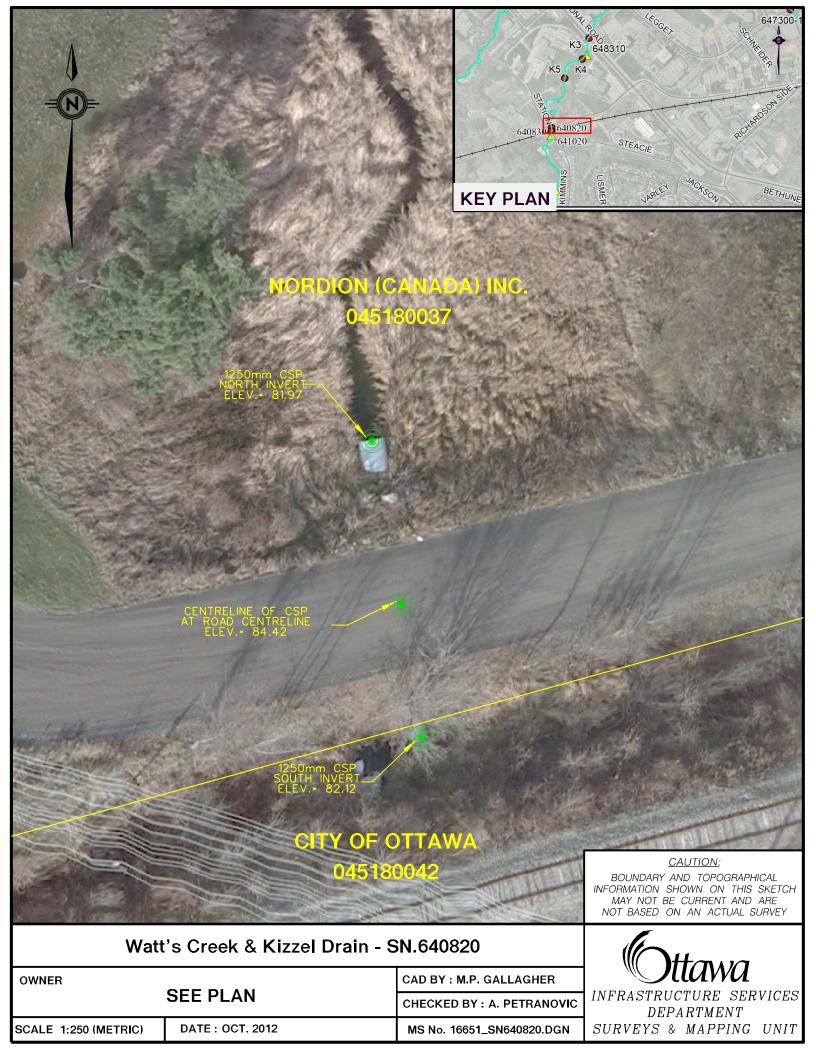
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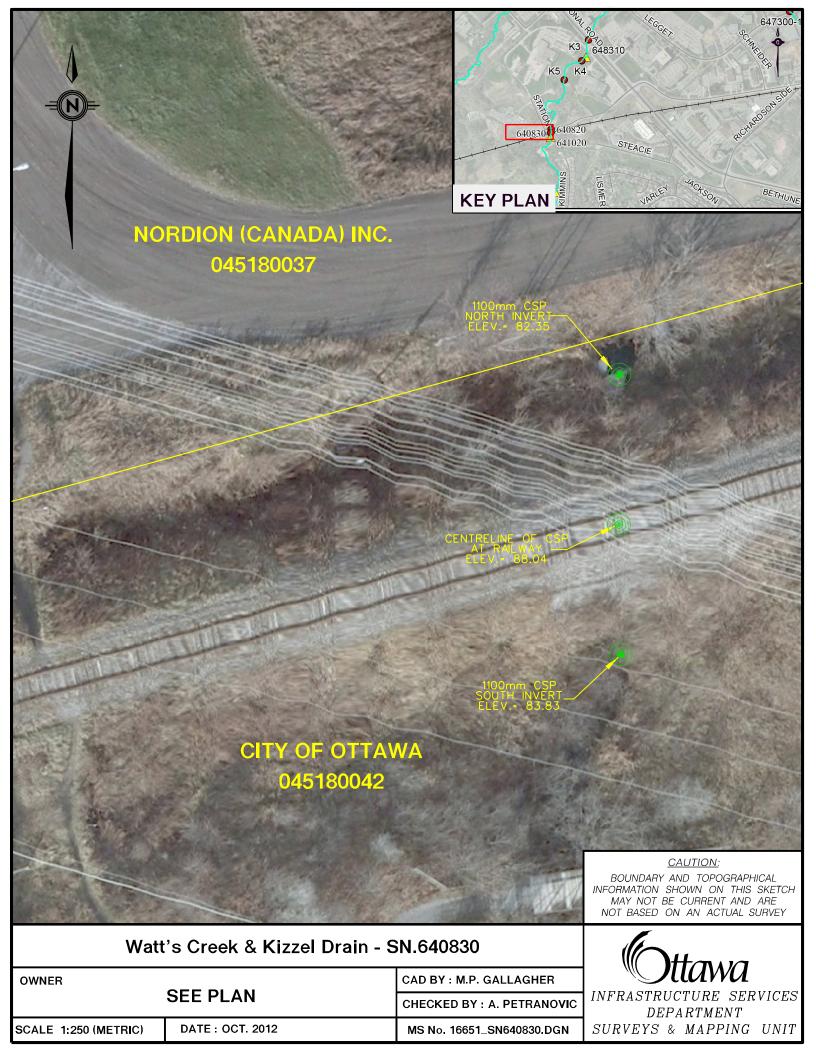
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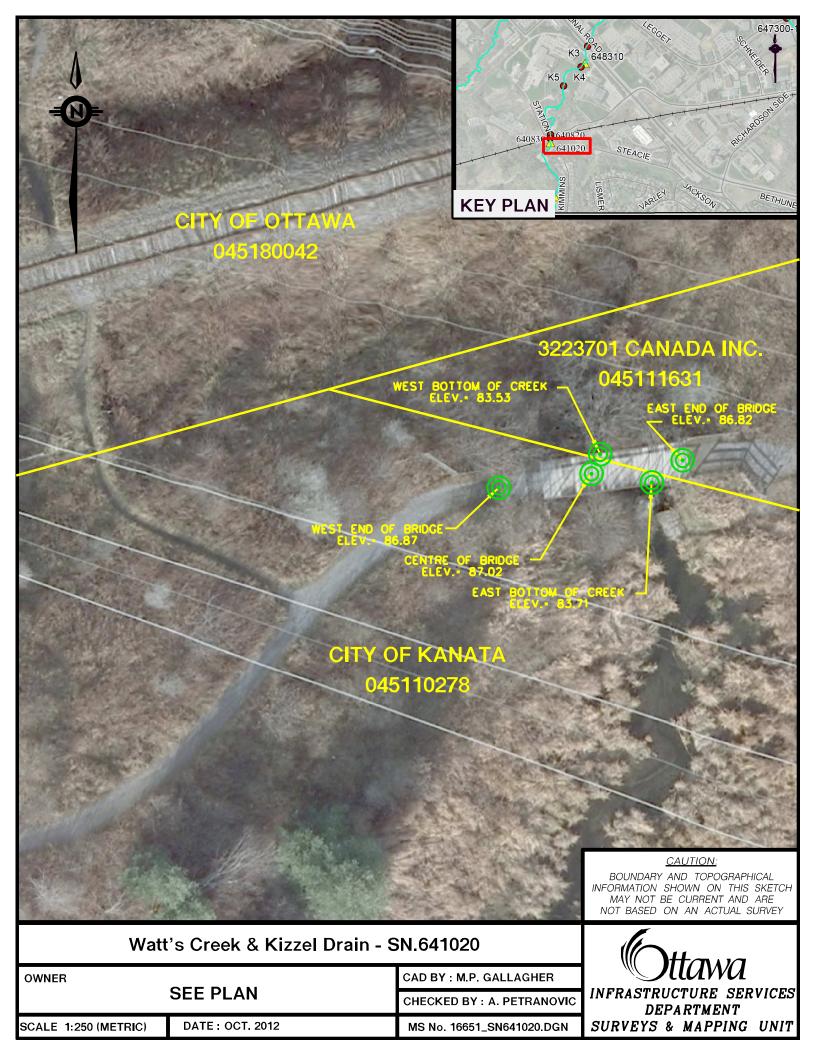


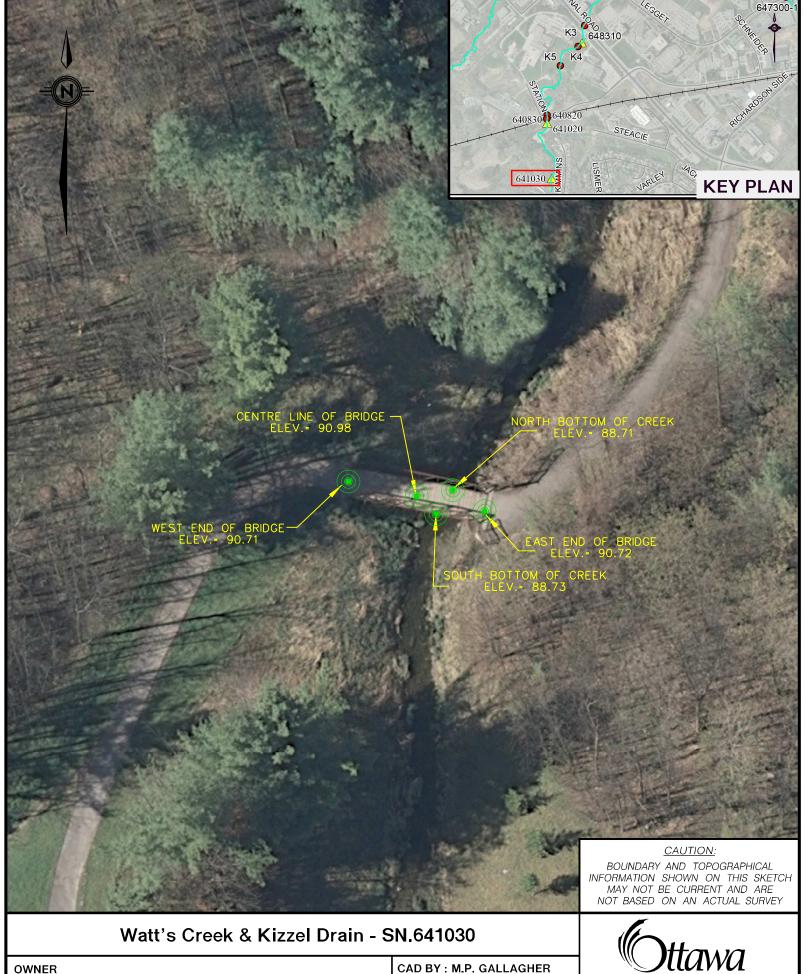












**CITY OF OTTAWA** 

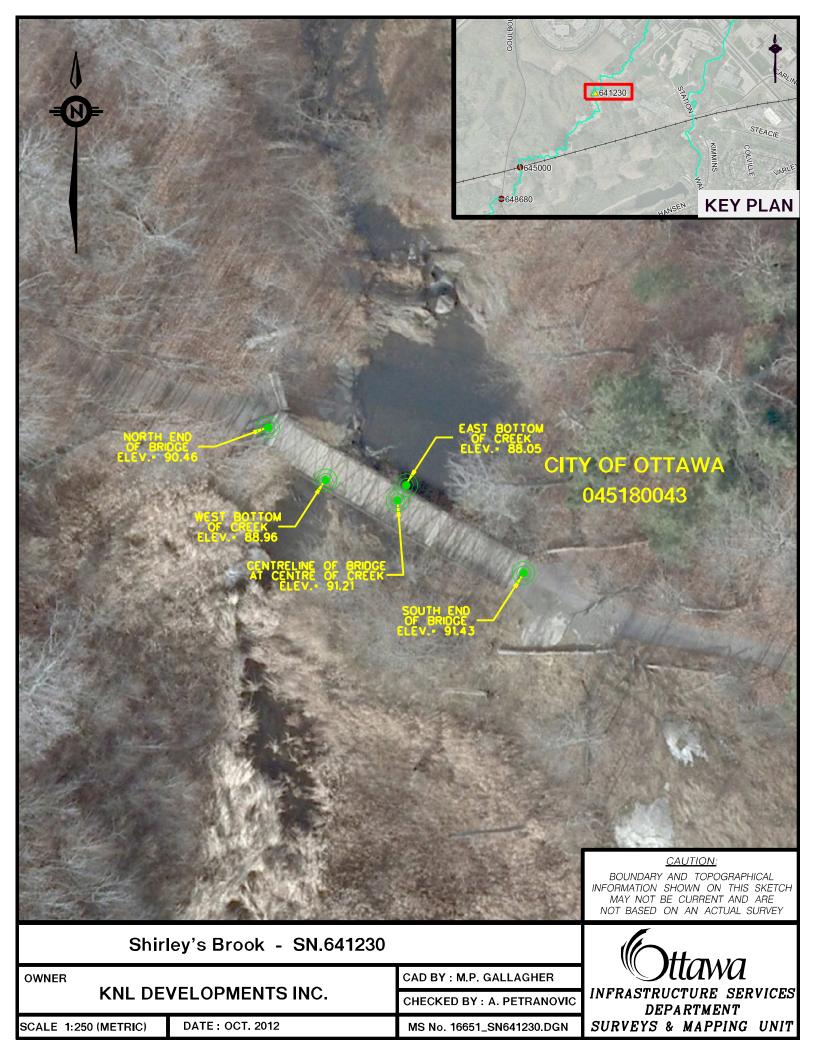
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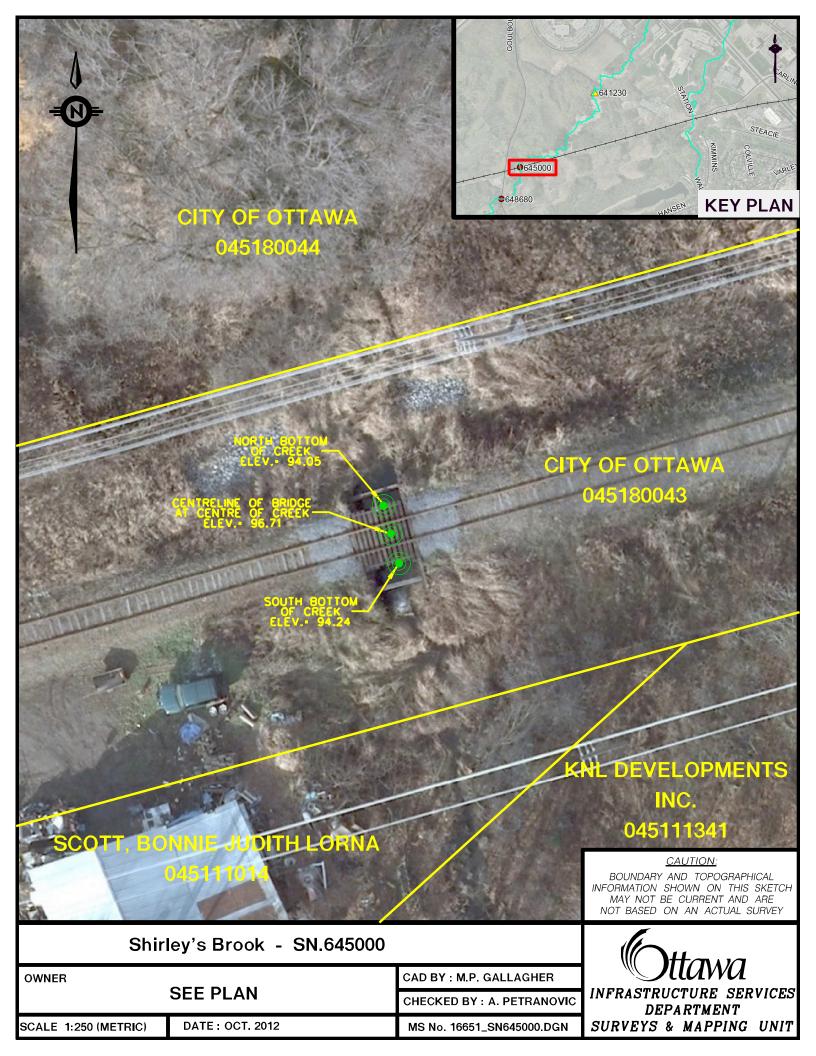
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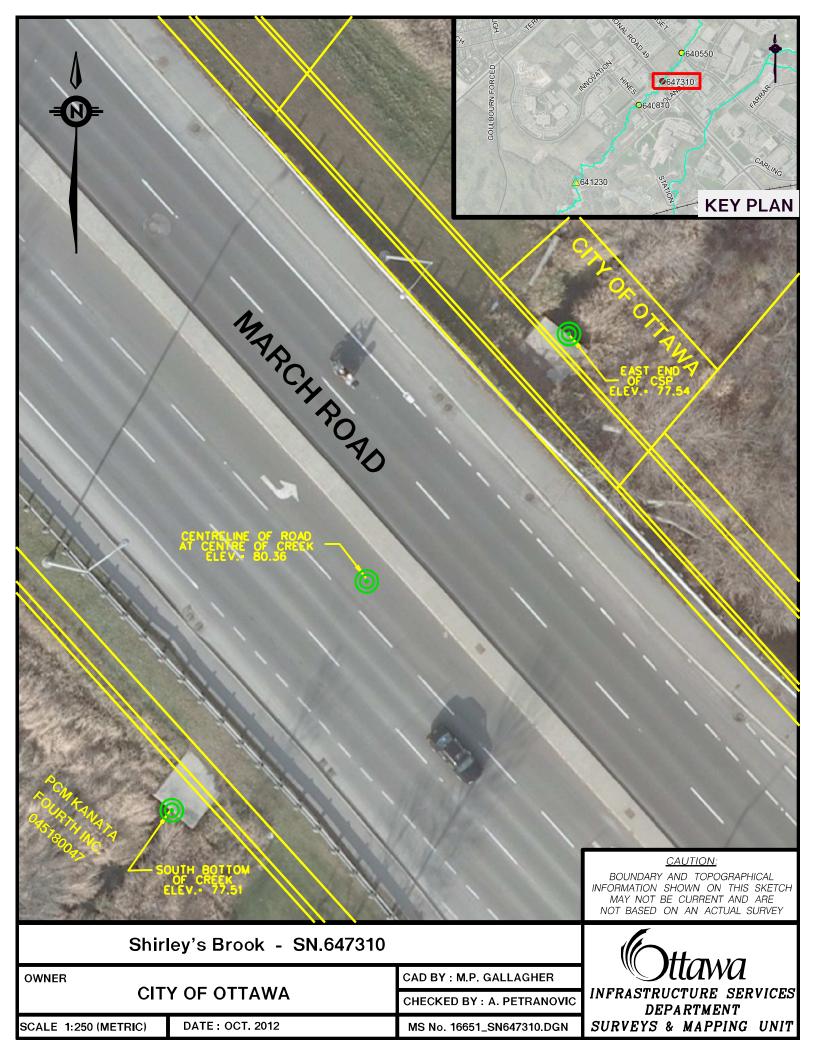
**CHECKED BY: A. PETRANOVIC** 

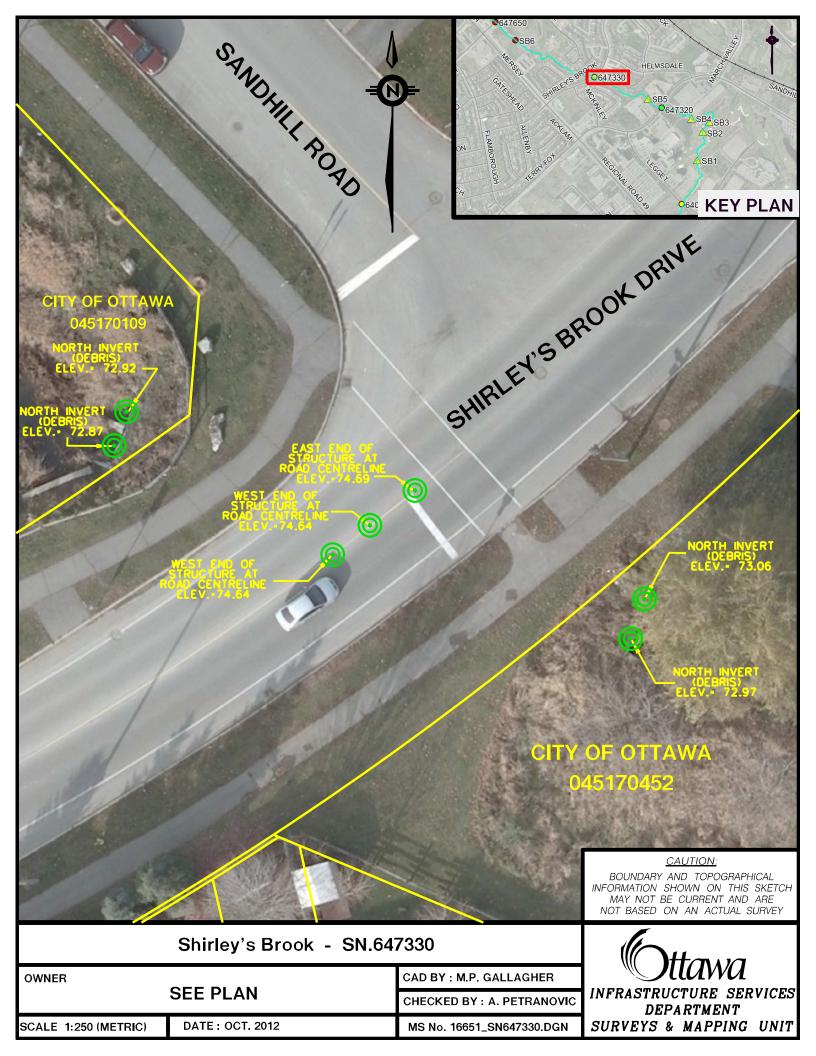
MS No. 16651\_SN641030.DGN

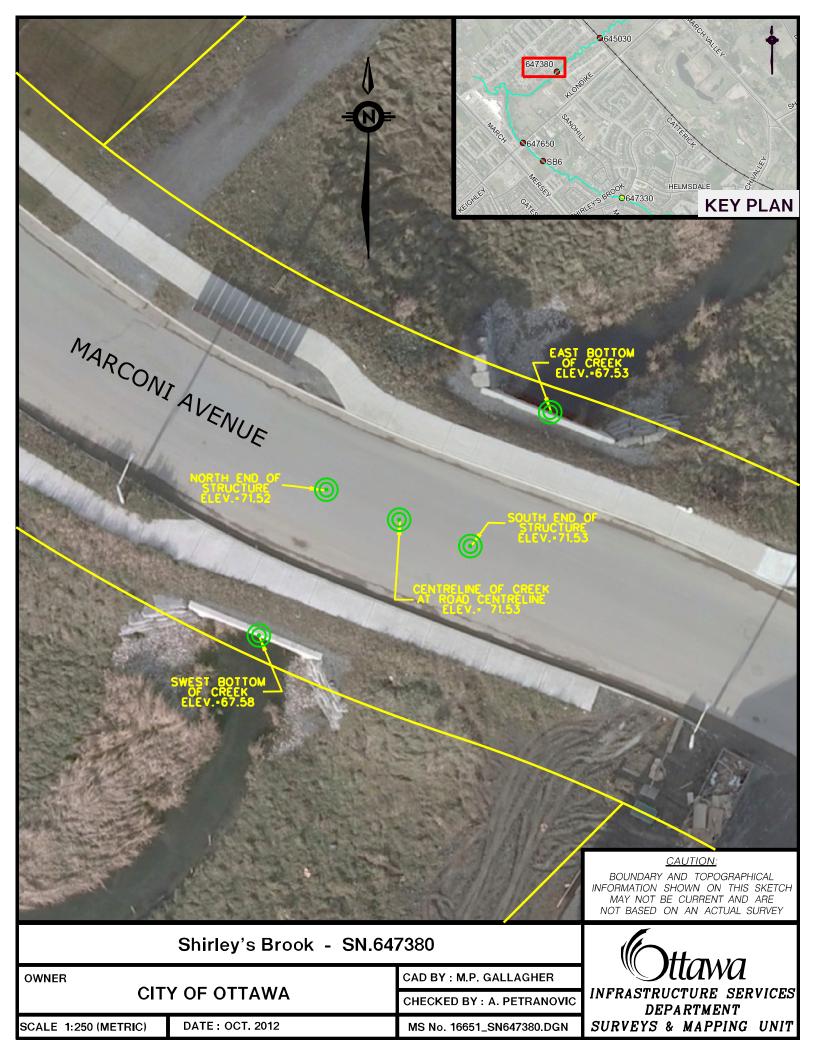
INFRASTRUCTURE SERVICES DEPARTMENT SURVEYS & MAPPING UNIT

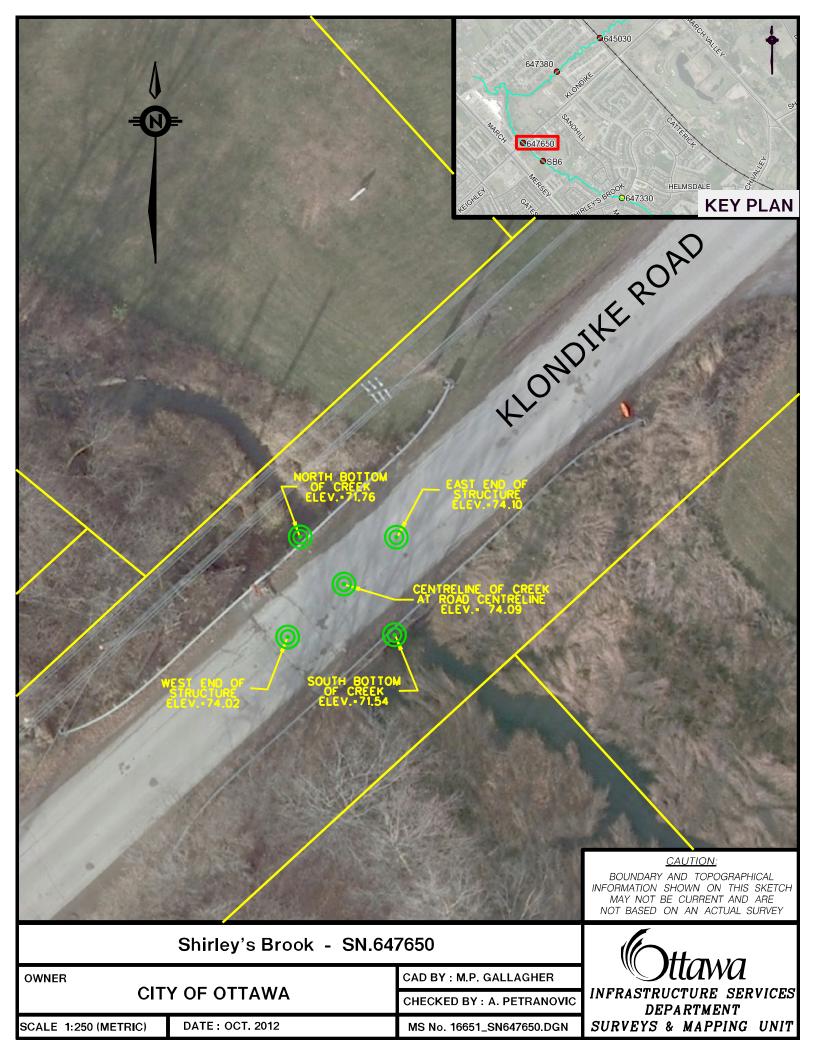


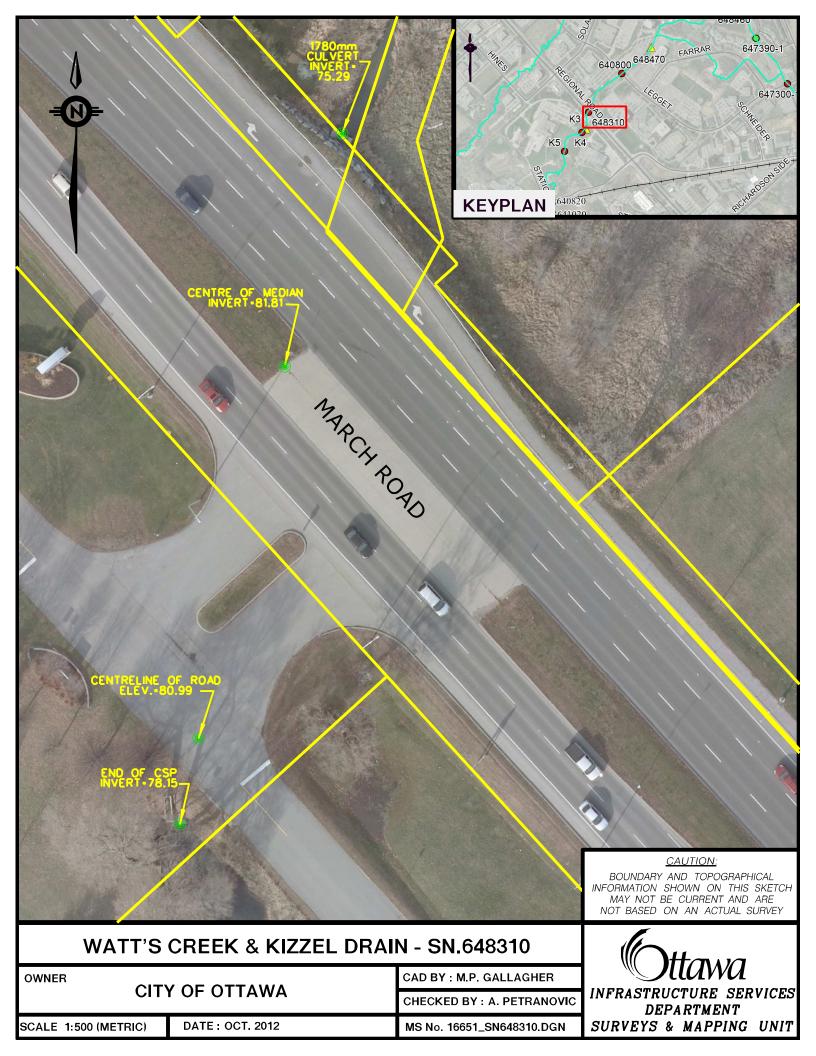


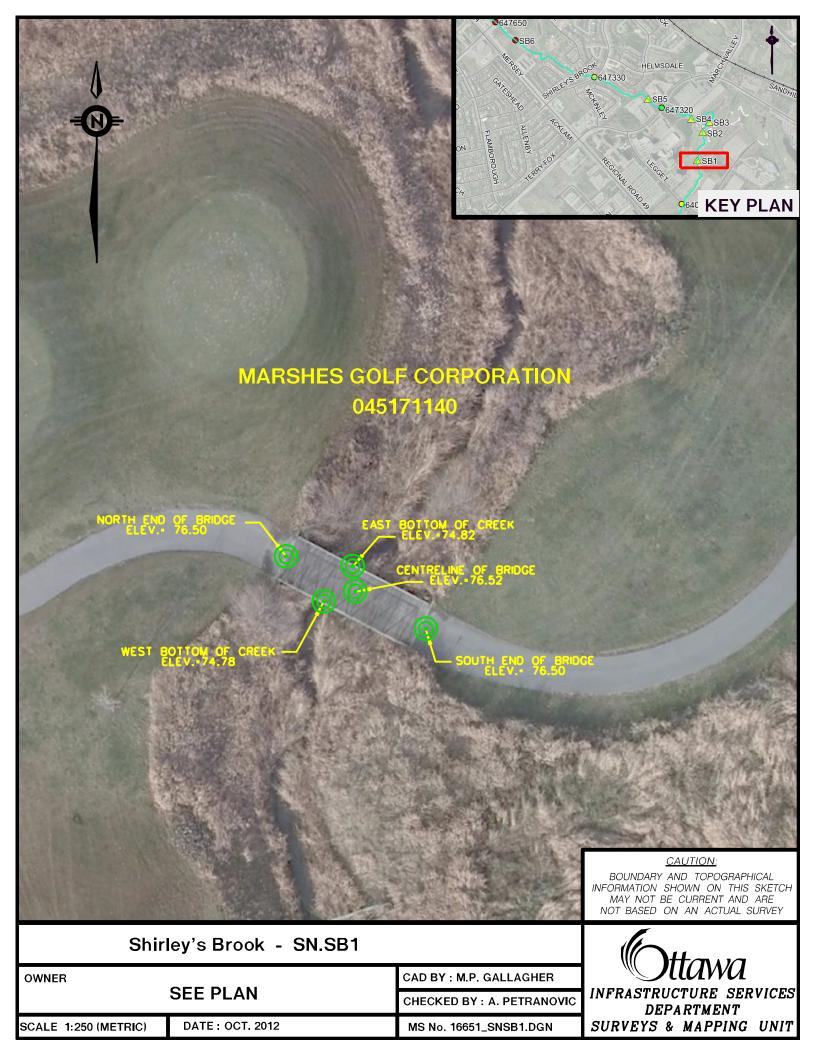


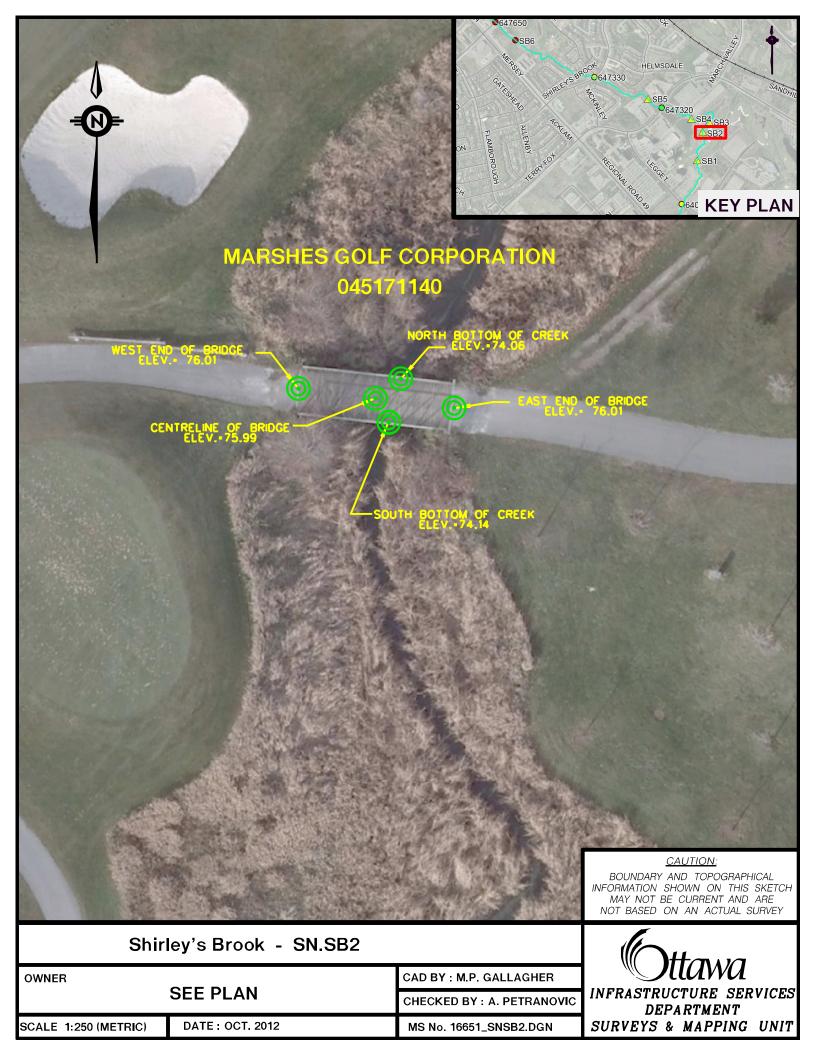


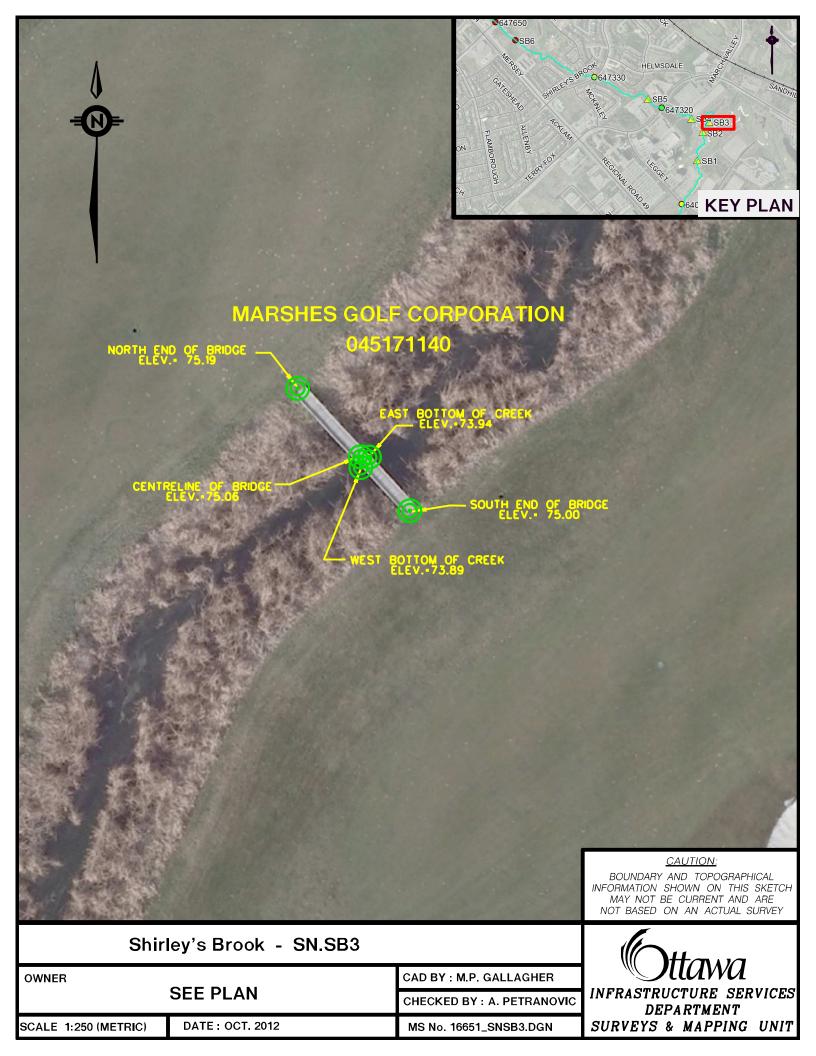


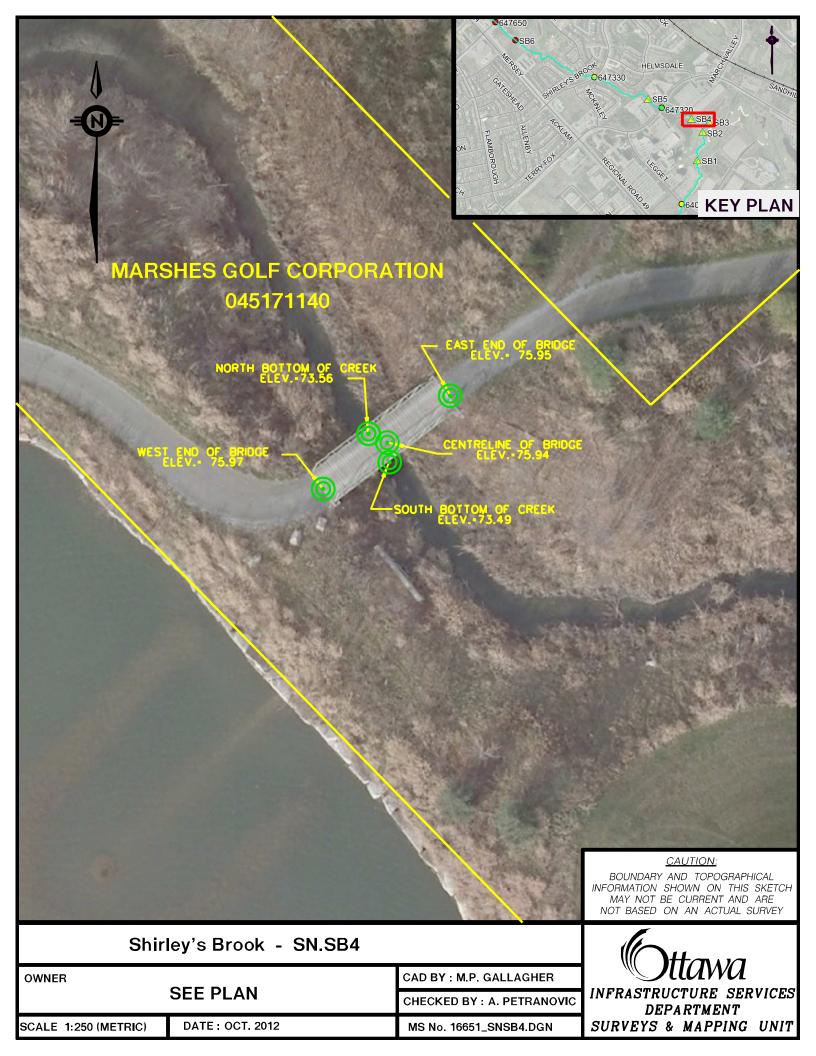


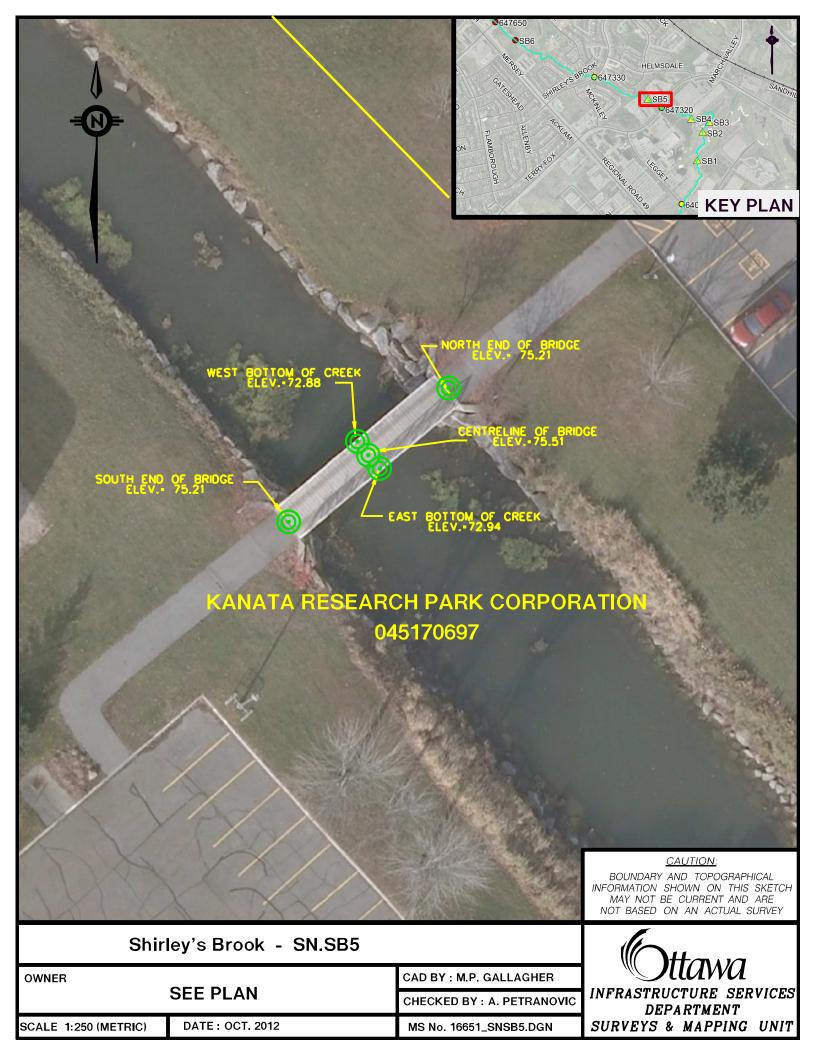


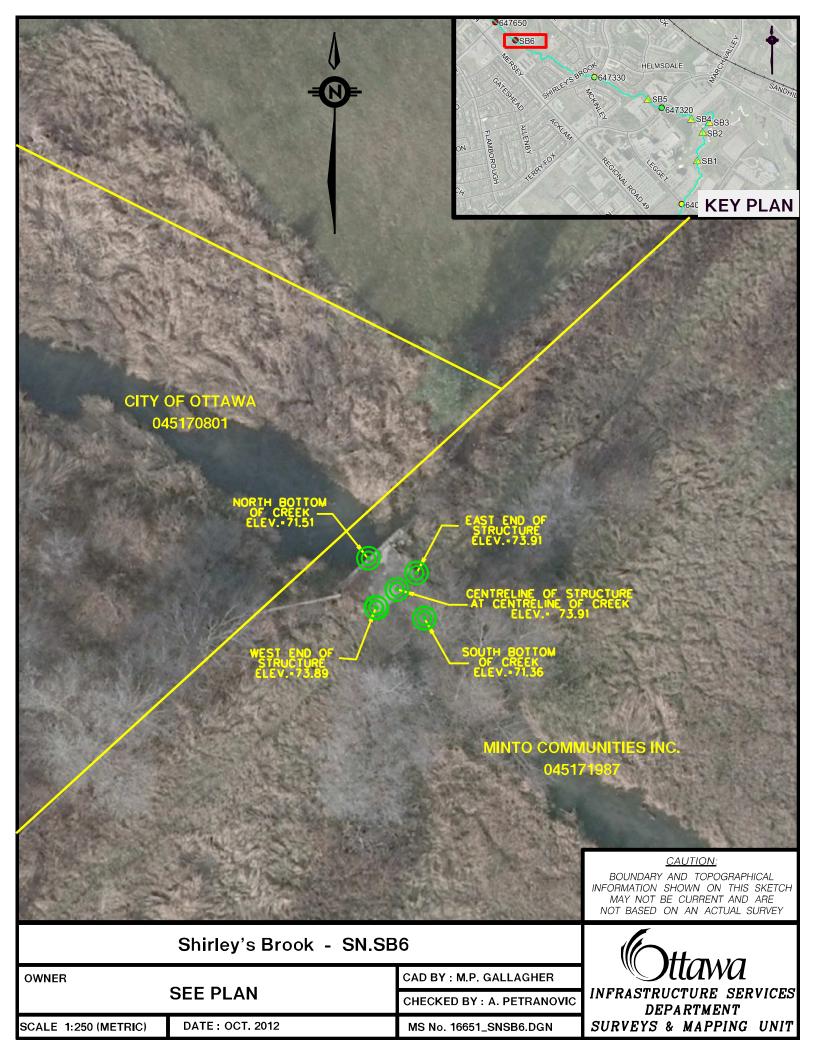














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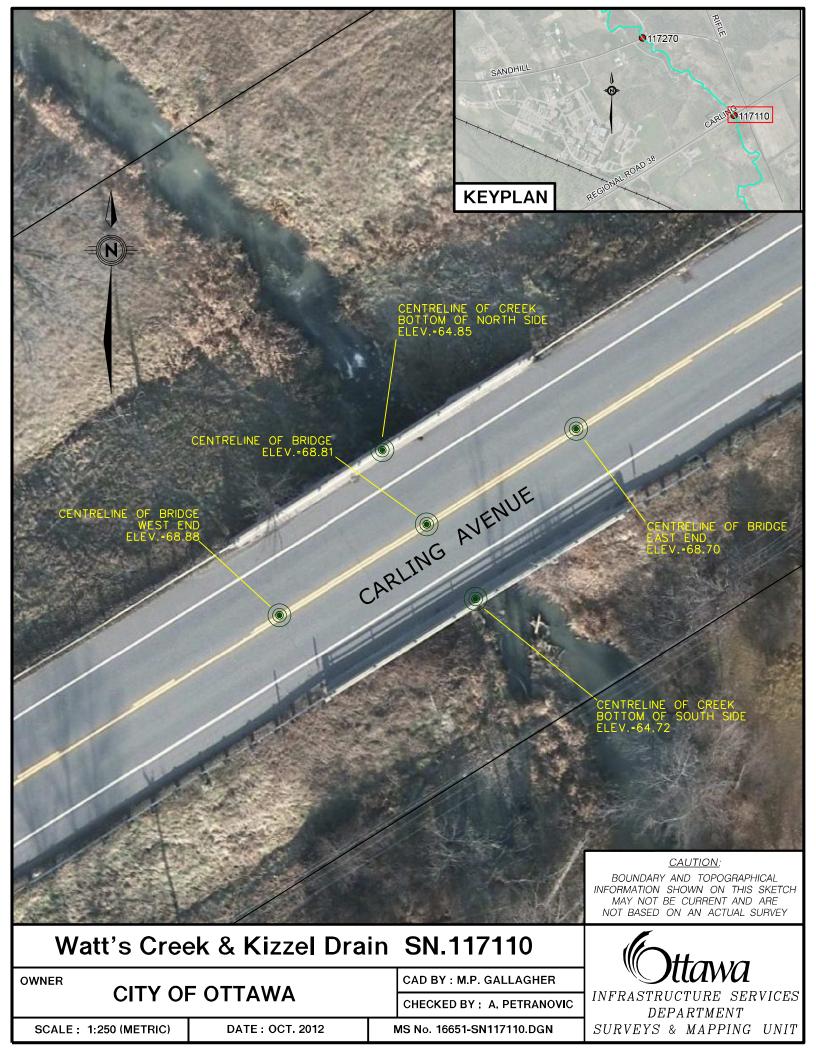
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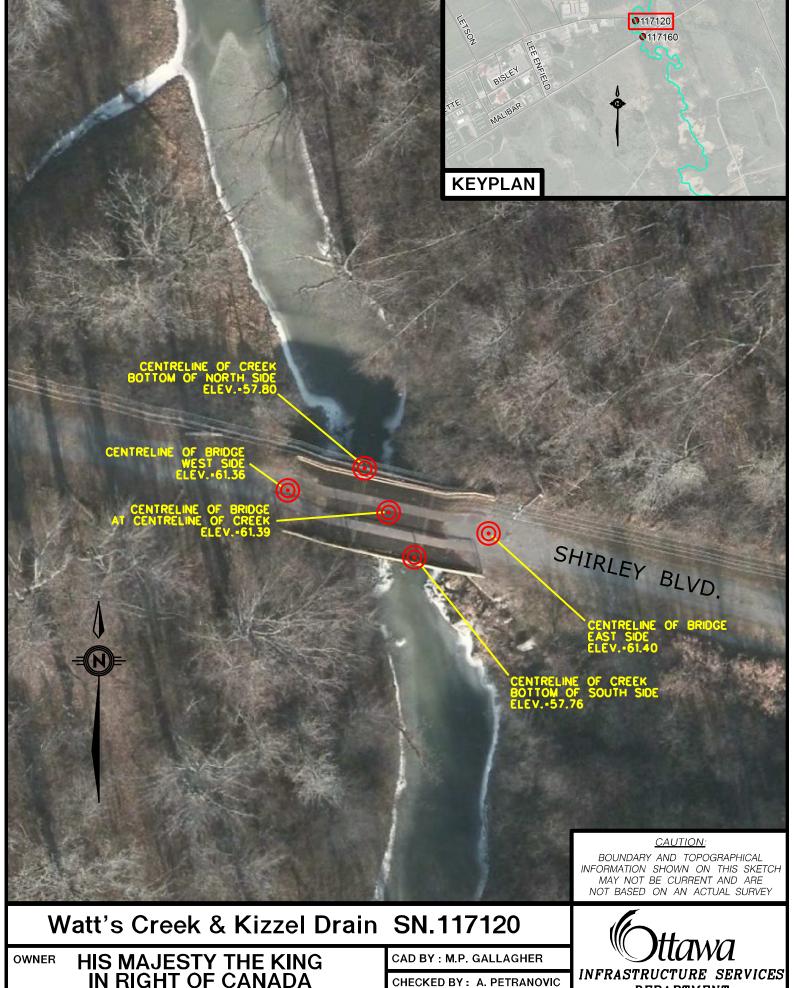
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**CHECKED BY: A. PETRANOVIC** 

MS No. 16651-SN-SB8.DGN

INFRASTRUCTURE SERVICES
DEPARTMENT
SURVEYS & MAPPING UNIT





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DATE: OCT. 2012

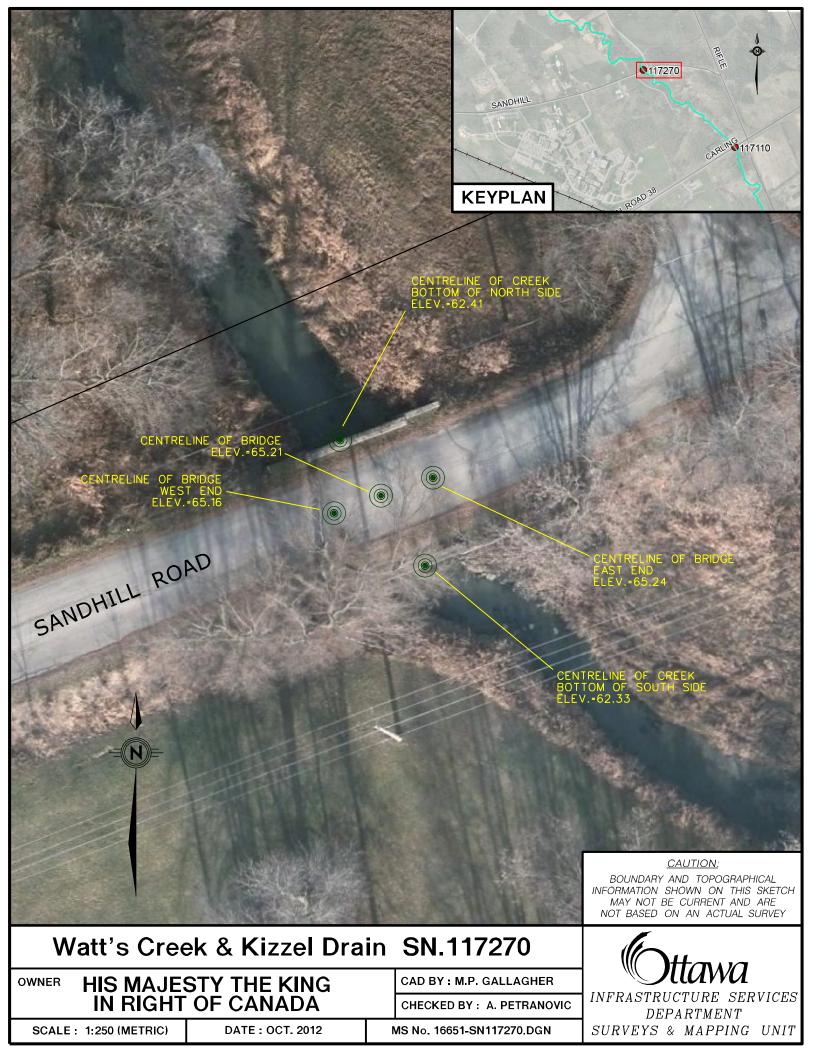
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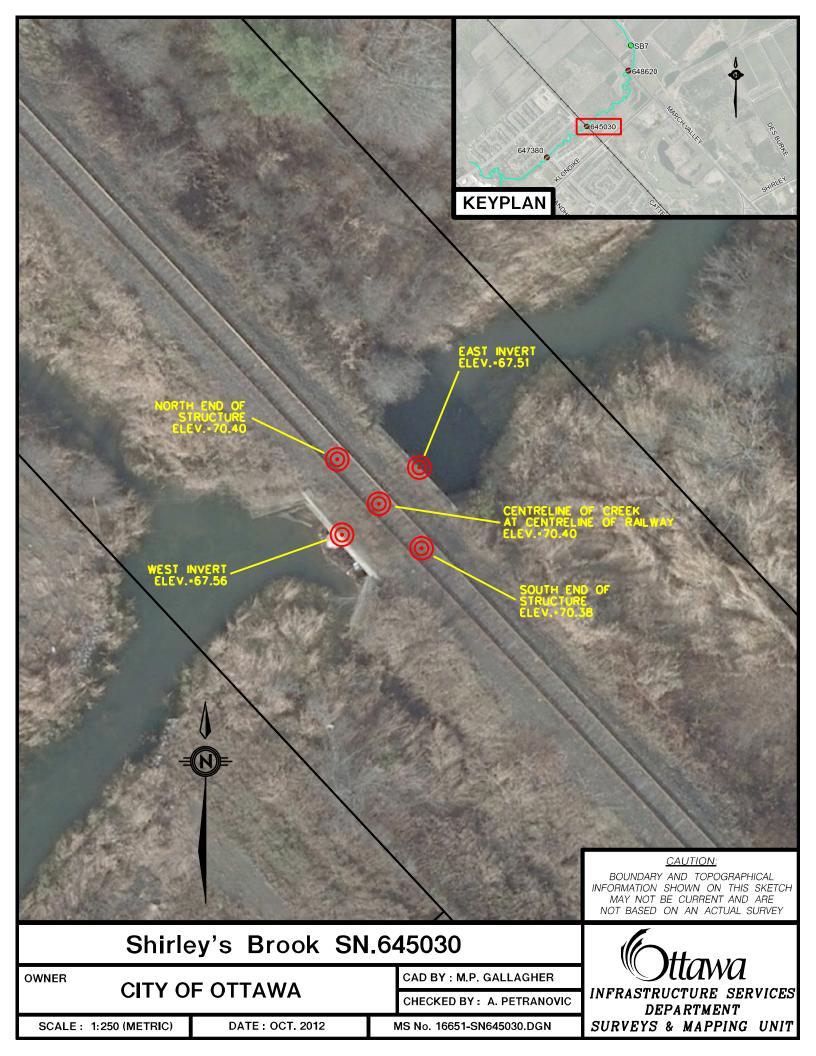
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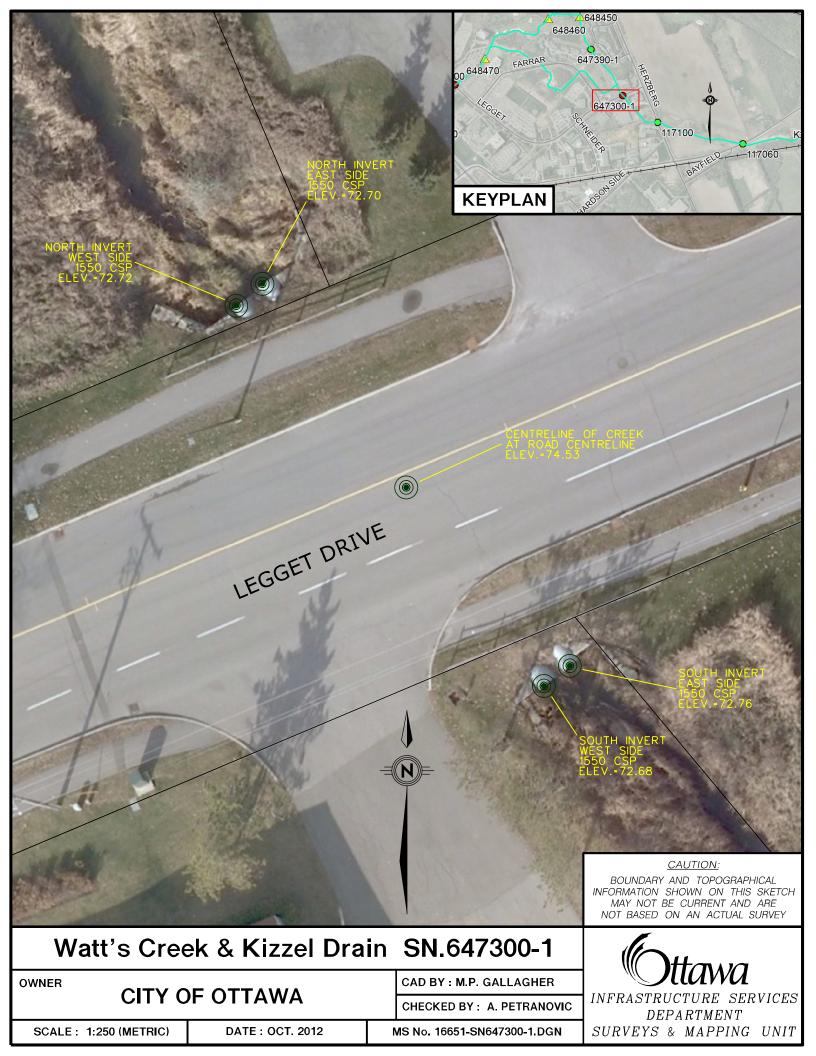
INFRASTRUCTURE SERVICES

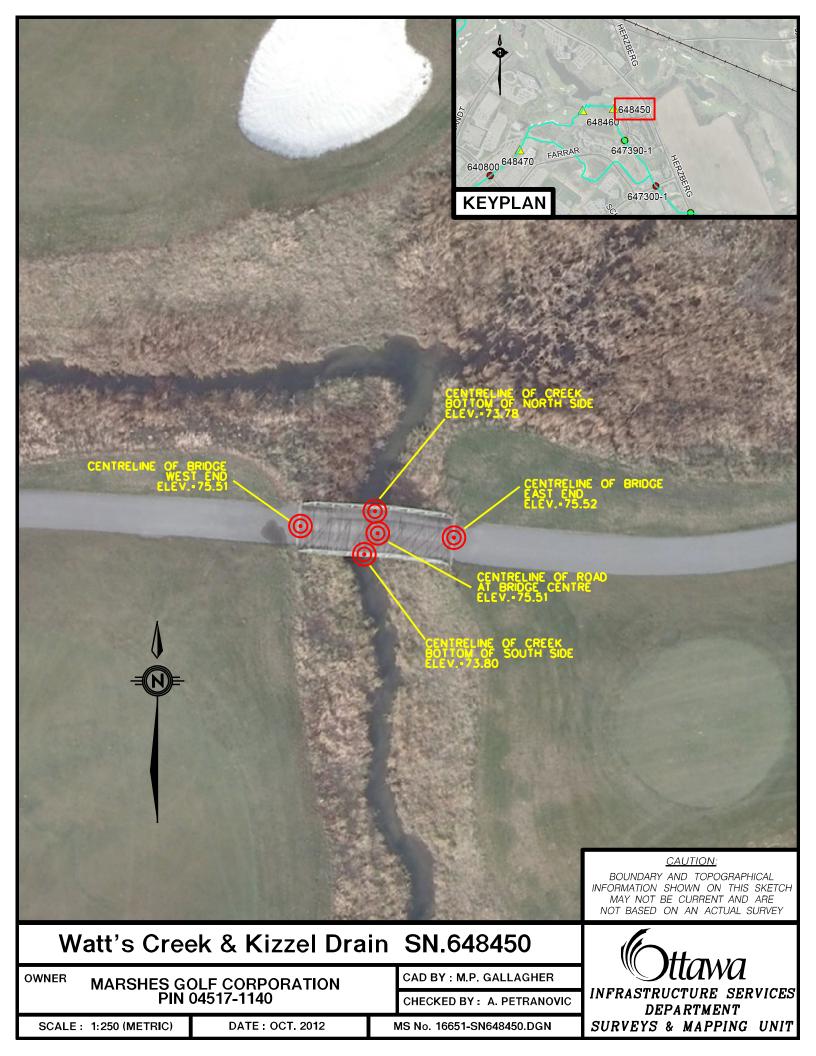
**DEPARTMENT** SURVEYS & MAPPING UNIT

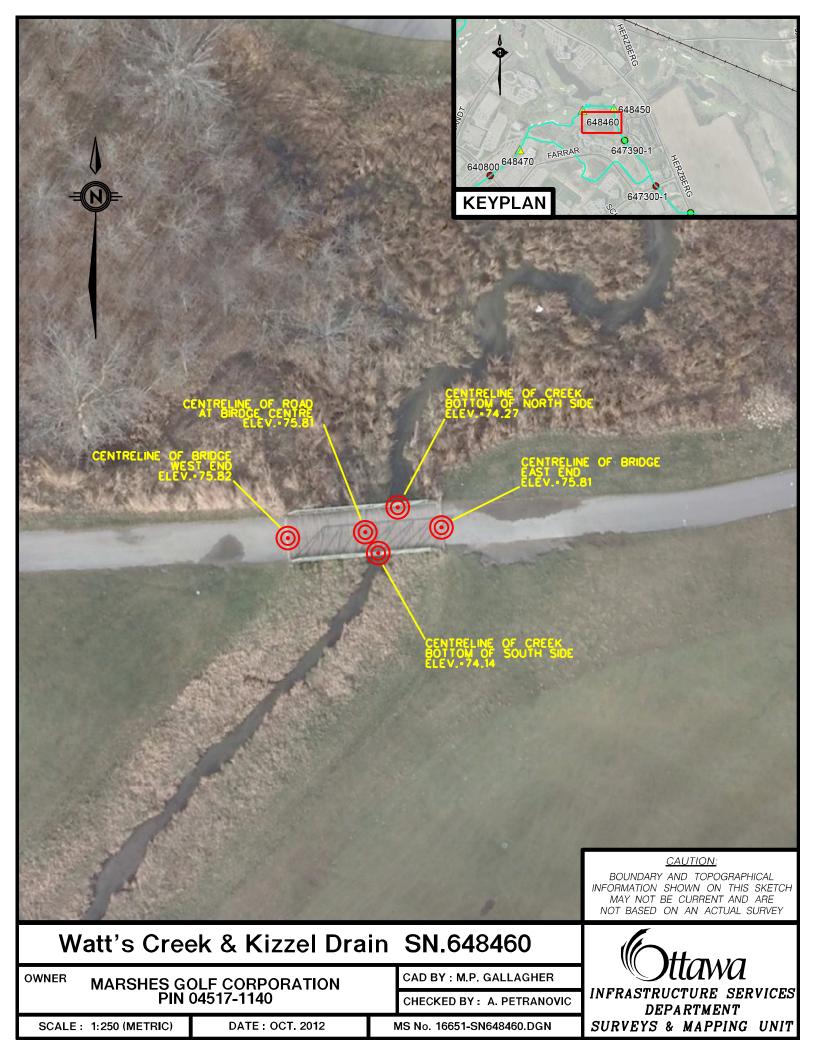


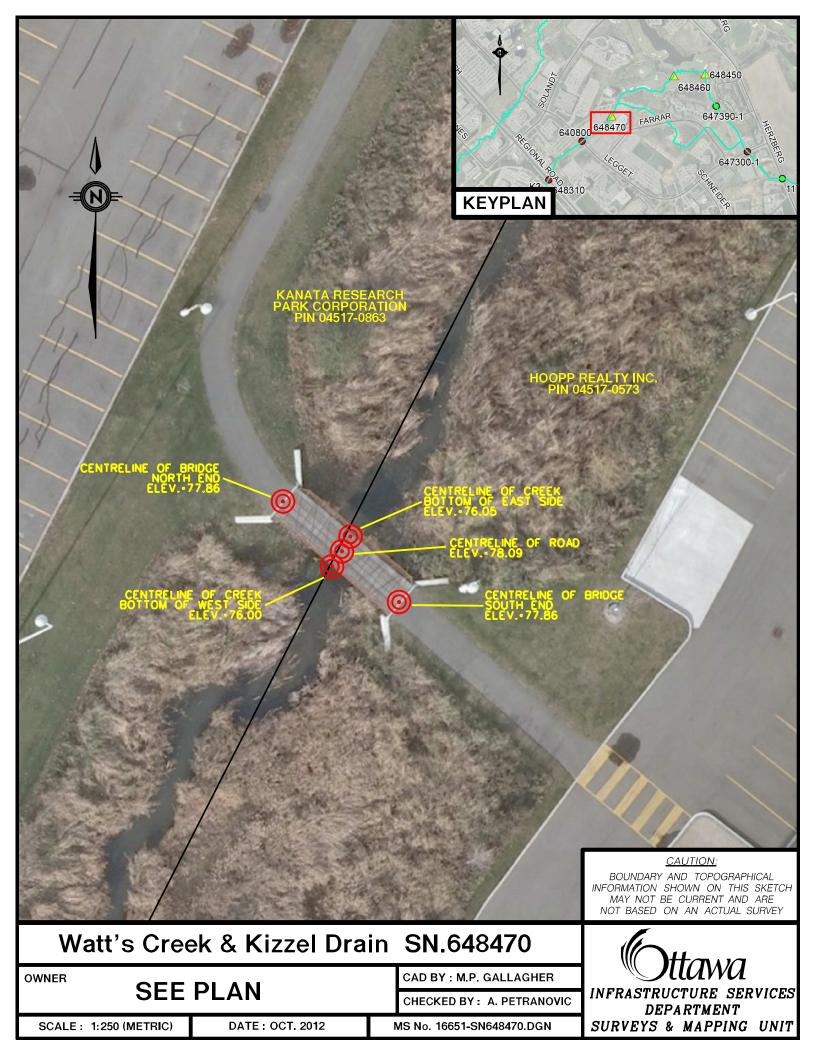


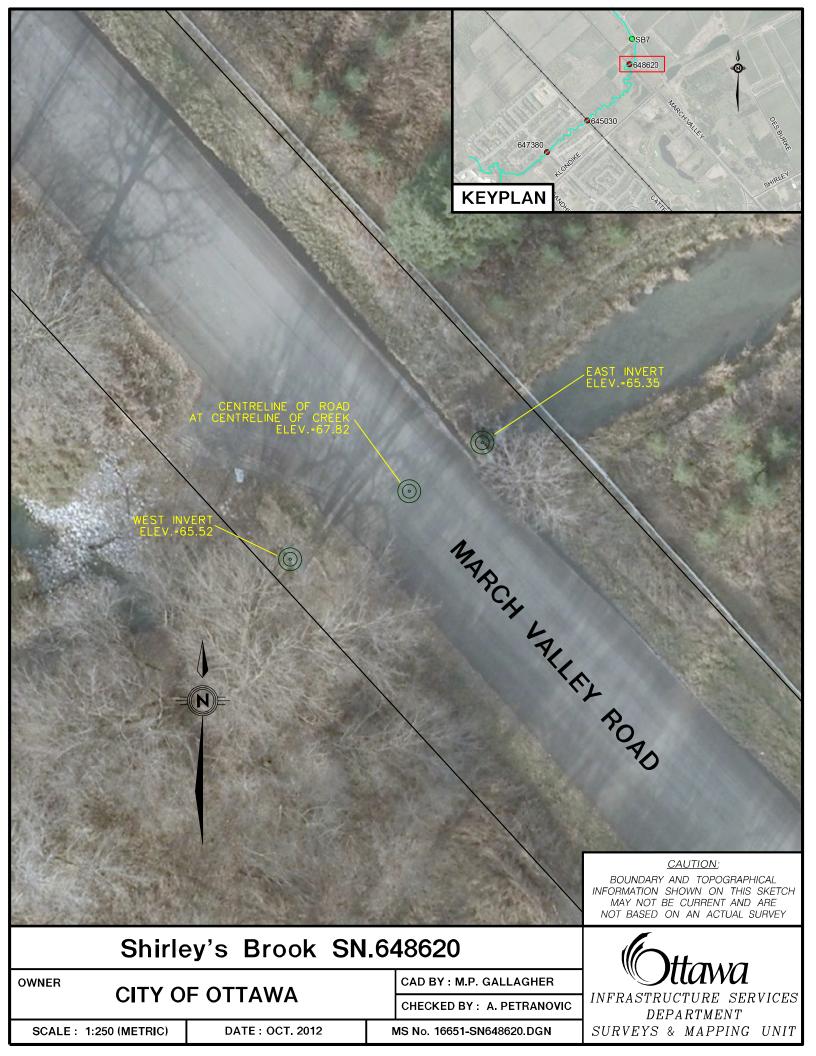


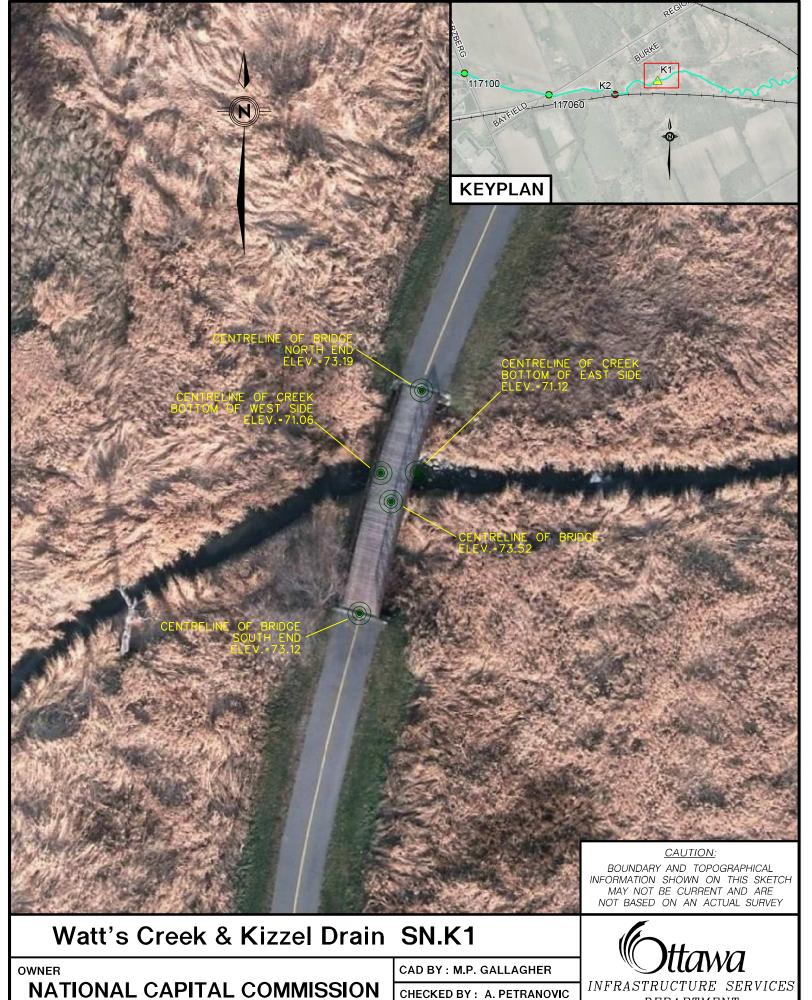












SCALE: 1:250 (METRIC)

DATE: OCT. 2012

**CHECKED BY: A. PETRANOVIC** 

DEPARTMENTMS No. 16651-SN-K1.DGN SURVEYS & MAPPING UNIT



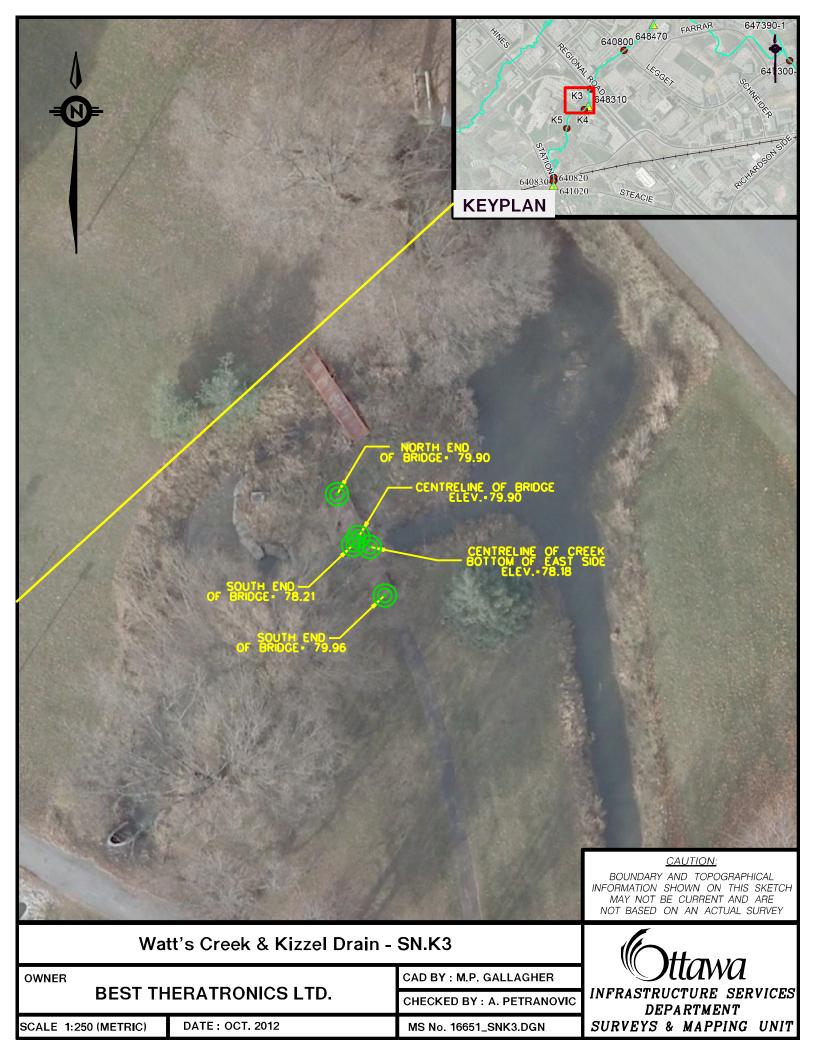
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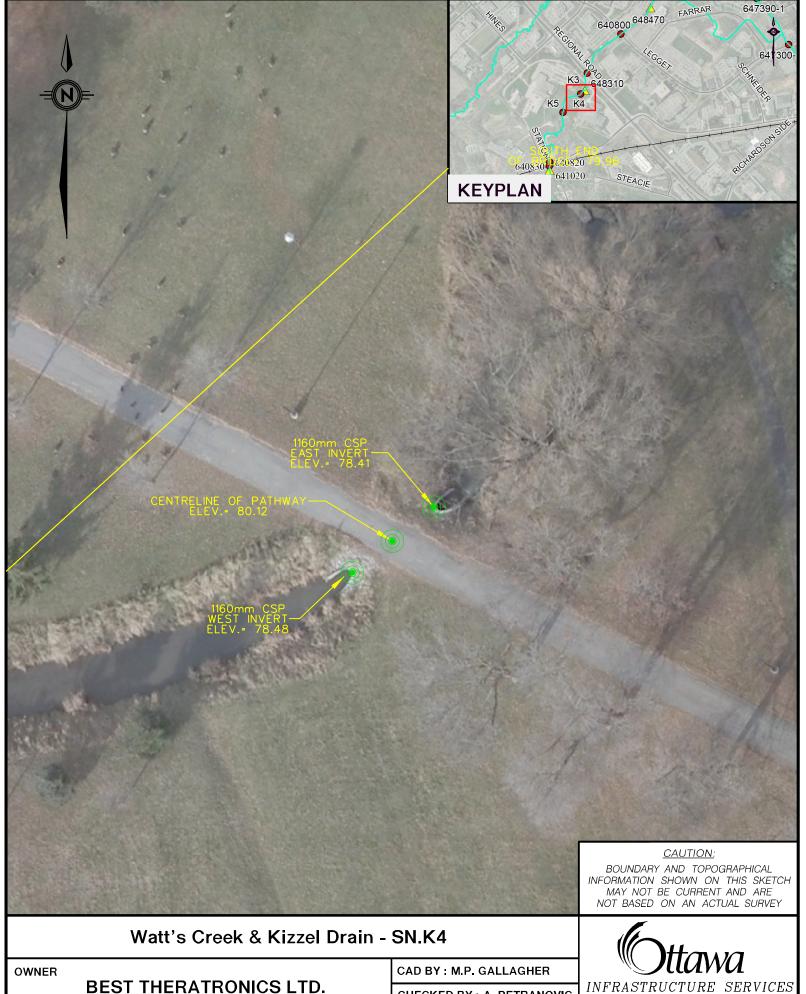
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DEPARTMENT SURVEYS & MAPPING UNIT



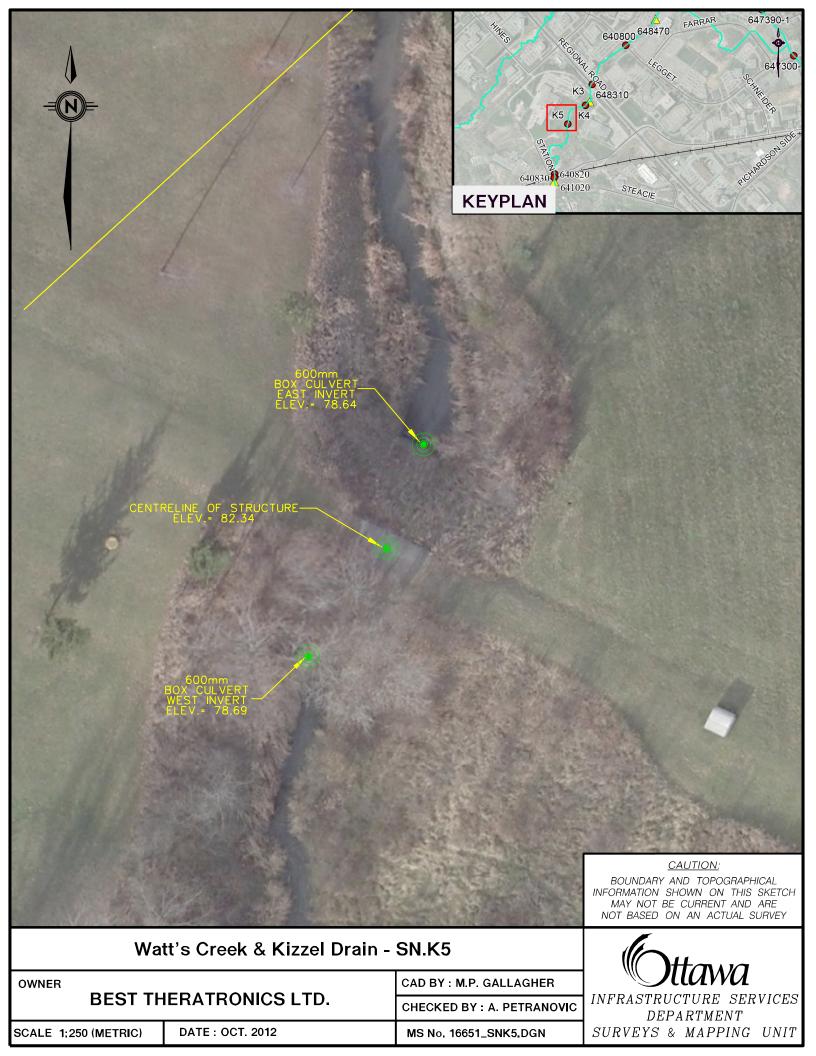


**CHECKED BY: A. PETRANOVIC** 

DATE: OCT. 2012 MS No. 16651\_SNK4.DGN

SCALE 1:250 (METRIC)

DEPARTMENT SURVEYS & MAPPING UNIT





SCALE: 1:250 (METRIC)

**DATE: OCT. 2012** 

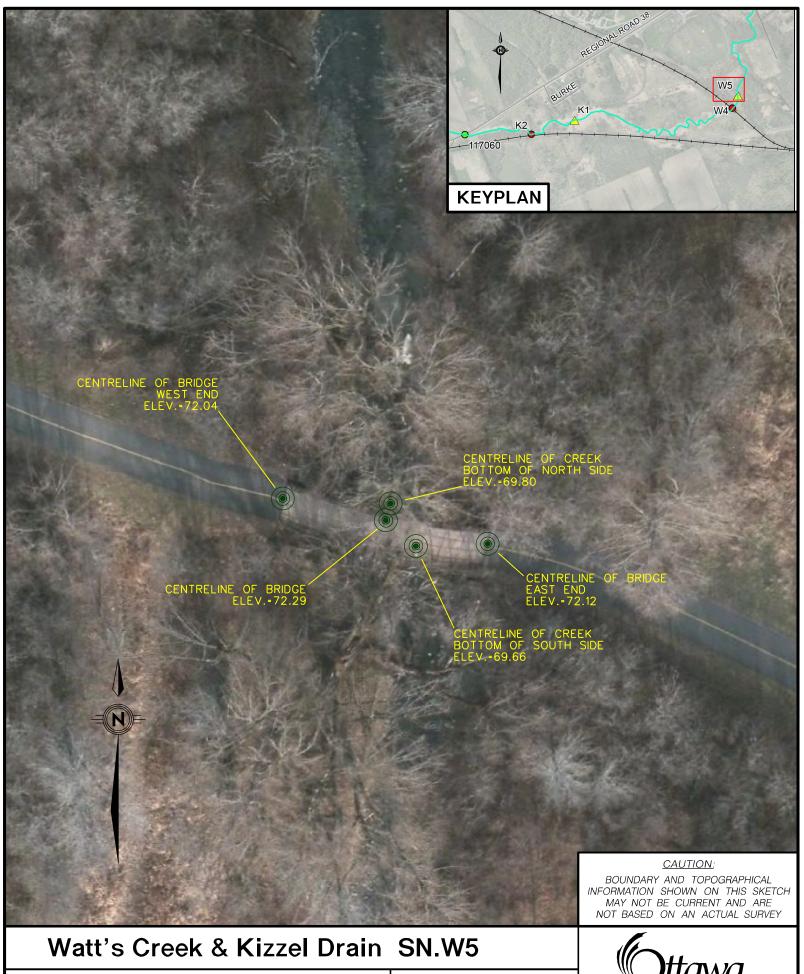
**CHECKED BY: A. PETRANOVIC** 

MS No. 16651-SN-W4.DGN

INFRASTRUCTURE SERVICES

DEPARTMENT

SURVEYS & MAPPING UNIT



**OWNER** 

SCALE: 1:250 (METRIC)

NATIONAL CAPITAL COMMISSION

DATE: OCT. 2012

CAD BY: M.P. GALLAGHER

**CHECKED BY: A. PETRANOVIC** 

MS No. 16651-SN-W5 DGN



DEPARTMENT SURVEYS & MAPPING UNIT

# 1) <u>DA 1</u>

**Comments**: Not found. Inlet likely buried.

#### 2) DA 2

a) Inlet ID: Det\_2B





Inlet Type: Standard catch basin

**X/Y Coordinates:** <u>350566.24 / 5020253.032</u>

**Lead Size**: 200 mm (Invert: 98.24 m)

CB Frame: 99.52 m

**Receiving Sewer**: 675 mm (from GIS Infrastructure data base)

**Comments**: The extent of surface ponding is limited (according to the

golf course superintendant). Detailed drawings of the detention area and inlet structure are not available.

**DWG Reference**: DWG13311-Ponds 1\_2. DWGS: Plan 1 and Plan 2.

# 3) <u>DA 3:</u>

Inlet ID: Det\_3





Inlet Type: Honey comb inlet

**Lead Size**: Unknown. Inlet structure submerged.

Receiving Sewer: Storm sewer conveys flows from the pond's outlet structure

to a channel which conveys flows to detention area 4.

**Comments**: During large storm events, maximum water levels in the

pond are achieved (according to the golf course

superintendant). Excess flows from the pond drain overland

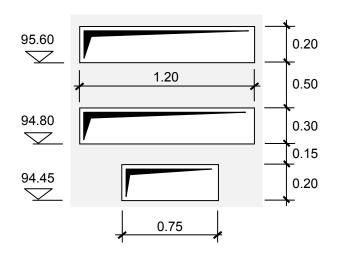
to the receiving channel (see figure on the right).

**DWG Reference**: None available

## 4) <u>DA 4:</u>

Inlet ID: Det 4





**Inlet Type**: Large grate

**X/Y Coordinates:** <u>351153.991 / 5020407.172</u>

**Lead Size**: 750 mm x 200 mm (el. 94.45 m); 1200 mm x 300 mm (el.

94.80 m); 1200 mm x 200 mm (el. 95.60 m).

**Receiving Sewer**: 1050 mm (from GIS infrastructure data base)

**Comments**: Maximum water level in detention area is achieved during

large storm events (according to the golf course

superintendant). Excess flows from the detention area

drains overland to the inlet structure.

**DWG Reference**: DWG13023 Ponds 4 5 5a 6. DWGS: Plan 1, Plan 2,

Plan 6, p&p13.pdf, details6.pdf.

#### 5) <u>DA 5A:</u>

Inlet ID: Det\_5A





Inlet Type: Large grate

**X/Y Coordinates:** <u>351413.922 / 5019912.697</u>

**Lead Size**: 630 mm x 350 mm (Invert: 99.59 m)

**Receiving Sewer:** 600 mm (from GIS infrastructure data base)

**Comments**: Manhole structure contains one opening which restricts the

inflow to 450 L/s (see p&p10.pdf). The Inlet structure's outlet

sewer is 450 mm in diameter.

**DWG Reference**: DWG13023\_Ponds 4\_5\_5a\_6. DWGS: Plan 1, Plan 2,

Plan 3, Plan 6, p&p10.pdf, details5.pdf.

# 6) <u>DA 5:</u>

Inlet ID: Det\_5A





Inlet Type: Honey comb ditch inlet

**X/Y Coordinates:** <u>351375.782 / 5020184.113</u>

**Lead Size**: <u>300 mm</u> (Invert: <u>95.67 m</u>)

**Receiving Sewer**: 525 mm (from GIS infrastructure data base)

**Comments**: Detailed drawing of the inlet structure indicates that a steel

plate cover with a 400mm x 150 mm opening should have

been installed at this location.

**DWG Reference**: DWG13023\_Ponds 4\_5\_5a\_6. DWGS: Plan 1, Plan 2,

Plan 6, p&p11.pdf, details4.pdf.

#### 7) <u>DA 6A:</u>

Inlet ID: Det\_6





**Inlet Type**: Honey comb ditch inlet

**X/Y Coordinates:** <u>351314.481 / 5020464.599</u>

**Lead Size**: <u>250 mm</u> (Invert: <u>94.15 m</u>)

Receiving Sewer: 1050 mm (from GIS infrastructure data base)

**Comments**: Significant ponding occurs during large rainfall events

(according to the golf course superintendant).

**DWG Reference**: DWG13023\_Ponds 4\_5\_5a\_6. DWGS: Plan 1, Plan 2, Plan

6, p&p11.pdf, details4.pdf.

# 8) <u>DA 6B:</u>

Inlet ID: Det\_6





**Inlet Type**: Honey comb ditch inlet

**X/Y Coordinates:** 351532.424 / 5020139.209

**Lead Size**: <u>200 mm</u> (Invert: <u>97.12 m</u>)

Receiving Sewer: 750 mm (from GIS infrastructure data base)

**DWG Reference**: None available

## 9) <u>DA 7:</u>

Inlet ID: Det\_7





**Inlet Type**: Ditch inlet

**X/Y Coordinates:** 351010.856 / 5020937.493

**Lead Size**: <u>300 mm</u> (Invert: <u>92.04 m</u>)

**Receiving Sewer**: 600 mm (from GIS infrastructure data base)

**DWG Reference**: None available

**Comments**: No history of surface ponding at this location (according to

the golf course superintendant).

## 10) <u>DA 8:</u>

Inlet ID: Det\_8





**Inlet Type**: Honey comb ditch inlet

X/Y Coordinates: <u>350838.78 / 5020862.737</u>

**Lead Size**: <u>250 mm</u> (Invert: <u>91.84 m</u>)

**Receiving Sewer**: 2550 mm (from GIS infrastructure data base)

**Comments**: Creek inlets into an outlet structure (see below). The outlet

structure conveys flows to the 2550 mm storm sewer on

Weslock Way via a 250 mm storm sewer.

The outlet structure is equipped with a honey comb inlet. Historical maximum water levels observed in detention area 8 are well below the honey comb inlet elevation (according

to the golf course superintendant).

**Potential spill:** 350858.533 / 5020856.925 (Elevation: 95.84)

**DWG Reference**: DWG13180 Ponds 8 9 10 11. DWGS: Plan 1, Plan 5,

Plan 6, Plan 10, Plan 15.pdf, details4.pdf.

# 11) <u>DA 9:</u>

Inlet ID: Det\_9





**Inlet Type**: Unknown. Inlet covered by mud and vegetation.

**X/Y Coordinates:** 350680.69 / 5021044.95

**Lead Size**: 300 mm (Invert: <u>92.82 m</u>)

Receiving Sewer: 2700 mm (from GIS infrastructure data base)

**Comments:** Drawings indicate that a precast concrete ditch inlet

structure with a 300 mm lead size service this detention

area.

**DWG Reference**: DWG13180\_Ponds 8\_9\_10\_11. DWGS: Plan 1, Plan 6,

Plan 11, Plan 15, P&P 1, Details2.

# 12) <u>DA 10A:</u>

Inlet Id: Det\_10



**Inlet Type**: Fishbone (square frame, herring bone openings)

**X/Y Coordinates:** 350086.363 / 5021117.785

**Lead Size**: <u>150 mm</u> (Invert: <u>98.15 m</u>)

**Comments:** Receives flows from a splash park

**DWG Reference**: DWG13180\_Ponds 8\_9\_10\_11. DWGS: P&P 4, details2.

# 13) <u>DA 10B:</u>

Inlet Id: Det\_10



**Inlet Type**: Honey comb ditch inlet

**X/Y Coordinates:** 350229.775 / 5021059.455

**Lead Size**: <u>300 mm</u> (Invert: <u>98.24 m</u>)

**DWG Reference**: DWG13180\_Ponds 8\_9\_10\_11. DWGS: P&P 4, details2.

NOTE: Underlined information was measured by survey on April 10, 2012

# 14) <u>DA 11:</u>

Inlet ID: Det 11





**Inlet Type**: honey comb ditch inlet

**X/Y Coordinates:** <u>350711.768 / 5021279.614</u>

**Lead Size**: <u>200 mm</u> (Invert: <u>93.70 m</u>)

Receiving Sewer: 2700 mm (from GIS infrastructure data base)

**Comments:** Storage area is significant (refer to figure above)

DWG Reference: DWG13180\_Ponds 8\_9\_10\_11. DWGS: Plan 1, Plan 11,

Plan 15.

NOTE: Underlined information was measured by survey on April 10, 2012

TABLE B-1 CITY OF OTTAWA

SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

CITY OF OTTAWA STREAM GAUGE LOCATION CK5-01 ON SHIRLEY'S BROOK

Version: 60264539 Project No.: 2/6/2015 Date: Design: GAF/SN/CL

#### **AECOM Survey Measurements**

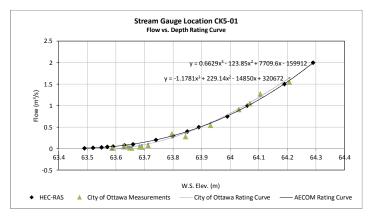
3.33 1 Crest Gauge Inv. Rod Reading = W/C Inv. Rod Reading = 3.33 <sup>1</sup> Crest Gauge Above W/C Invert = 0.008 1 HEC-RAS/Surveyed W/C Invert = 63.35 <sup>1</sup> Crest Gauge Invert = 63.3550 Notes: 1. AECOM survey data

- 2. City of Ottawa survey data
- 3. Flow estimates calculated using flow vs. depth rating curve developed using HEC-RAS.
- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit 3  $^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$

<b>Ottawa</b>
---------------

Flow vs. Depth Curve Fitting							
Parameter HEC-RAS							
a	0.66						
b	-123.85						
С	7709.58						
d	-159911.76						

HEC-RAS Rating Curve		City of Ottawa M	easurements <sup>2</sup>	AECOM Fitted Rating Curve	City of Ottawa Rating Curve	
Upstream	Face	Upstrear	n Face	Upstream Face	Upstream Face	
Flow (m³/s)	W.S. Elev (m)	Flow (m³/s)	W.S. Elev (m)	Flow (m³/s)	Flow (m³/s)	
0.01	63.49	0.01	63.59	0.05	-0.01	
0.02	63.52	0.01	63.59	0.05	0.00	
0.03	63.55	0.01	63.66	0.10	0.04	
0.04	63.57	0.02	63.65	0.10	0.04	
0.05	63.59	0.04	63.69	0.14	0.08	
0.08	63.63	0.04	63.68	0.13	0.07	
0.10	63.66	0.04	63.63	0.08	0.02	
0.20	63.74	0.04	63.64	0.09	0.03	
0.30	63.8	0.06	63.63	0.08	0.02	
0.40	63.85	0.08	63.71	0.17	0.11	
0.50	63.89	0.28	63.84	0.39	0.36	
0.75	63.99	0.35	63.80	0.29	0.26	
1.00	64.06	0.54	63.93	0.59	0.60	
1.50	64.19	0.91	64.03	0.89	0.93	
2.00	64.29	1.05	64.07	1.02	1.07	
		1.28	64.11	1.16	1.21	
		1.55	64.21	1.59	1.65	



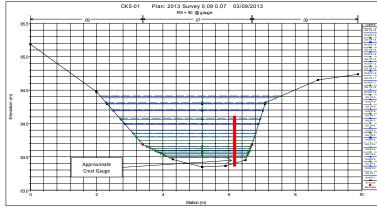




TABLE B-2 CITY OF OTTAWA

SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

CITY OF OTTAWA STREAM GAUGE LOCATION CK6-002 ON WATT'S CREEK

Project No.: 60264539

Date: 2/6/2015

Design: GAF/SN/CL

#### **AECOM Survey Measurements**

Upstream

Crest Gauge Inv. Rod Reading = 3.29 1

W/C Inv. Rod Reading = 3.35 \(^{1}\)
Crest Gauge Above W/C Invert = 0.060 \(^{1}\)
HEC-RAS/Surveyed W/C Invert = 64.42 \(^{2}\)
Crest Gauge Invert = 64.4810

Notes: 1. AECOM survey data

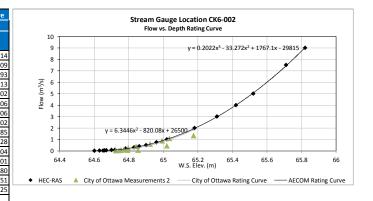
2. City of Ottawa survey data

- ${\it 3. Flow \ estimates \ calculated \ using \ flow \ vs. \ depth \ rating \ curve \ developed \ using \ HEC-RAS.}$
- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit 3 rd order polynomial  $y = ax^3 + bx^2 + cx + d$

1	
	<b>)</b> ttawa

Flow	rs.Depth Curve Fittin
Parameter	HEC-RAS
а	0.20
b	-33.27
С	1767.07
d	-29815.13

HEC-RAS Rati	ing Curve	City of Ottawa M	easurements <sup>2</sup>	AECOM Fitted Rating Curve	City of Ottawa Rating Curve
Upstream	r Face	Upstrear	n Face	Upstream Face	Upstream Face
Flow (m <sup>3</sup> /s)	W.S. Elev (m)	Flow (m <sup>3</sup> /s)	W.S. Elev (m)	Flow (m <sup>3</sup> /s)	Flow (m³/s)
0.01	64.6	0.24	64.80	0.23	0.14
0.02	64.63	0.10	64.77	0.18	0.09
0.03	64.65	0.45	65.02	1.02	0.93
0.04	64.66	0.07	64.79	0.22	0.13
0.05	64.67	0.02	64.72	0.10	0.02
0.08	64.7	0.06	64.75	0.14	0.06
0.10	64.72	0.08	64.76	0.14	0.06
0.20	64.78	0.03	64.73	0.10	0.02
0.30	64.83	1.34	65.18	1.94	1.85
0.40	64.86	0.07	64.85	0.37	0.28
0.50	64.9	0.03	64.74	0.13	0.04
0.75	64.96	1.09	65.04	1.10	1.01
1.00	65.02	0.87	64.99	0.89	0.80
2.00	65.18	0.59	64.92	0.60	0.51
3.00	65.31	0.40	64.84	0.34	0.25
4.00	65.42				
5.00	65.52				
7.50	65.71				
9.00	65.82				



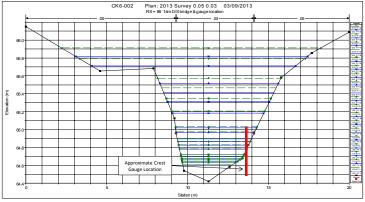




TABLE B-3 CITY OF OTTAWA

# SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

### CREST GAUGE MONITORING LOCATION KD-1 KIZELL DRAIN AT HERZBERG ROAD

Version: 60264539 Project No.: Date: 2/6/2015 Design: GAF/SN/CL

August 8, 2013

September 2, 2013 October 19, 2013



#### **AECOM Survey Measurements** Flow vs. Depth Curve Fitting Upstream Parameter HEC-RAS 2012 2013 -0.88 Crest Gauge Inv. Rod Reading = 3.13 1 196.79 4.02 W/C Inv. Rod Reading = 4.18 3.51 <sup>1</sup> -14587.59 0.380 Crest Gauge Above W/C Invert = 0.160 360247.53

HEC-RAS/Surveyed W/C Invert = 72.10 72.10<sup>2</sup> Crest Gauge Invert = 72.48

0.39

0.25

0.25

Notes: 1. AECOM survey data

- 2. Based on LiDAR, design information and City survey data.
- 3. Flow estimates calculated using flow vs. depth rating curve developed using HEC-RAS.

1.27

0.76

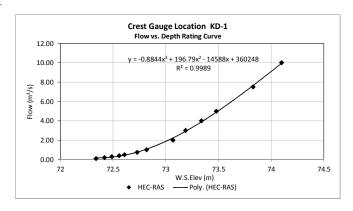
0.76

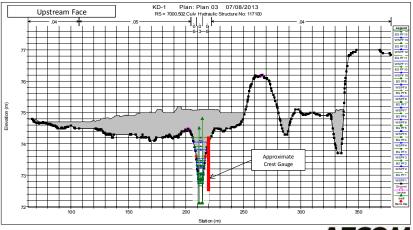
- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit 3  $^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$
- 6. Orange highlighted measurement used in comparison with SWMHYMO output from observed event.

				HEC	-RAS
		Upstream Face		Upstrea	am Face
Reading Date	Depth Reading (m)	Elevation (m)	Approx. Flow (m3/s) <sup>3</sup>	Flow (m³/s)	W.S. Elev (m)
May 30, 2012	0.06	72.32	0.18	0.10	72.34
June 5, 2012	0.22	72.48	0.23	0.20	72.42
June 13, 2012	0.13	72.39	0.17	0.30	72.49
June 27, 2012	0.07	72.33	0.18	0.40	72.56
July 24, 2012	0.07	72.33	0.18	0.50	72.61
August 8, 2012	0.05	72.31	0.19	0.75	72.73
August 16, 2012	0.04	72.30	0.19	1.00	72.82
September 5, 2012	0.03	72.29	0.20	2.00	73.07
September 17, 2012	0.59	72.85	1.19	3.00	73.19
September 26, 2012	0.04	72.30	0.19	4.00	73.34
October 16, 2012	0.06	72.32	0.18	5.00	73.48
November 2, 2012	0.03	72.29	0.20	7.50	73.83
November 22, 2012	0.03	72.29	0.20	10.00	74.1
July 19, 2013	0.28	72.76	0.86		

72.87

72.73







#### TABLE B-4 CITY OF OTTAWA

SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

CREST GAUGE MONITORING LOCATION KD-2 KIZELL DRAIN AT MARCH / STATION ROAD

 Version:
 1

 Project No.:
 60264539

 Date:
 2/6/2015

 Design:
 GAF/SN/CL



#### MTO Chart 2.32 - Inlet Control for Circular CSP (Inlet Type = 3)

Depth (m)	Elev (m)	HW/D	Q (m <sup>3</sup> /s)	Depth Reading	Flow (m³/s)
1.2	79.33	1.00	1.8	79.1	1.25
1.5	79.63	1.25	2.3	79.79	2.61
2	80.13	1.67	3.1	80.92	3.90
2.5	80.63	2.08	3.7	81.59	4.45
3	81.13	2.50	4.0		
3 37	81 50	2 81	44		

CHECK

#### **AECOM Survey Measurements**

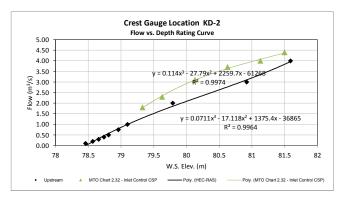
Ups	tream		Parameter	Upstream	MTO Chart 2.32
·	2012	2013	a	0.07	0.11
Crest Gauge Inv. Rod Reading =	4.010	3.368 <sup>1</sup>	b	-17.12	-27.79
W/C Inv. Rod Reading =	4.185	3.583 <sup>1</sup>	c	1375.45	2259.75
Crest Gauge Above W/C Invert =	0.175	0.215 <sup>1</sup>	d	-36865.26	-61267.75
HEC-RAS/Surveyed W/C Invert =	78.13	78.13 <sup>2</sup>			
Crest Gauge Invert =		78.35			

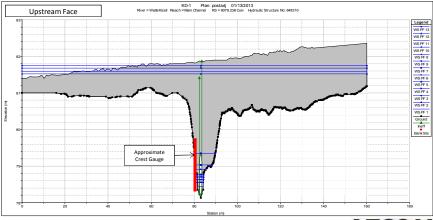
Flow vs. Depth Curve Fitting

Notes: 1. AECOM survey data

- 2. Based on LiDAR, design information and City survey data.
- 3. Flow estimates calculated using flow vs. depth rating curve developed using HEC-RAS.
- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit  $3^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$
- 6. Orange highlighted measurement used in comparison with SWMHYMO output from observed event.
- 7. Red highlighted flow estimates suspect.

			HEC-RAS R	ating Curve	
	Up	stream of Culv	ert	Upstrea	ım Face
Reading Data	Depth Reading (m)	Elevation (m)	Approx. Flow (m3/s) <sup>3</sup>	Flow (m <sup>3</sup> /s)	W.S. Elev (m)
May 30, 2012	0.18	78.48	0.03	0.10	78.46
June 5, 2012	0.36	78.67	0.34	0.20	78.57
June 13, 2012	0.32	78.63	0.28	0.30	78.66
June 27, 2012	0.11	78.42	> 0.1	0.40	78.74
July 24, 2012	0.07	78.38	> 0.1	0.50	78.81
August 8, 2012	0.08	78.39	> 0.1	0.75	78.96
August 16, 2012	0.07	78.38	> 0.1	1.00	79.1
September 5, 2012	0.05	78.36	> 0.1	2.00	79.79
September 17, 2012	0.52	78.83	0.60	3.00	80.92
September 26, 2012	0.05	78.36	> 0.1	4.00	81.59
October 16, 2012	0.02	78.33	> 0.1		
November 2, 2012	0.22	78.53	0.11		
November 22, 2012	0.15	78.46	0.10		
July 17, 2013	0.13	78.48	0.02		
August 8, 2013	0.58	78.93	0.75		
August 30, 2013	0.37	78.72	0.42		
October 19, 2013	0.45	78.80	0.55		







## TABLE B-5

#### CITY OF OTTAWA

SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

CREST GAUGE MONITORING LOCATION WC-1 WATT'S CREEK UPSTREAM OF CONFLEUNCE WITH KIZELL DRAIN (NCC LANDS)

 Version:
 1

 Project No.:
 60264539

 Date:
 2/6/2015

 Design:
 GAF/SN/CL

August 8, 2013

August 30, 2013

October 19, 2013

0.58

0.37

0.45

73.80

73.59

73.67



AECOM Surv	ey Measureme	Flow vs. Depth Curve Fitt			
Ups	tream		Parameter	HEC-RAS	
	2012	2013	a	-3.02	
Crest Gauge Inv. Rod Reading =	3.08	3.18 1	b	669.45	
W/C Inv. Rod Reading =	3.34	3.35 1	с	-49420.13	
Crest Gauge Above W/C Invert =	0.260	0.178 1	d	1215872.87	
HEC-RAS/Surveyed W/C Invert =	73.10	73.04 <sup>2</sup>			
Crest Gauge Invert =		73.22			

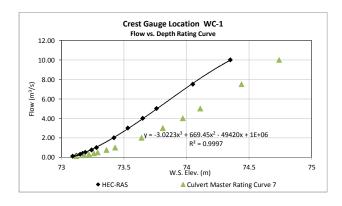
Notes: 1. AECOM survey data

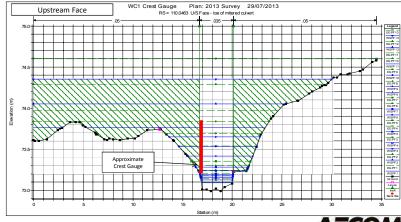
- 2. Based on LiDAR, design information and field measurements.
- 3. Flow estimates calculated using flow vs. depth rating curve developed using HEC-RAS.
- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit  $3^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$
- 6. Orange highlighted measurement used in comparison with SWMHYMO output from observed event.
- 7. Culvert master rating curve assumes a arch culvert with dimension 3100 x 1960mm.

				HEC-	-RAS	Culvert Master	Rating Curve 7	
	Upstream Face			Upstrea	Upstream Face		Upstream Face	
Reading Date	Depth Reading (m)	Elevation (m)	Approx. Flow (m3/s) <sup>3</sup>	Flow (m <sup>3</sup> /s)	W.S. Elev (m)	Flow (m³/s)	W.S. Elev (m)	
May 30, 2012	0.32	73.68	4.18	0.10	73.09	0.10	73.12	
June 5, 2012	0.11	73.47	2.43	0.20	73.12	0.20	73.18	
June 13, 2012	0.02	73.38	1.74	0.30	73.15	0.30	73.22	
June 27, 2012	0.10	73.46	2.35	0.40	73.17	0.40	73.26	
July 24, 2012	0.05	73.41	1.96	0.50	73.19	0.50	73.29	
August 8, 2012	0.15	73.51	2.76	0.75	73.24	0.75	73.36	
August 16, 2012	0.04	73.40	1.89	1.00	73.28	1.00	73.43	
September 5, 2012	0.05	73.41	1.96	2.00	73.42	2.00	73.64	
September 17, 2012	0.67	74.03	7.42	3.00	73.53	3.00	73.81	
September 26, 2012	0.15	73.51	2.76	4.00	73.65	4.00	73.97	
October 16, 2012	0.13	73.49	2.59	5.00	73.76	5.00	74.11	
November 2, 2012	0.15	73.51	2.76	7.50	74.05	7.50	74.44	
November 22, 2012	0.17	73.53	2.92	10.00	74.35	10.00	74.74	
July 17, 2013	0.13	73.35	1.53					

5.33

3.44







### TABLE B-6

Design:

#### CITY OF OTTAWA

#### SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

CREST GAUGE MONITORING LOCATION SB-1 SHIRLEY'S BROOK NORTH BRANCH AT MAXWELL BRIDGE ROAD

Version: 1
Project No.: 60264539
Date: 2/6/2015

August 8, 2013

August 26, 2013

October 20, 2013



AECOM Survey Measurements Upstream			Flow vs. Depth Curve Fitting		
			Parameter	HEC-RAS	
	2012	2013	a	2.12	
Crest Gauge Inv. Rod Reading =	3.74	4.30 <sup>1</sup>	b	-449.76	
W/C Inv. Rod Reading =	4.08	4.425 <sup>1</sup>	С	31863.03	
Crest Gauge Above W/C Invert =	0.339	0.130 1	d	-752243.48	
HEC-RAS/Surveyed W/C Invert =	71.90	71.88 <sup>2</sup>			
Crest Gauge Invert =		72 01			

Notes: 1. AECOM survey data

GAF/SN/CL

- 2. Based on LiDAR, design information and field measurements.
- ${\it 3. Flow estimates calculated using flow vs. depth rating curve developed using {\it HEC-RAS}.}$

1.20

0.30

0.36

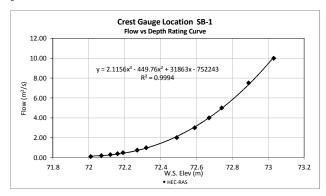
- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit  $3^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$
- 6. Orange highlighted measurement used in comparison with SWMHYMO output from observed event.
- 7. Linear equation was used for elevation lower than the local minimum of the 3rd degree polynomial rating curve.

	HEC-RAS				
	Upstream Face			Upstream Face	
Reading Date	Depth Reading (m)	Elevation (m)	Approx. Flow (m3/s) <sup>3</sup>	Flow (m <sup>3</sup> /s)	W.S. Elev (m)
May 30, 2012	n/a			0.10	72.01
June 5, 2012	0.02	72.26	0.68	0.20	72.07
June 13, 2012	n/a			0.30	72.12
June 27, 2012	n/a			0.40	72.16
July 24, 2012	n/a			0.50	72.19
August 8, 2012	n/a			0.75	72.27
August 16, 2012	n/a			1.00	72.32
September 5, 2012	n/a			2.00	72.49
September 17, 2012	0.30	72.54	2.57	3.00	72.59
September 26, 2012	0.05	72.29	0.81	4.00	72.67
October 16, 2012	0.05	72.29	0.81	5.00	72.74
November 2, 2012	0.02	72.26	0.68	7.50	72.89
November 22, 2012	0.03	72.27	0.72	10.00	73.03
July 19, 2013	0.26	72.27	0.73		

72.36

72.13

0.35



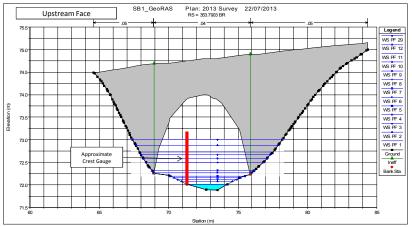




TABLE B-7

#### CITY OF OTTAWA

SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY CREST GAUGE MONITORING LOCATION SB-2 SHIRLEY'S BROOK AT KLONDIKE ROAD

Version: Project No.: 60264539 Date: 2/6/2015 Design: GAF/SN/CL

August 26, 2013

October 19, 2013



AECOM Survey Measurements Upstream		Flow vs. Depth Curve Fitting		
		Parameter	HEC-RAS	
	2012	2013	a	-3.69
Crest Gauge Inv. Rod Reading =	3.66	3.34 <sup>1</sup>	b	804.92
W/C Inv. Rod Reading =	3.92	3.63 <sup>1</sup>	С	-58554.63
Crest Gauge Above W/C Invert =	0.260	0.294 1	d	1419644.14
HEC-RAS/Surveyed W/C Invert =	71.54	71.54 <sup>2</sup>		
Crest Gauge Invert =		71.83		

Notes: 1. AECOM survey data

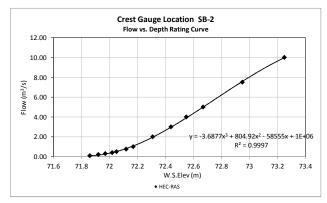
- 2. Based on LiDAR, design information and City survey data.
- 3. Flow estimates calculated using flow vs. depth rating curve developed using HEC-RAS.

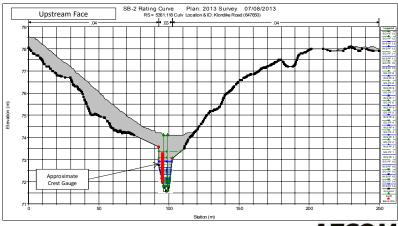
0.33

- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit 3  $^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$
- 6. Orange highlighted measurement used in comparison with SWMHYMO output from observed event.

	HEC-RAS				
	Upstream Face			Upstream Face	
Reading Date	Depth Reading (m)	Elevation (m)	Approx. Flow (m3/s) <sup>3</sup>	Flow (m <sup>3</sup> /s)	W.S. Elev (m)
May 30, 2012	0.06	71.86	0.10	0.10	71.86
June 5, 2012	0.22	72.02	0.41	0.20	71.92
June 13, 2012	0.13	71.93	0.18	0.30	71.97
June 27, 2012	0.07	71.87	0.11	0.40	72.02
July 24, 2012	0.07	71.87	0.11	0.50	72.05
August 8, 2012	0.05	71.85	0.10	0.75	72.12
August 16, 2012	0.04	71.84	0.10	1.00	72.17
September 5, 2012	0.03	71.83	0.10	2.00	72.31
September 17, 2012	0.59	72.39	2.57	3.00	72.44
September 26, 2012	0.04	71.84	0.10	4.00	72.55
October 16, 2012	0.06	71.86	0.10	5.00	72.67
November 2, 2012	0.03	71.83	0.10	7.50	72.95
November 22, 2012	0.03	71.83	0.10	10.00	73.25
July 19, 2013	0.24	72.07	0.61	•	
July 29, 2013	0.45	72.28	1.79		

71.99







#### TABLE B-8 CITY OF OTTAWA

## SHIRLEY'S BROOK & WATT'S CREEK - PHASE 2 STORMWATER MANAGEMENT STUDY

#### CREST GAUGE MONITORING LOCATION SB-3 SHIRLEY'S BROOK AT MARCH ROAD

Version: Project No.: 60264539 Date: 2/6/2015 Design: GAF/SN/CL

August 8, 2013

September 2, 2013

October 19, 2013



AECOM Surv	ey Measureme	nts	Flow vs. Depth	Curve Fitting
Upst	ream		Parameter	HEC-RAS
	2012	2013	a	-0.72
Crest Gauge Inv. Rod Reading =	4.24	2.65 1	b	174.69
W/C Inv. Rod Reading =	4.56	2.96 <sup>1</sup>	С	-14080.66
Crest Gauge Above W/C Invert =	0.320	0.311 1	d	377918.49
HEC-RAS/Surveyed W/C Invert =	77.51	77.51 <sup>2</sup>		
Crest Gauge Invert =		77.82		

Notes: 1. AECOM survey data

0.57

0.31

0.25

- 2. Based on LiDAR, design information and City survey data.
- 3. Flow estimates calculated using flow vs. depth rating curve developed using HEC-RAS.

1.17

0.35

0.27

- 4. n/a = flow depth below crest gauge elevation.
- 5. Blue text calculated using curve fit  $3^{rd}$  order polynomial  $y = ax^3 + bx^2 + cx + d$
- 6. Orange highlighted measurement used in comparison with SWMHYMO output from observed event.

				HEC	-RAS
	Upstream Face			Upstream Face	
Reading Date	Depth Reading (m)	Elevation (m)	Approx. Flow (m3/s) <sup>3</sup>	Flow (m³/s)	W.S. Elev (m)
May 30, 2012	0.06	77.89	0.26	0.10	77.9
June 5, 2012	0.22	78.05	0.25	0.20	77.98
June 13, 2012	0.13	77.96	0.22	0.30	78.04
June 27, 2012	0.07	77.90	0.25	0.40	78.09
July 24, 2012	0.07	77.90	0.25	0.50	78.17
August 8, 2012	0.05	77.88	0.27	0.75	78.26
August 16, 2012	0.04	77.87	0.28	1.00	78.35
September 5, 2012	0.03	77.86	0.30	2.00	78.56
September 17, 2012	0.59	78.42	1.30	3.00	78.72
September 26, 2012	0.04	77.87	0.28	4.00	78.85
October 16, 2012	0.06	77.89	0.26	5.00	78.94
November 2, 2012	0.03	77.86	0.30	7.50	79.14
November 22, 2012	0.03	77.86	0.30	10.00	79.41
July 19, 2013	0.27	78.09	0.29	•	

78.39

78.13

