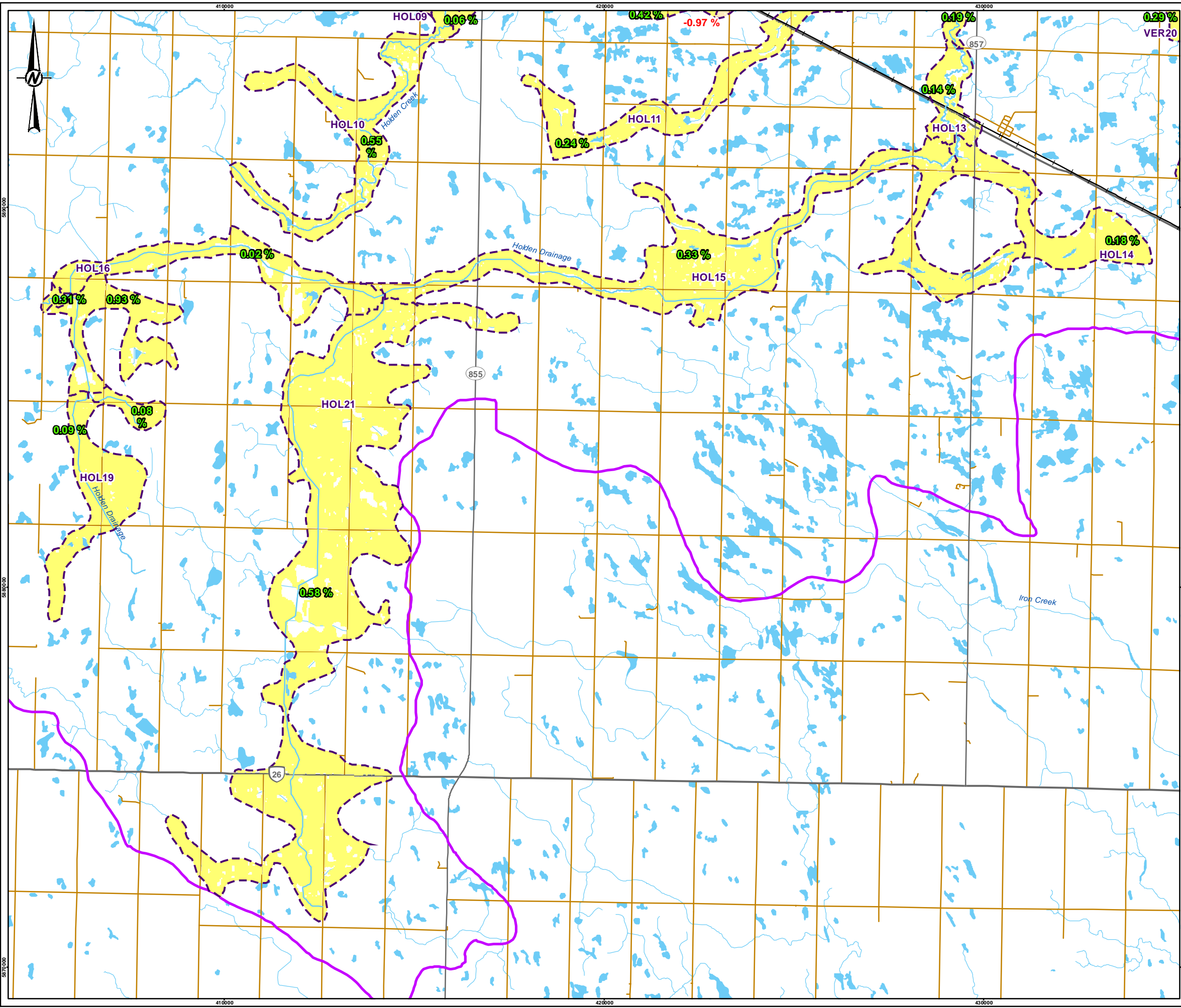




# **ATTACHMENT 3**

## **Landcover Change Maps**



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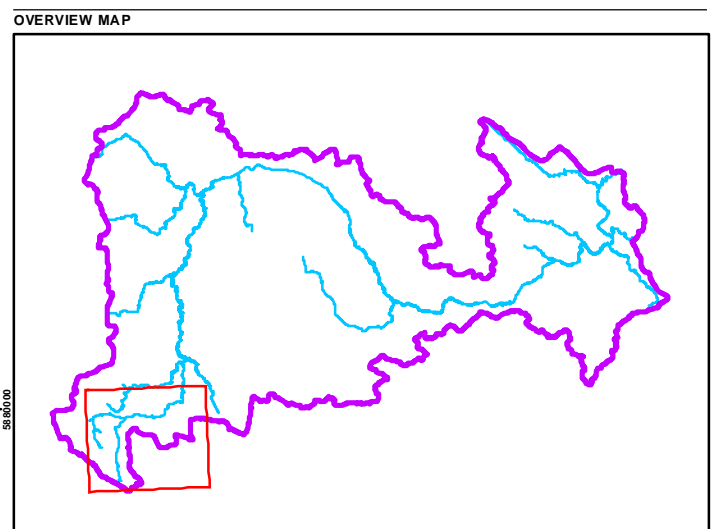
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)

**Color Scale for Landcover Type Change (%)**

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

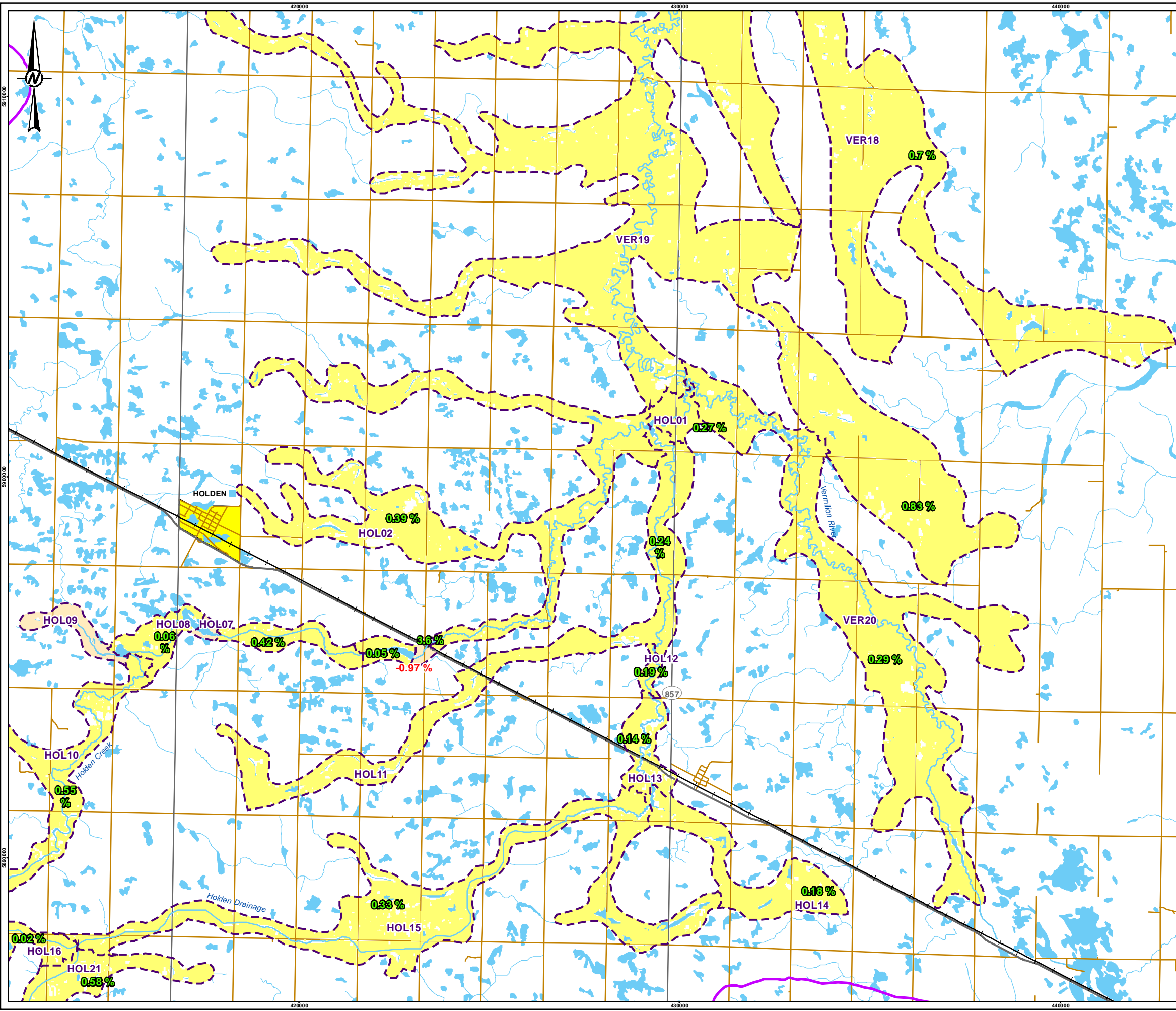
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

P:\1534932\Maping\MXD\fig\hobden\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:21:29 PM  
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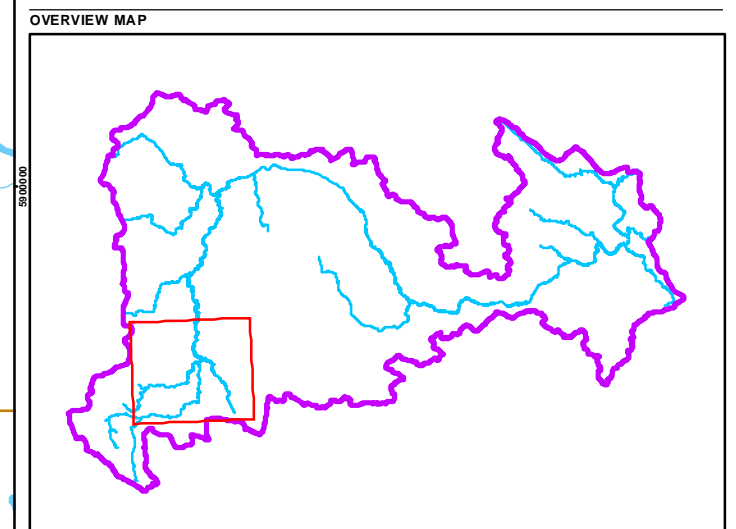
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

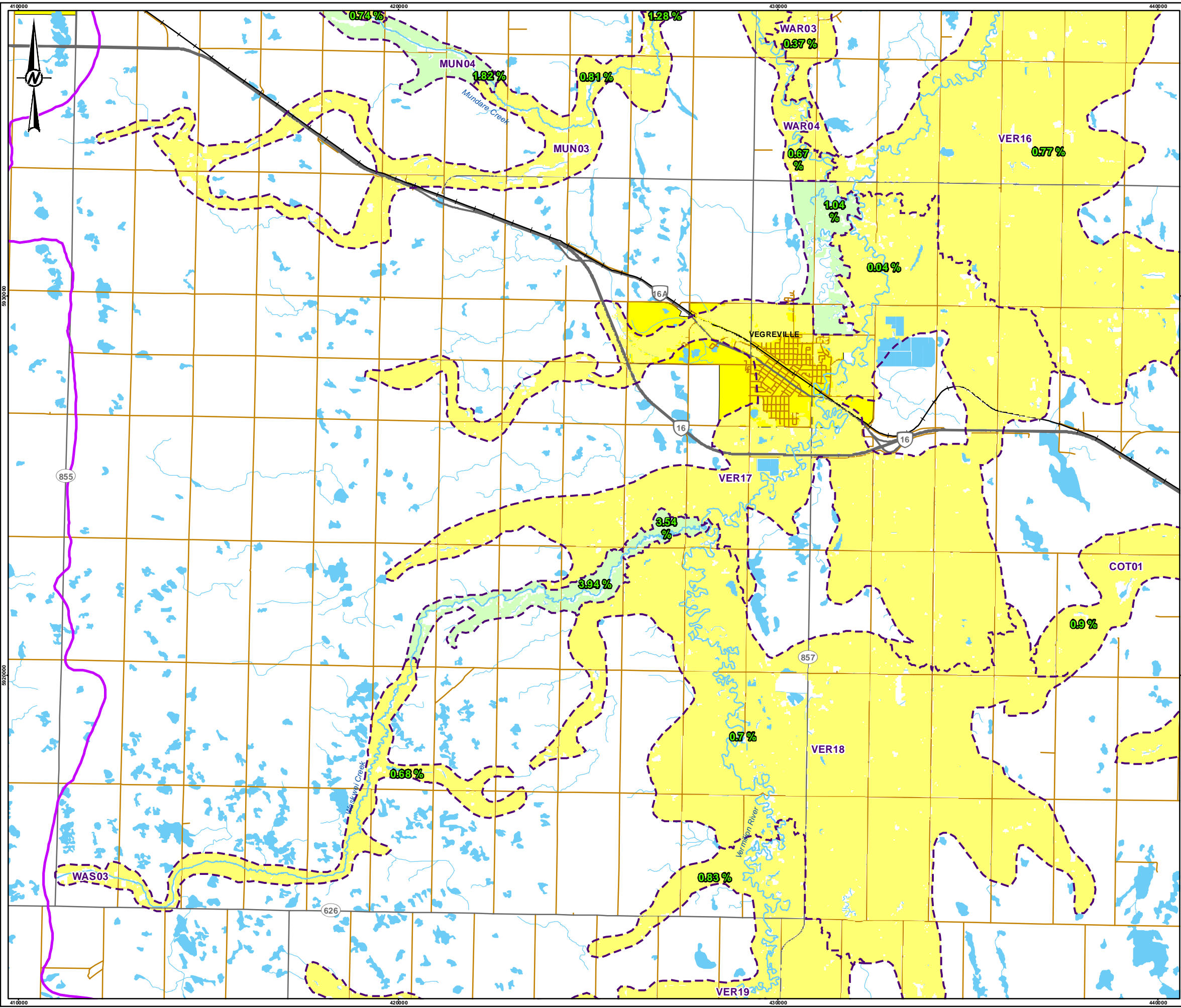
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B1-b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:21:50 PM

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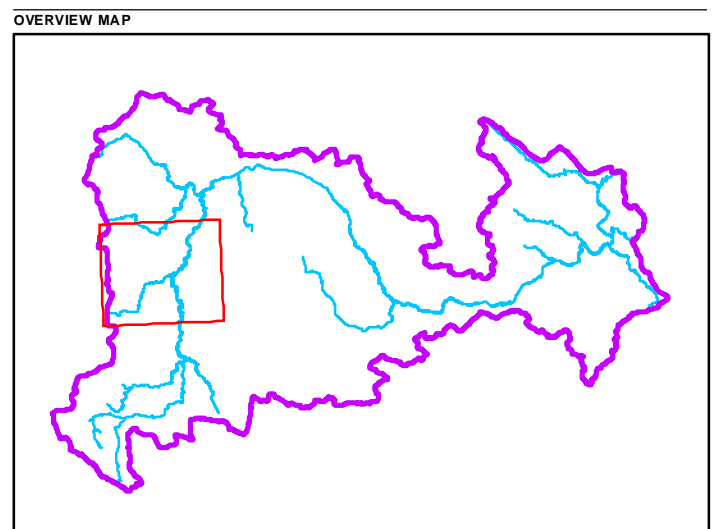
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



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 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

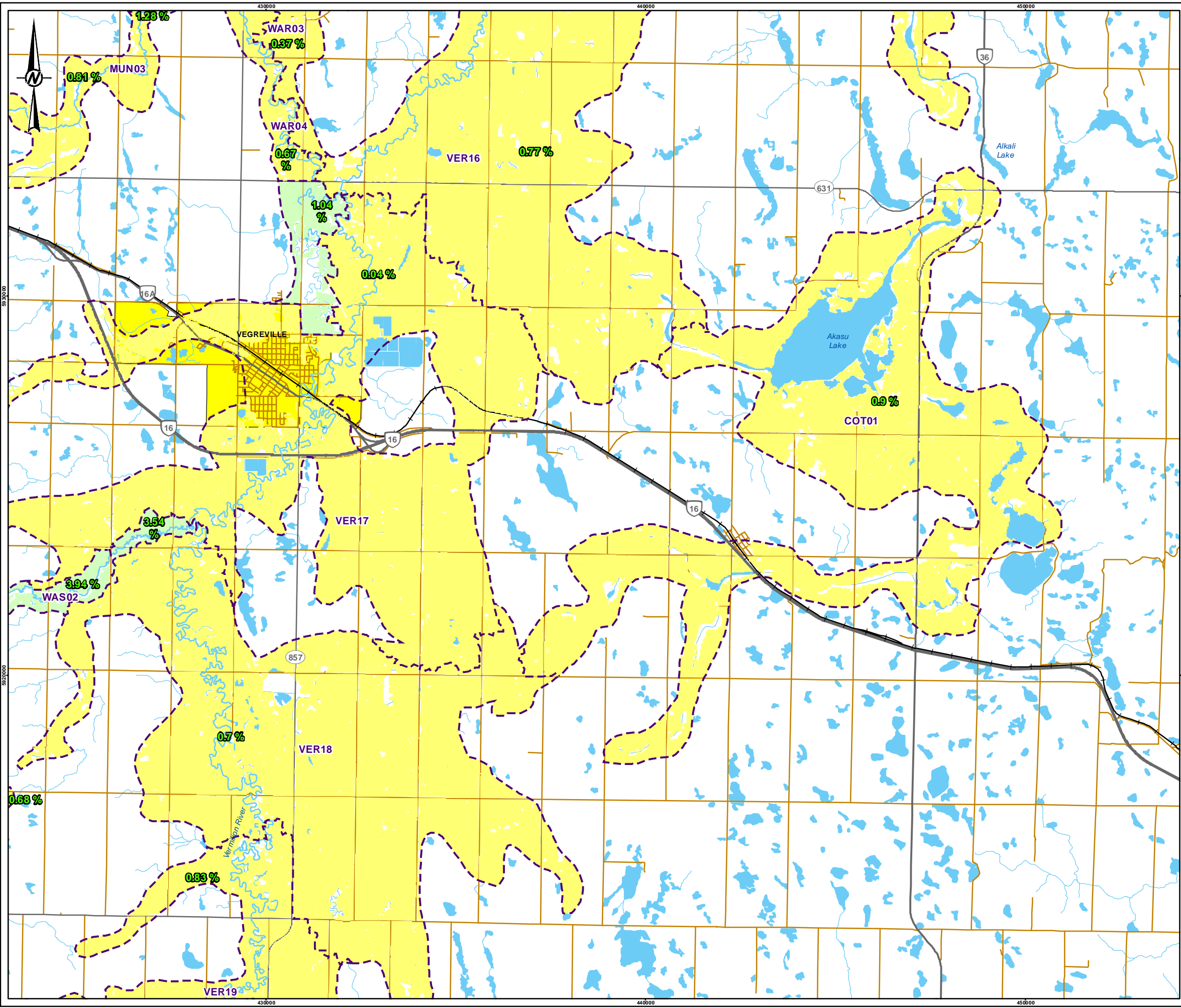
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B1-c

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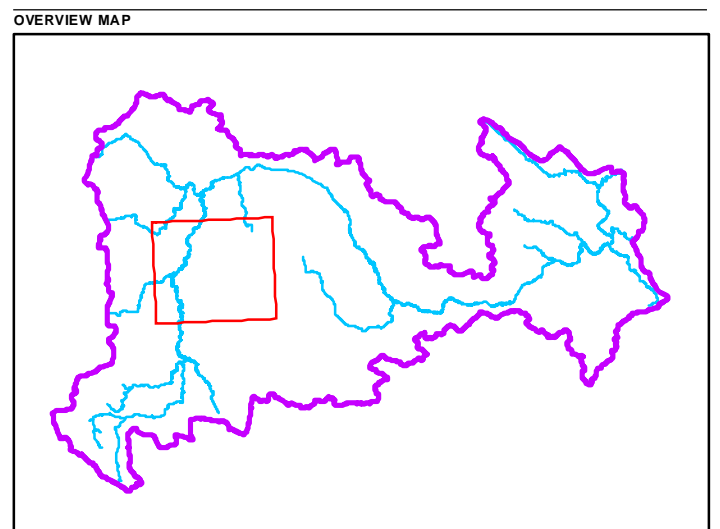
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

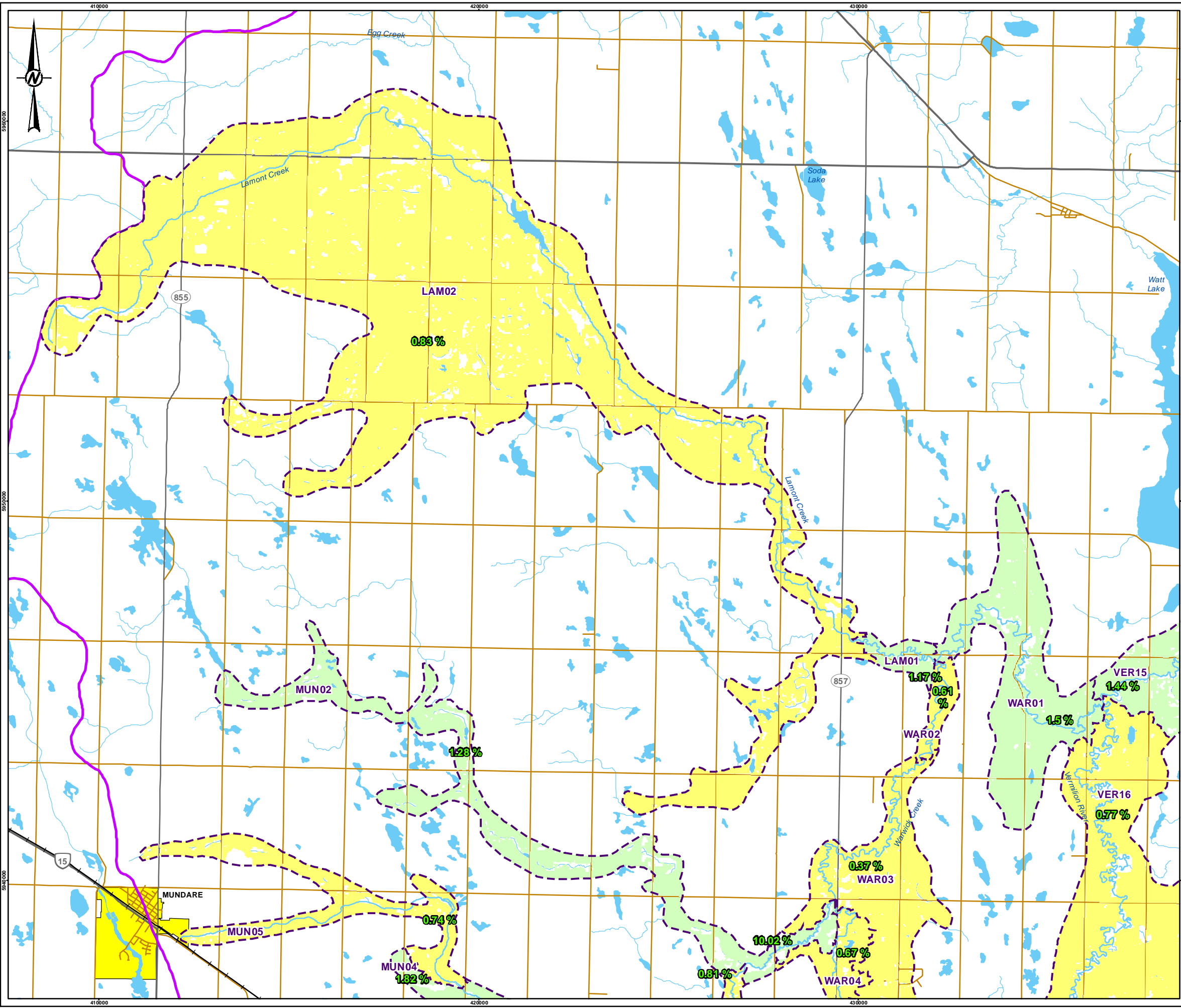
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B1-d

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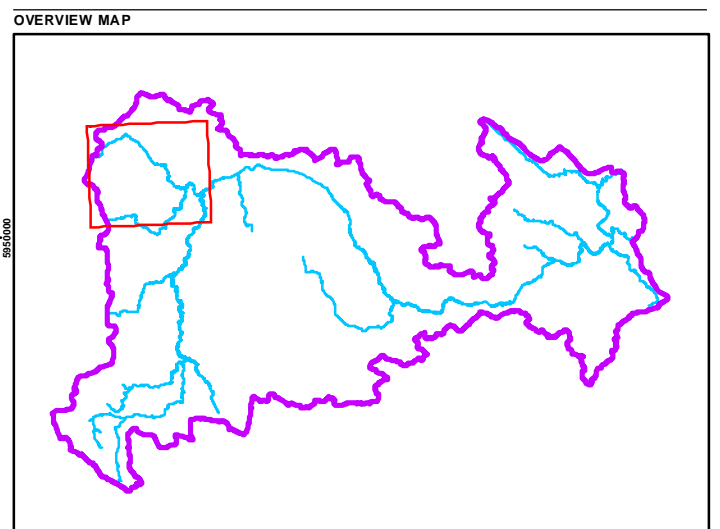


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

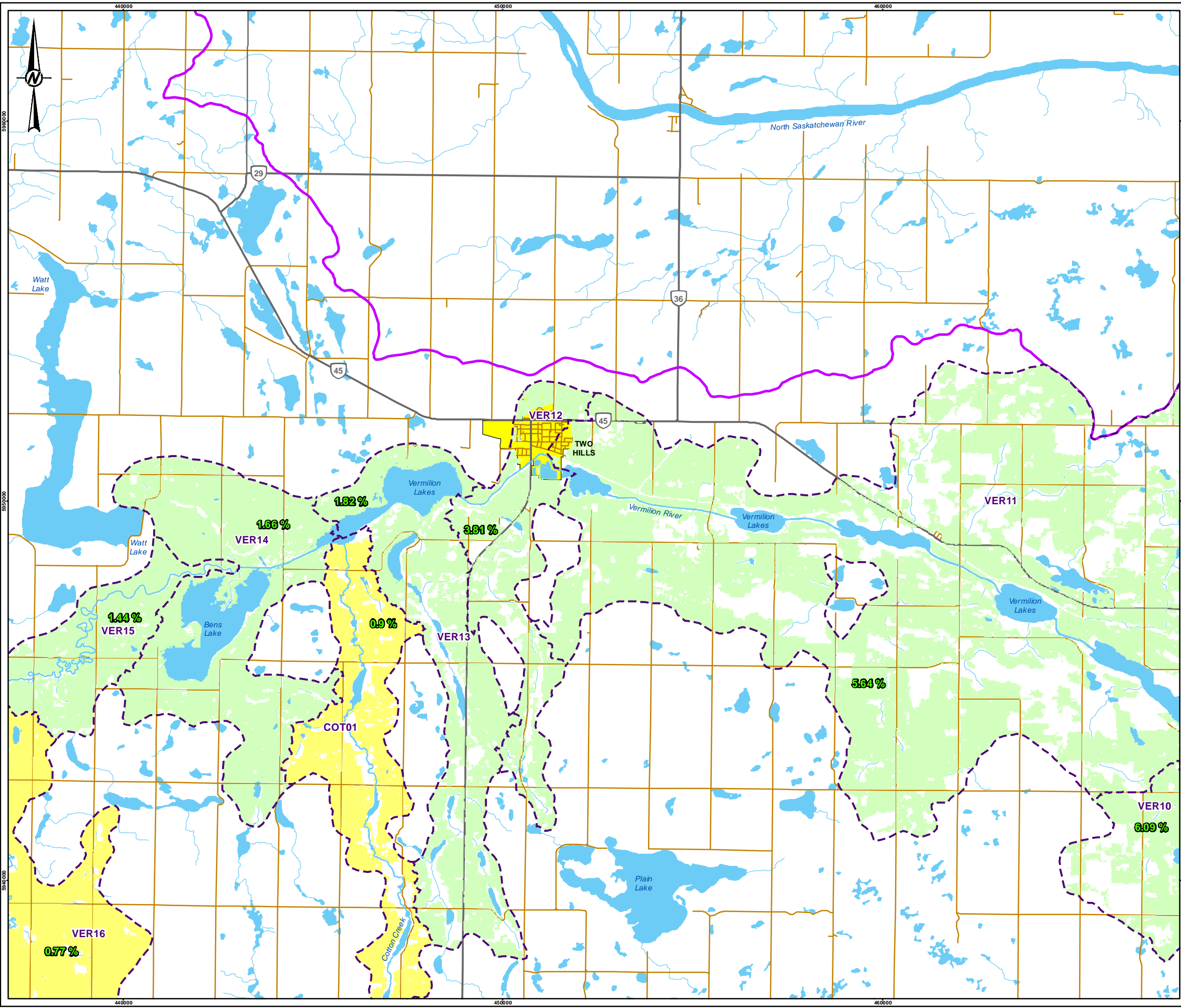
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

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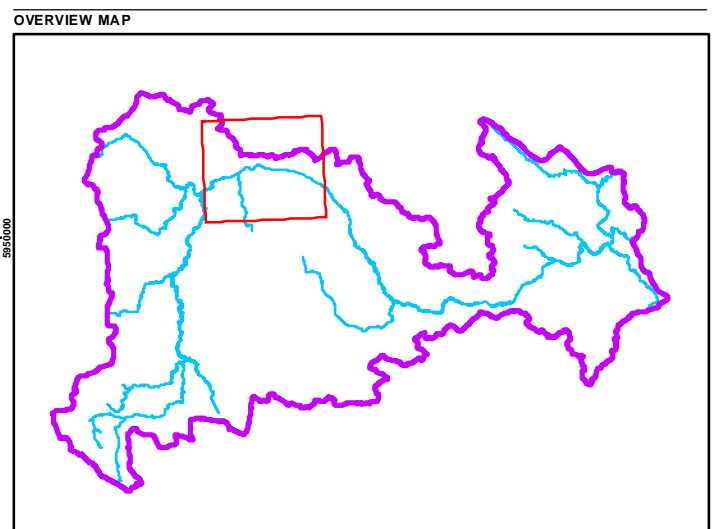
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

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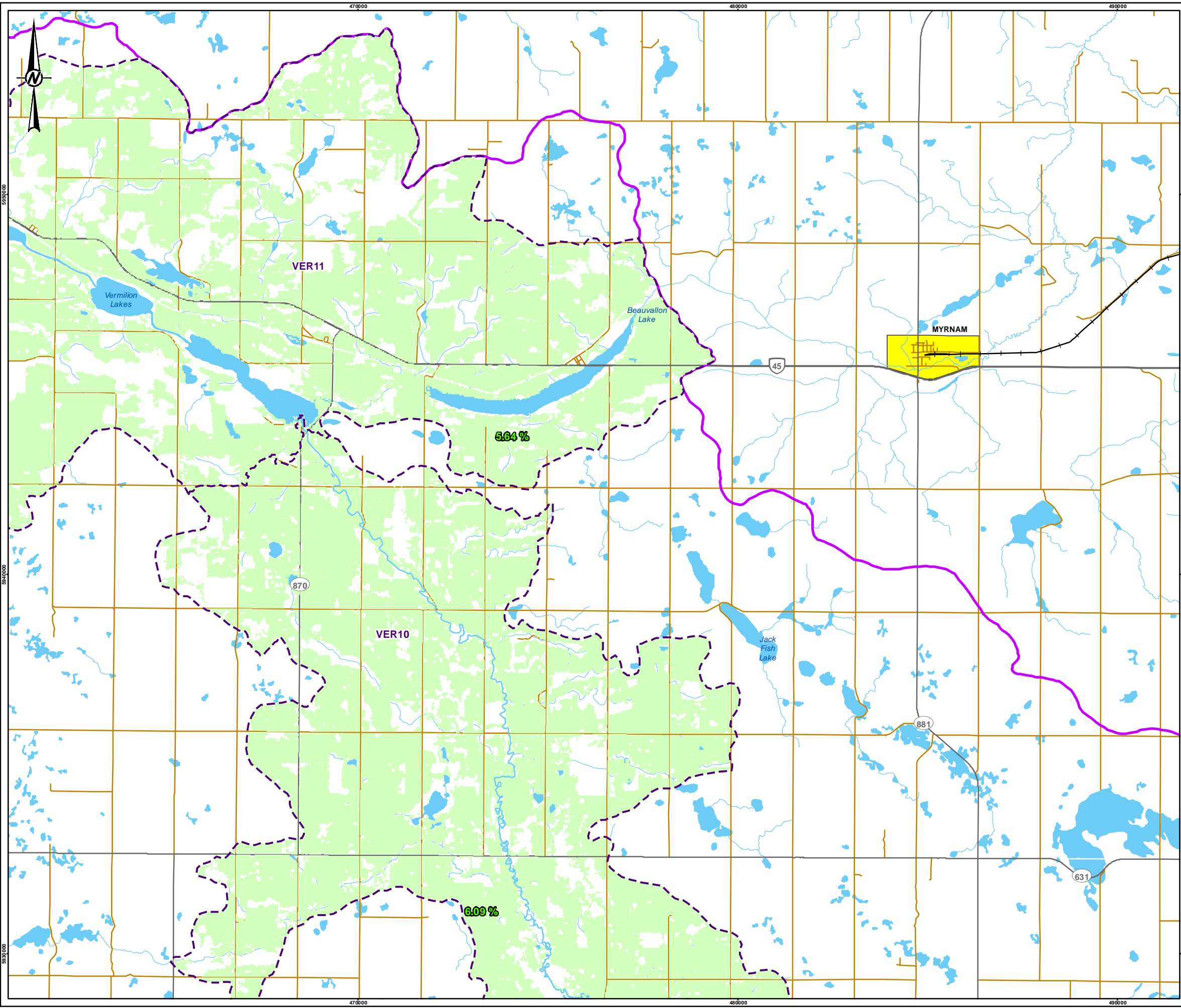
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

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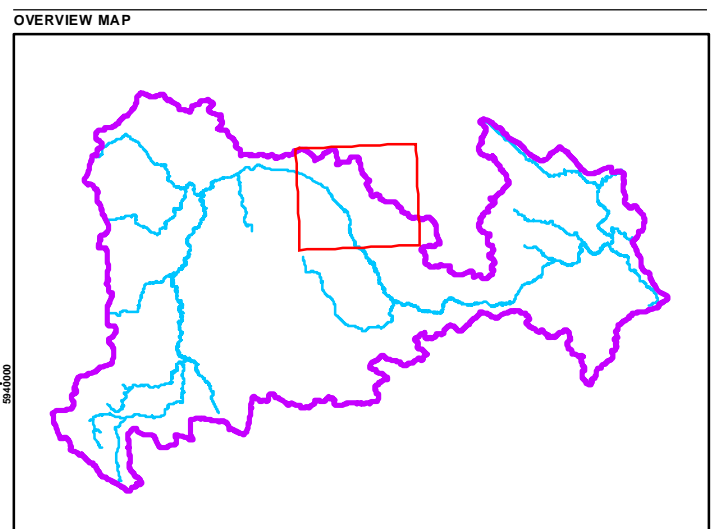
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

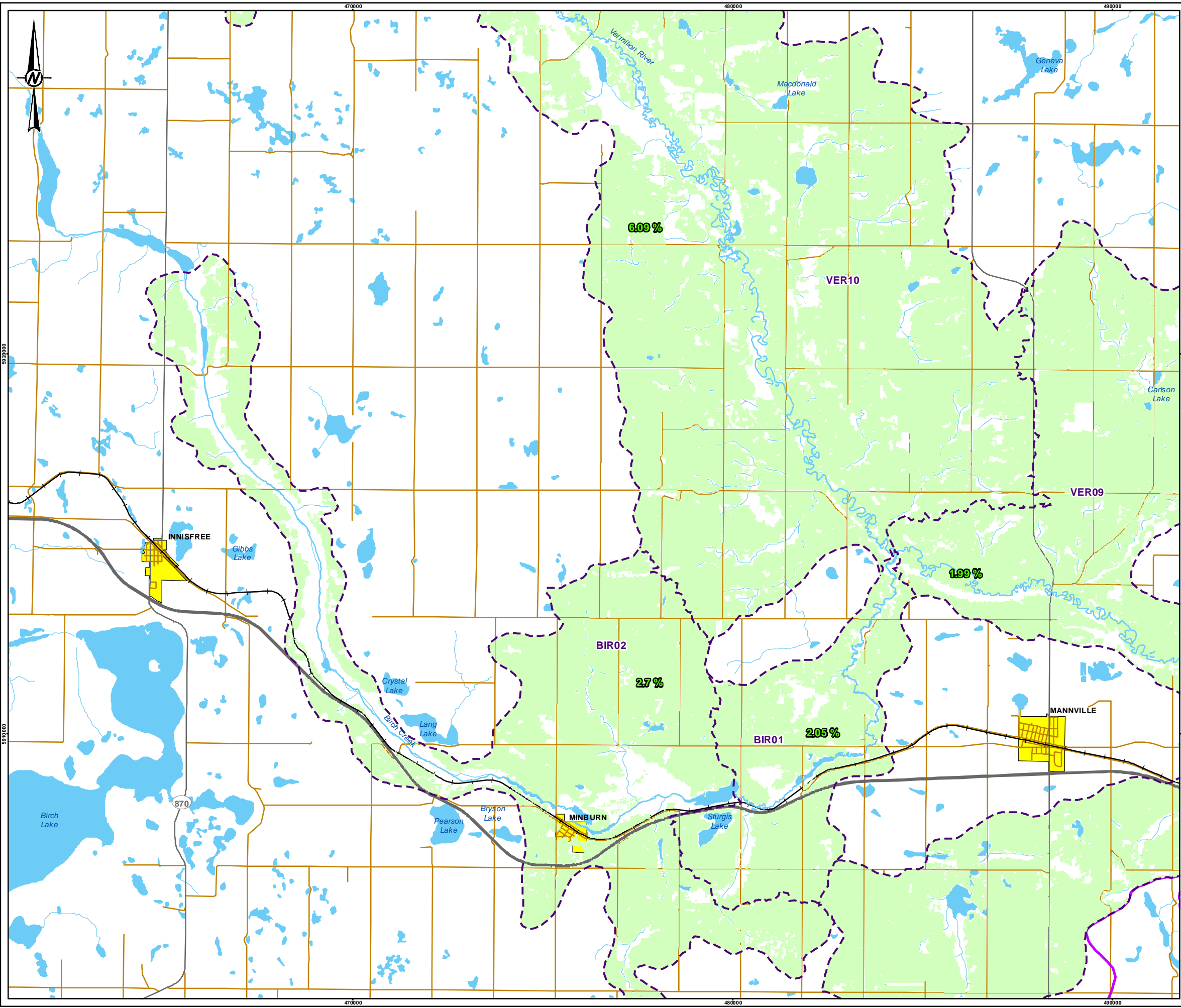
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:23:34 PM  
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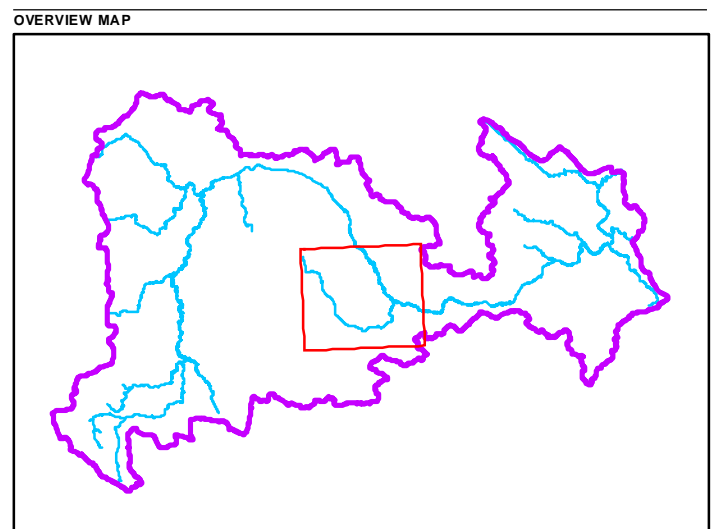
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

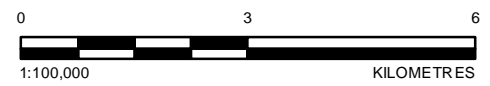
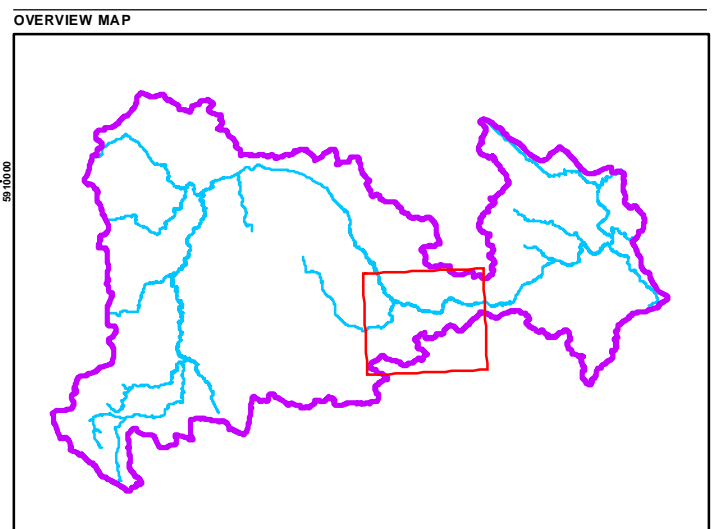
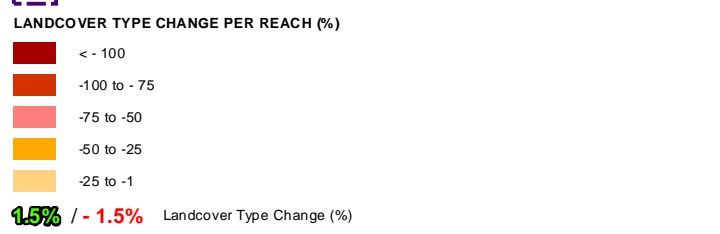
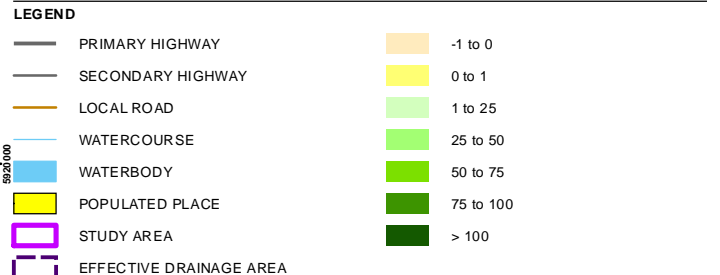
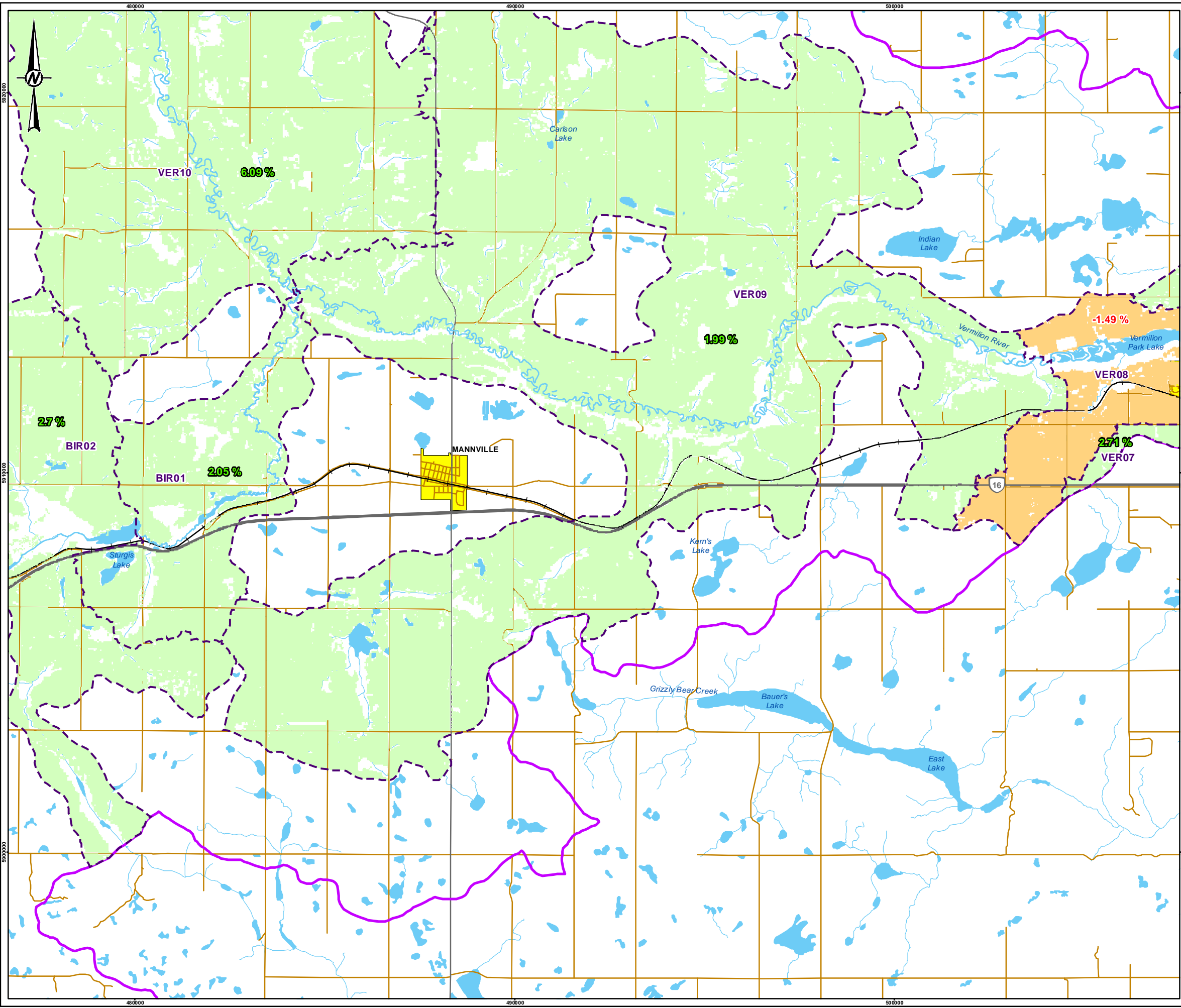
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:25:56 PM  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

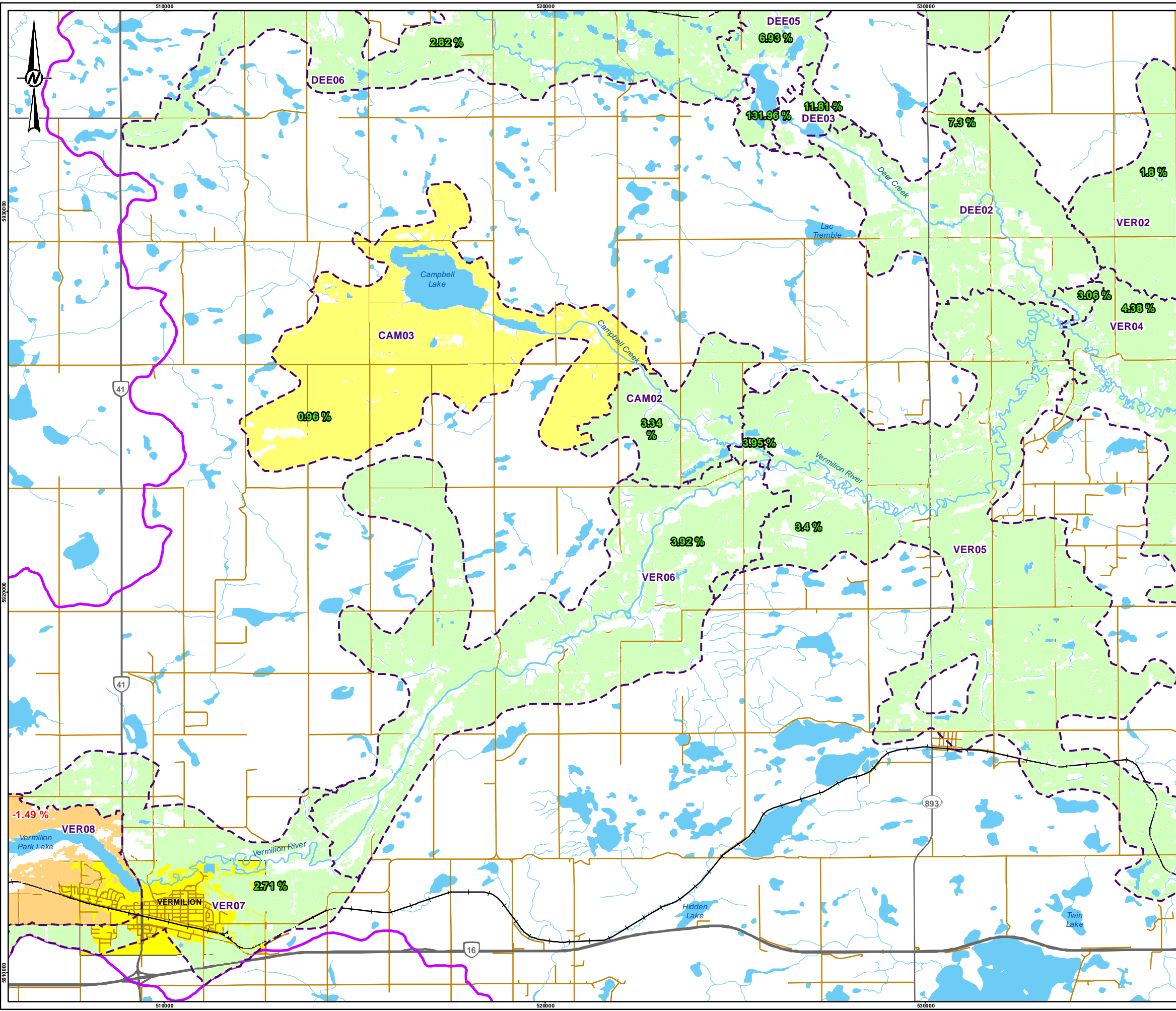
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<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

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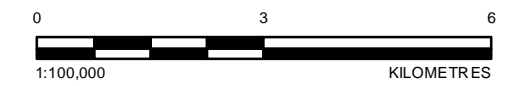
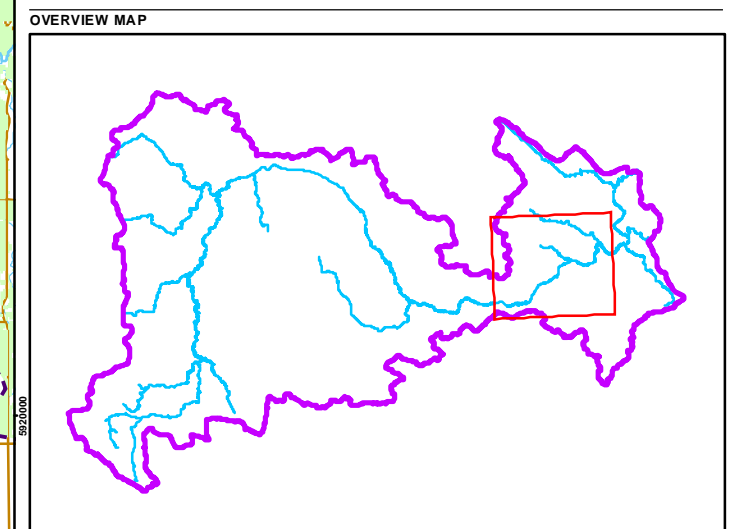
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

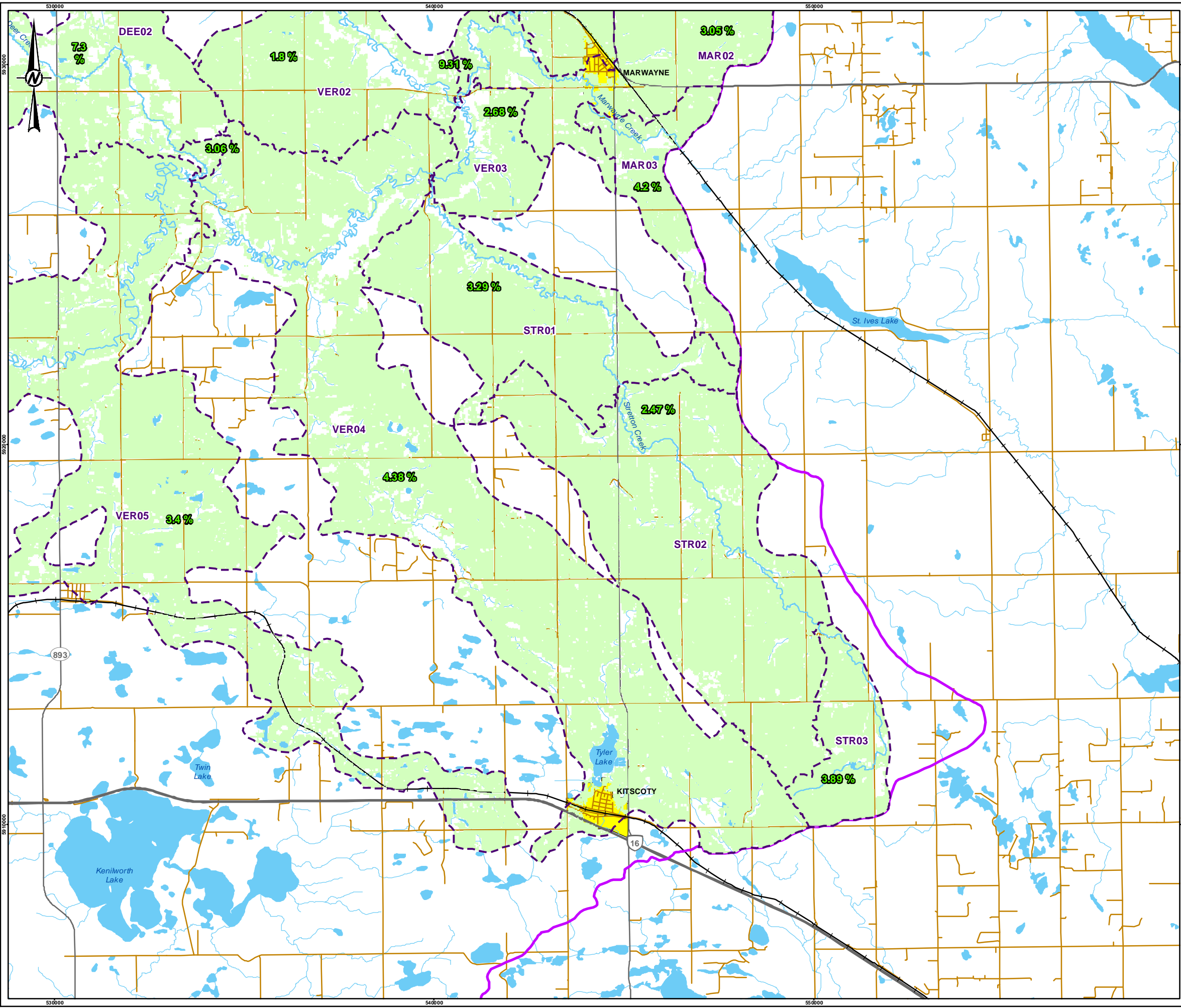
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 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

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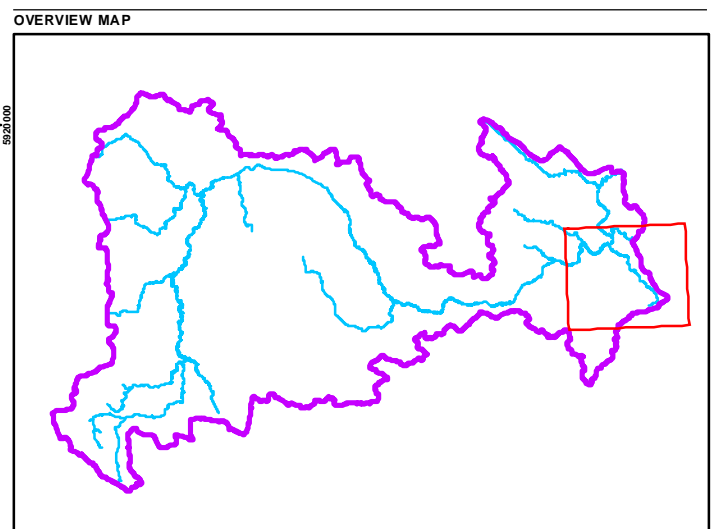


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5%
- Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

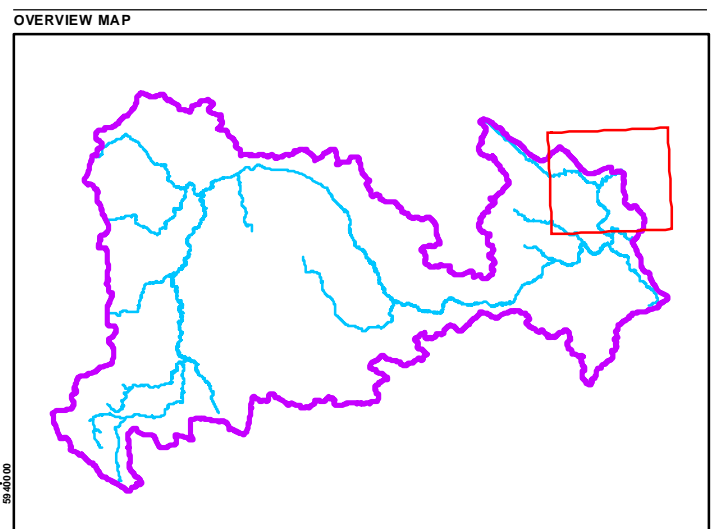
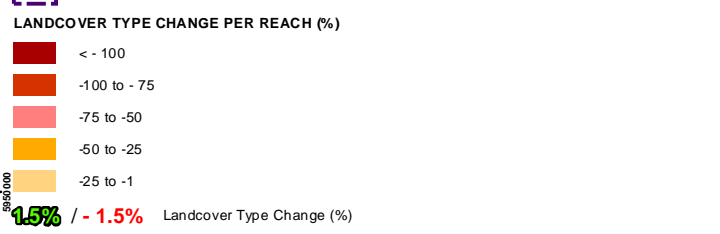
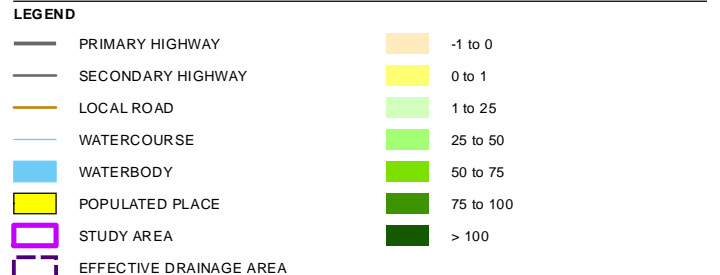
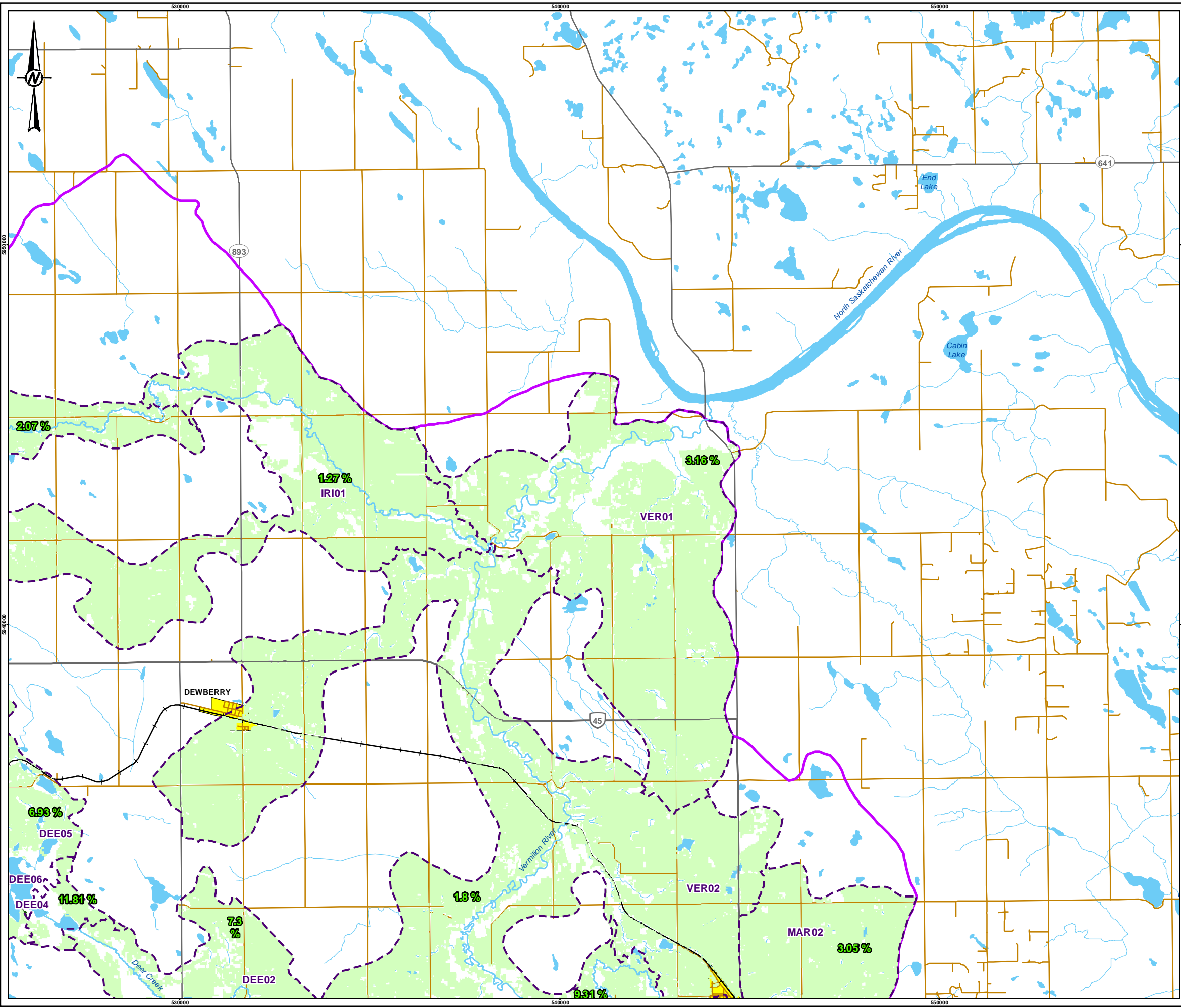
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

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 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





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 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

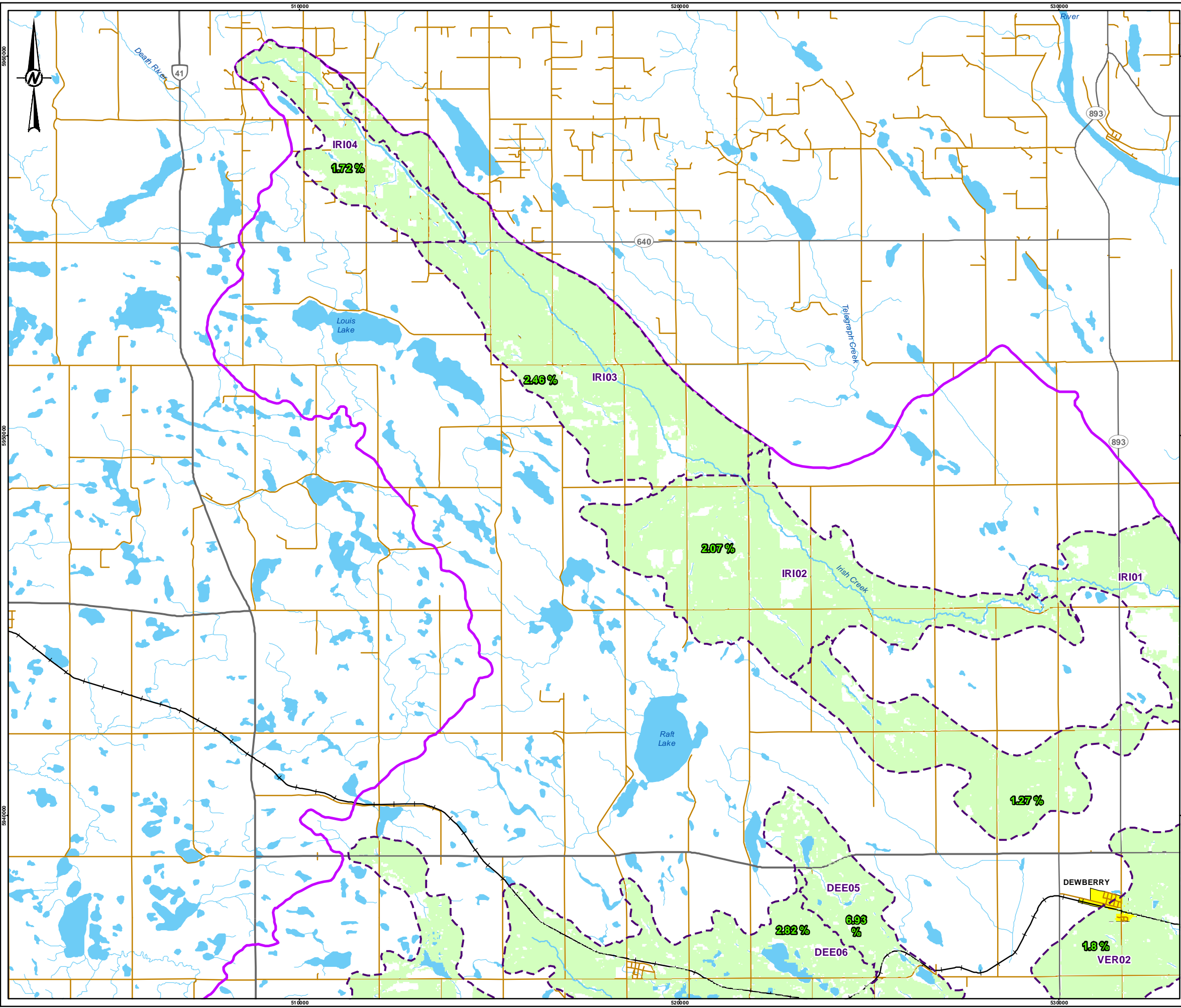
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:25:17 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



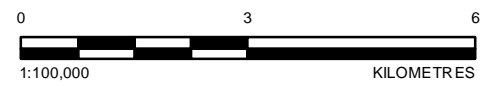
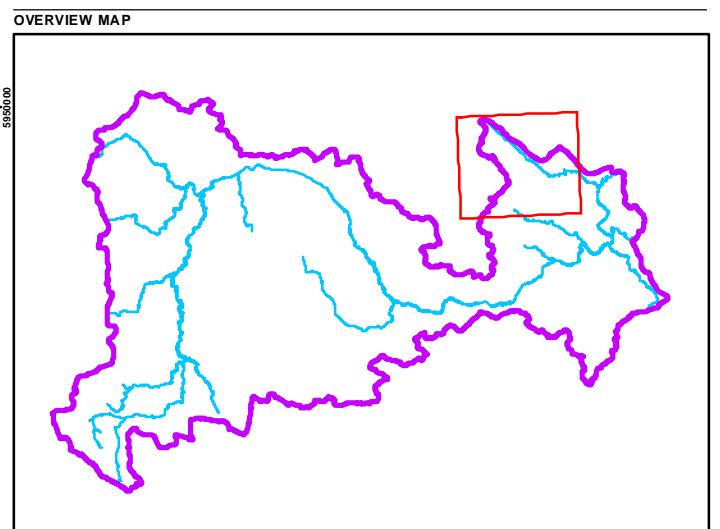
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

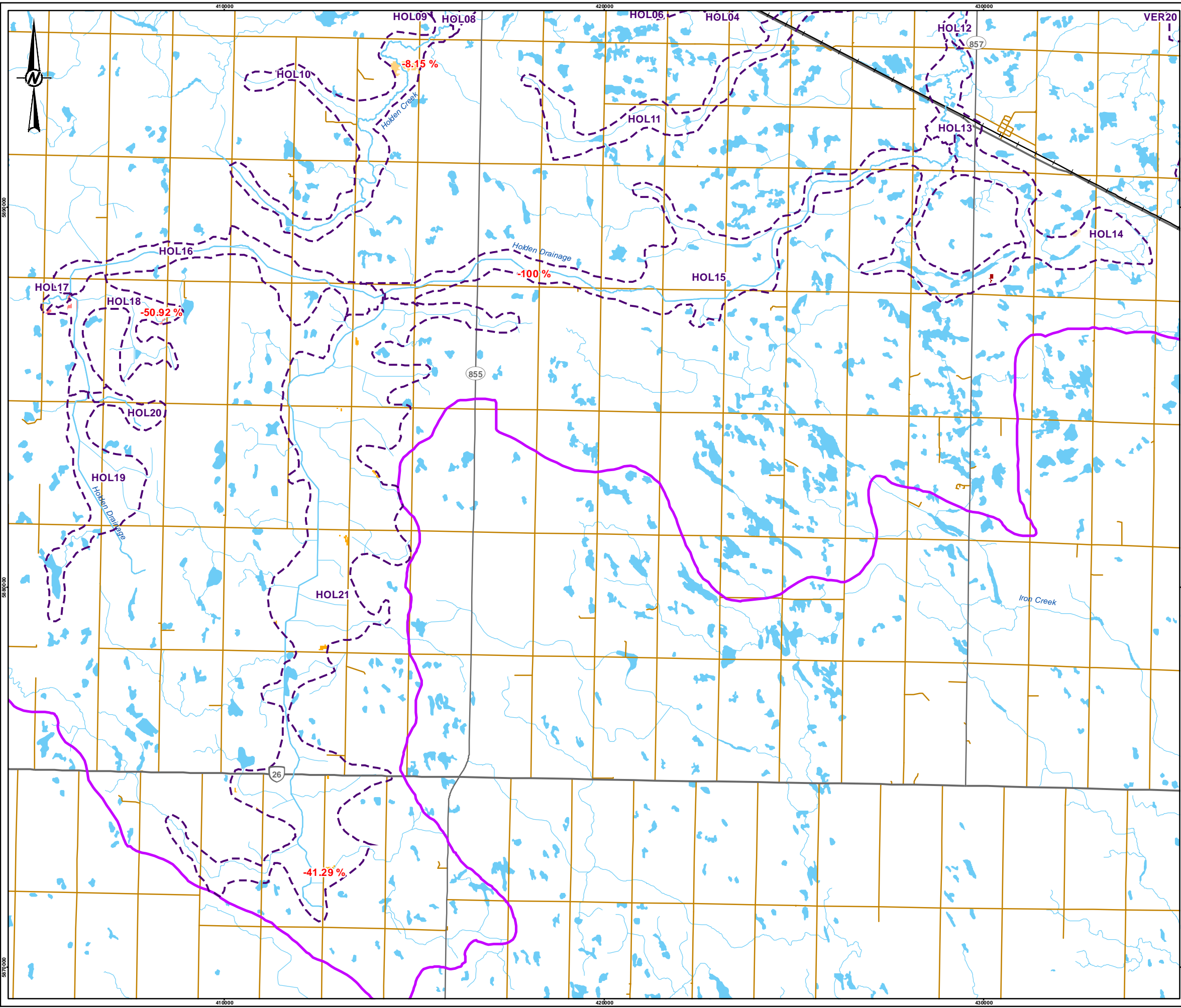
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - CROPLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B1-m

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:25:36 PM  
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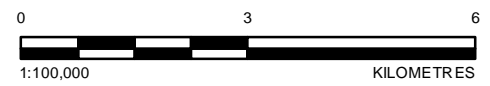
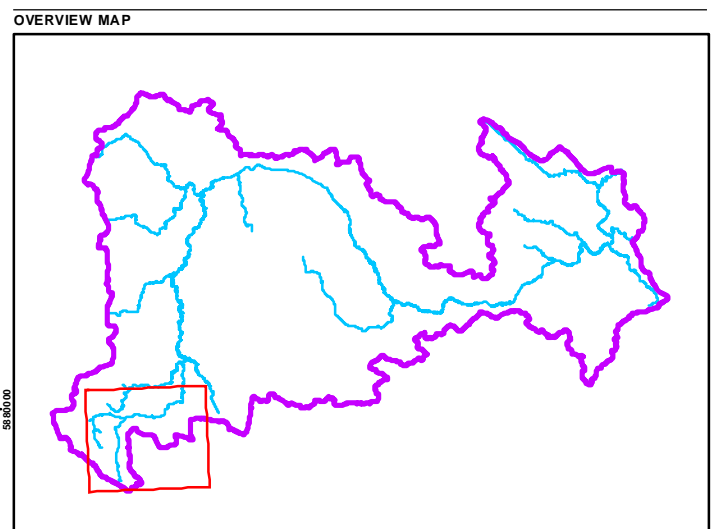


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

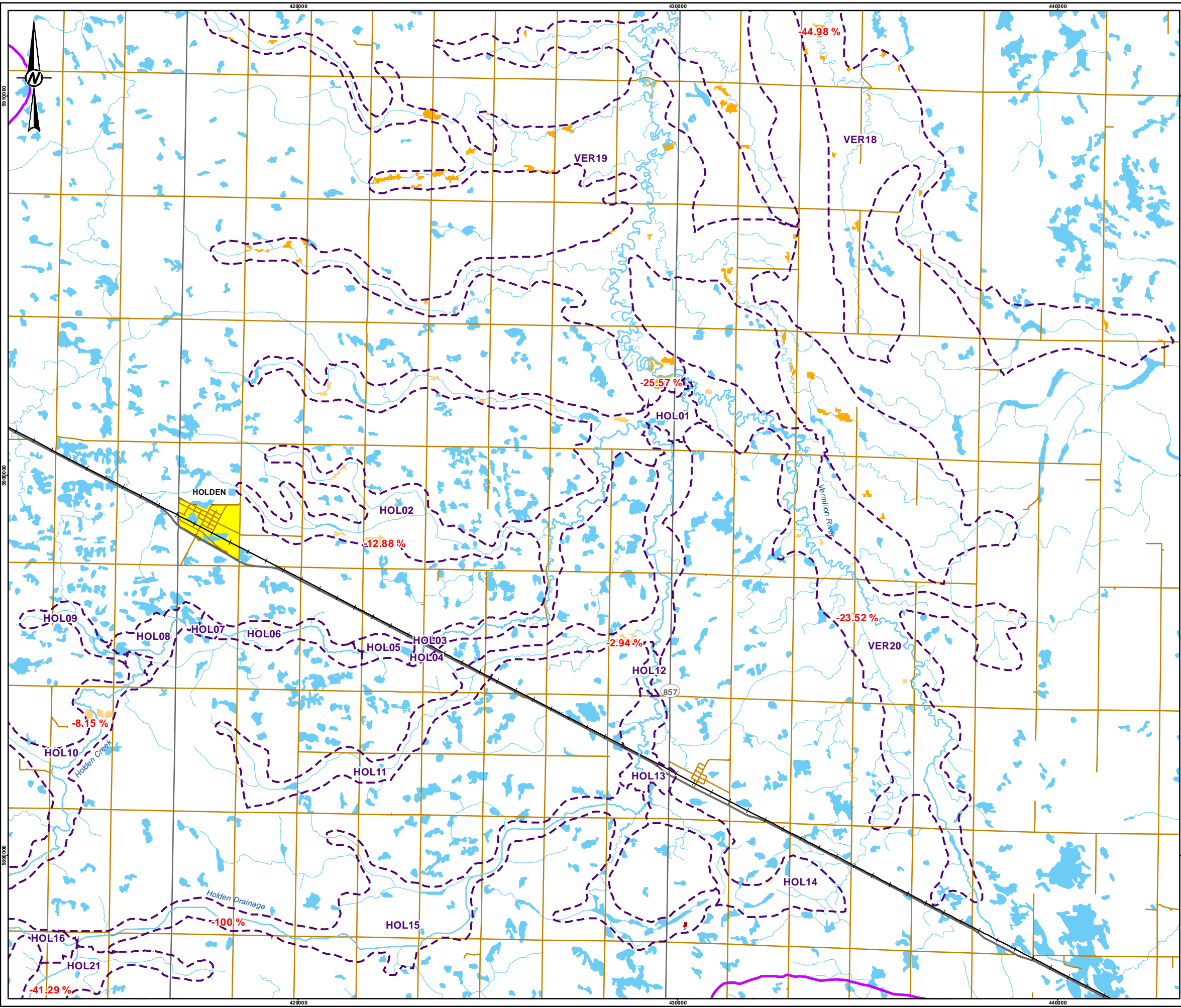
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\TM\1534932\Maping\MXD\Golder\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:25:05 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





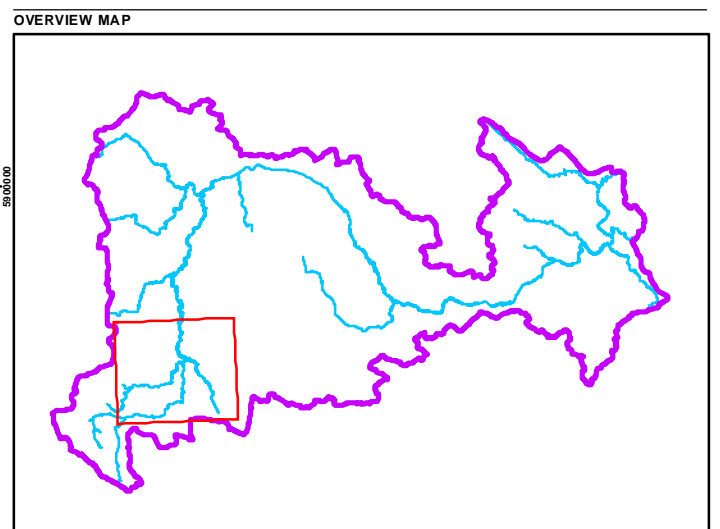
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

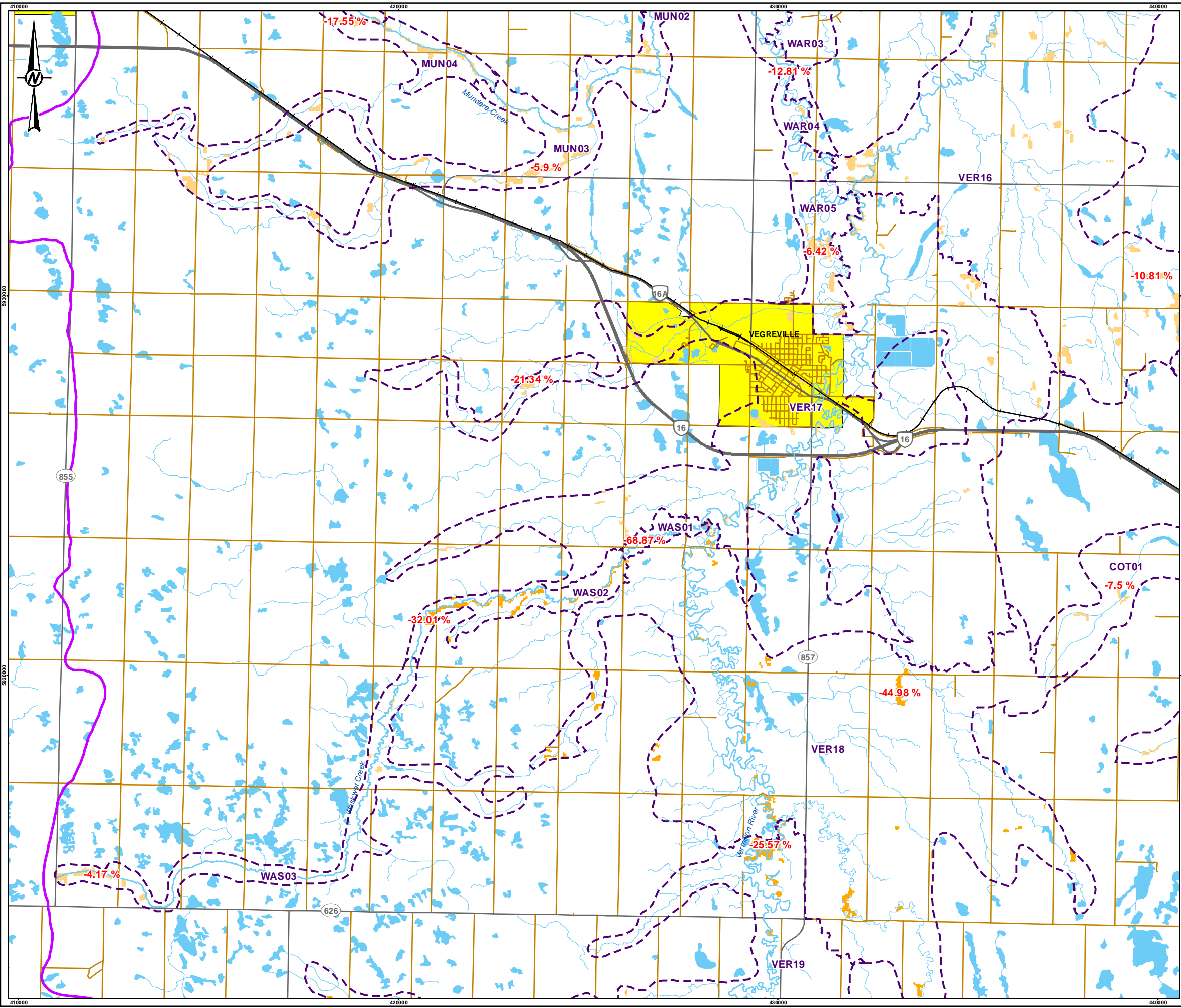
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:26:15 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**LEGEND**

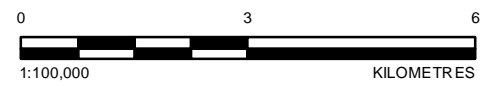
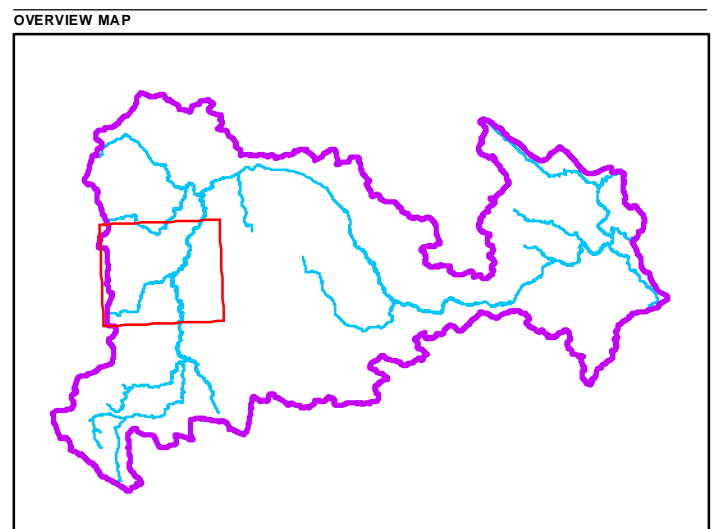
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

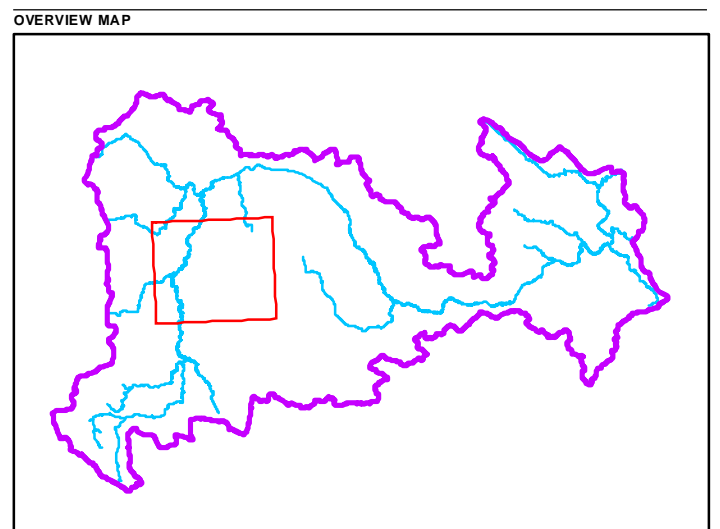
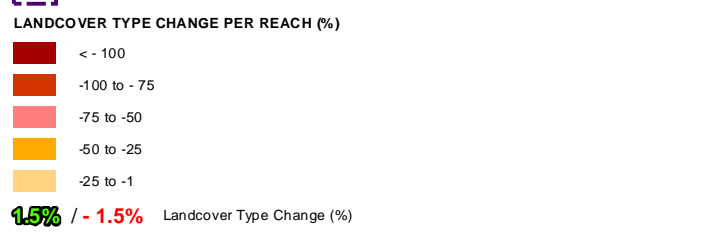
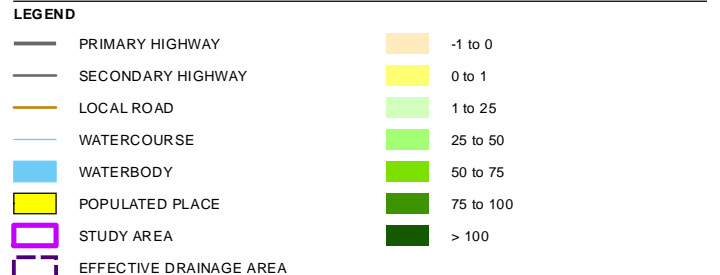
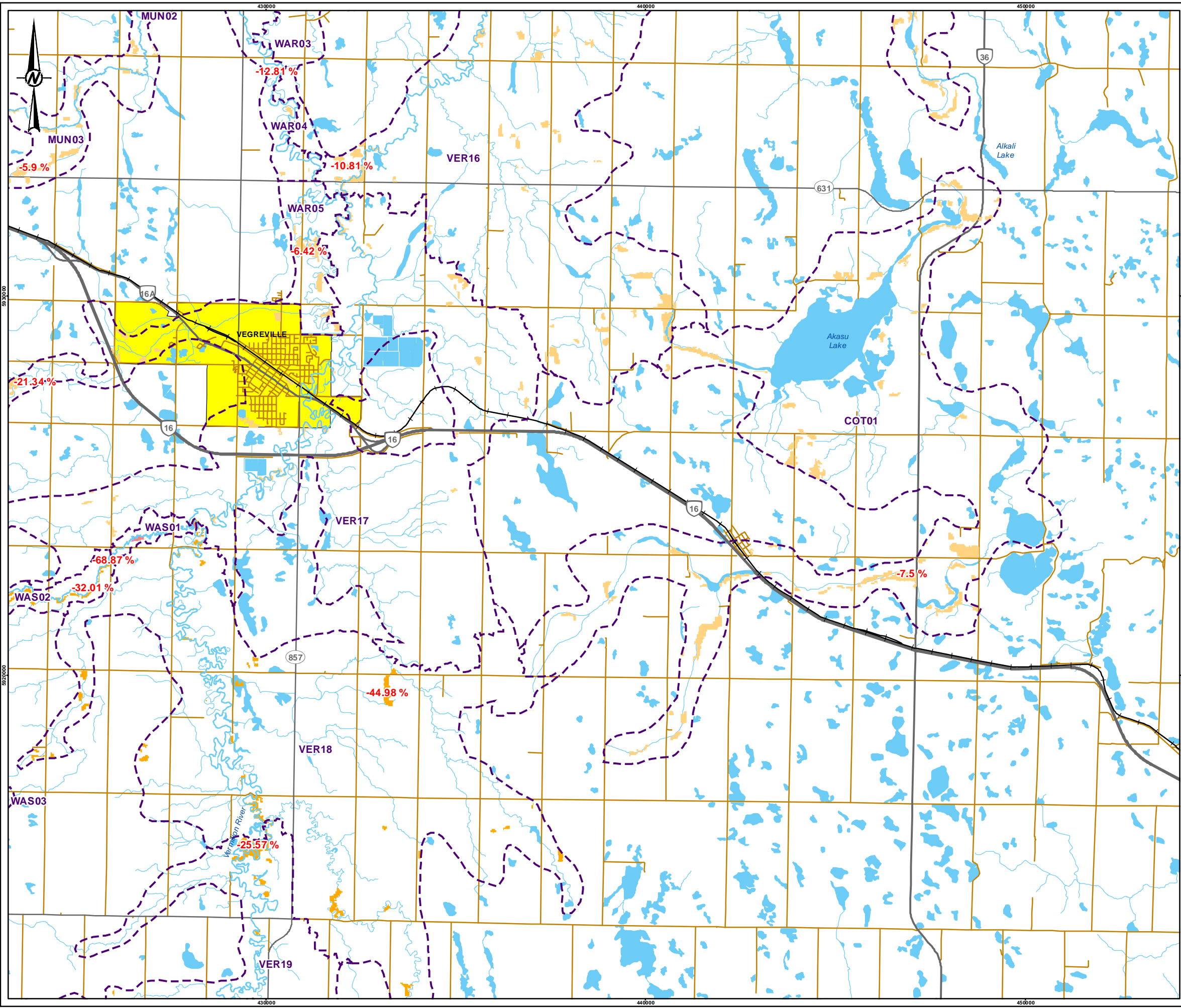
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd Printed on: 2016-03-21 At: 3:26:36 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B






**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

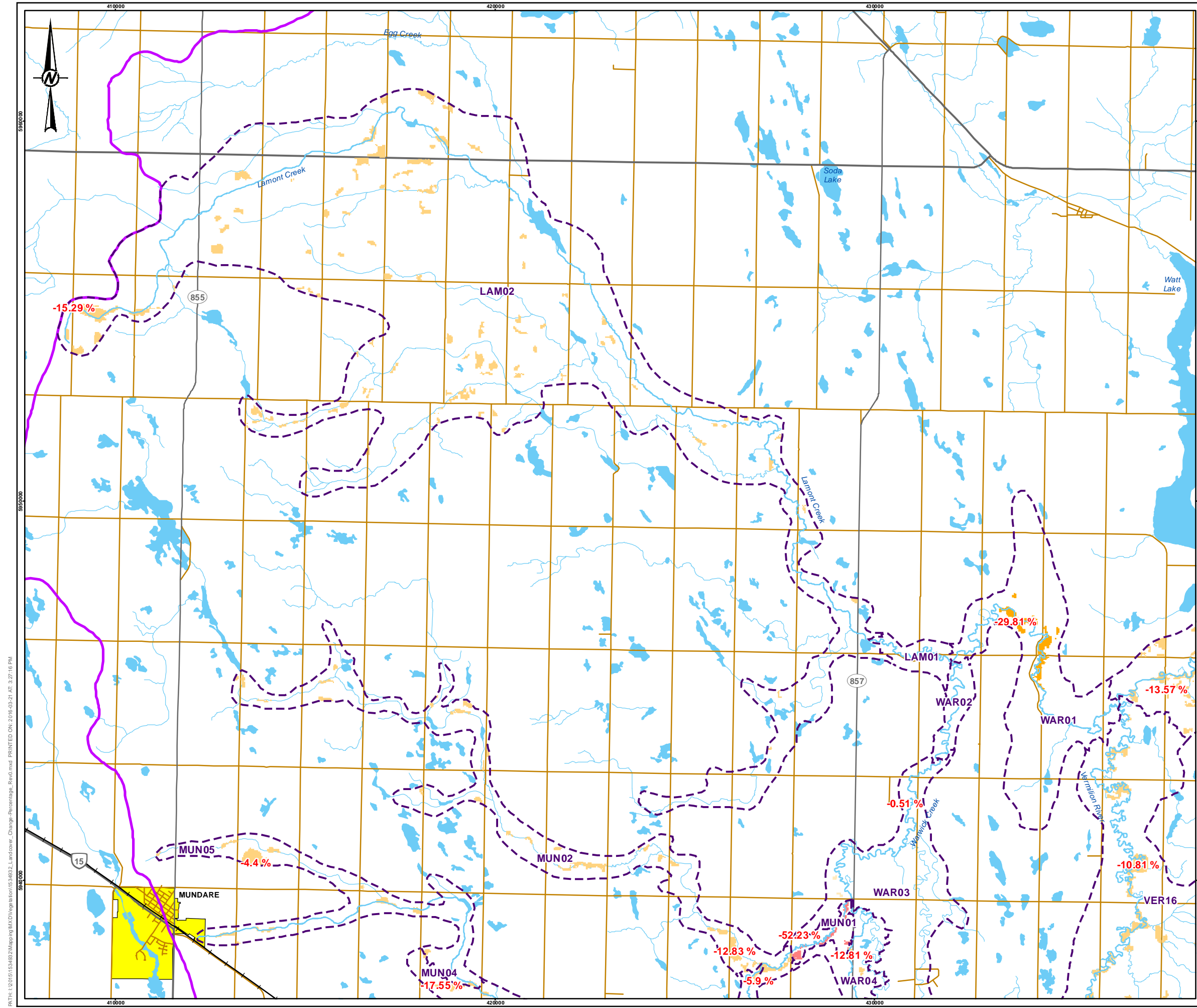
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-d

P:\THU\_1\310151524922\Maping\Maping\Maping\1534932\_Landcover\_Change\_Riparian\Revised.mxd PRINTED ON: 2016-03-21 AT: 3:26:56 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

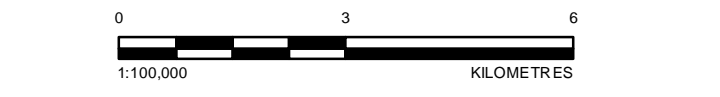
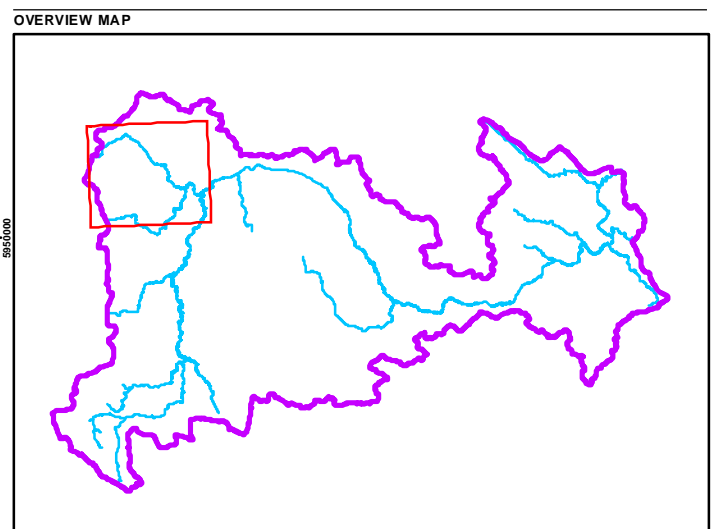
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100
-100 to - 75
-75 to -50
-50 to -25
-25 to -1
1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

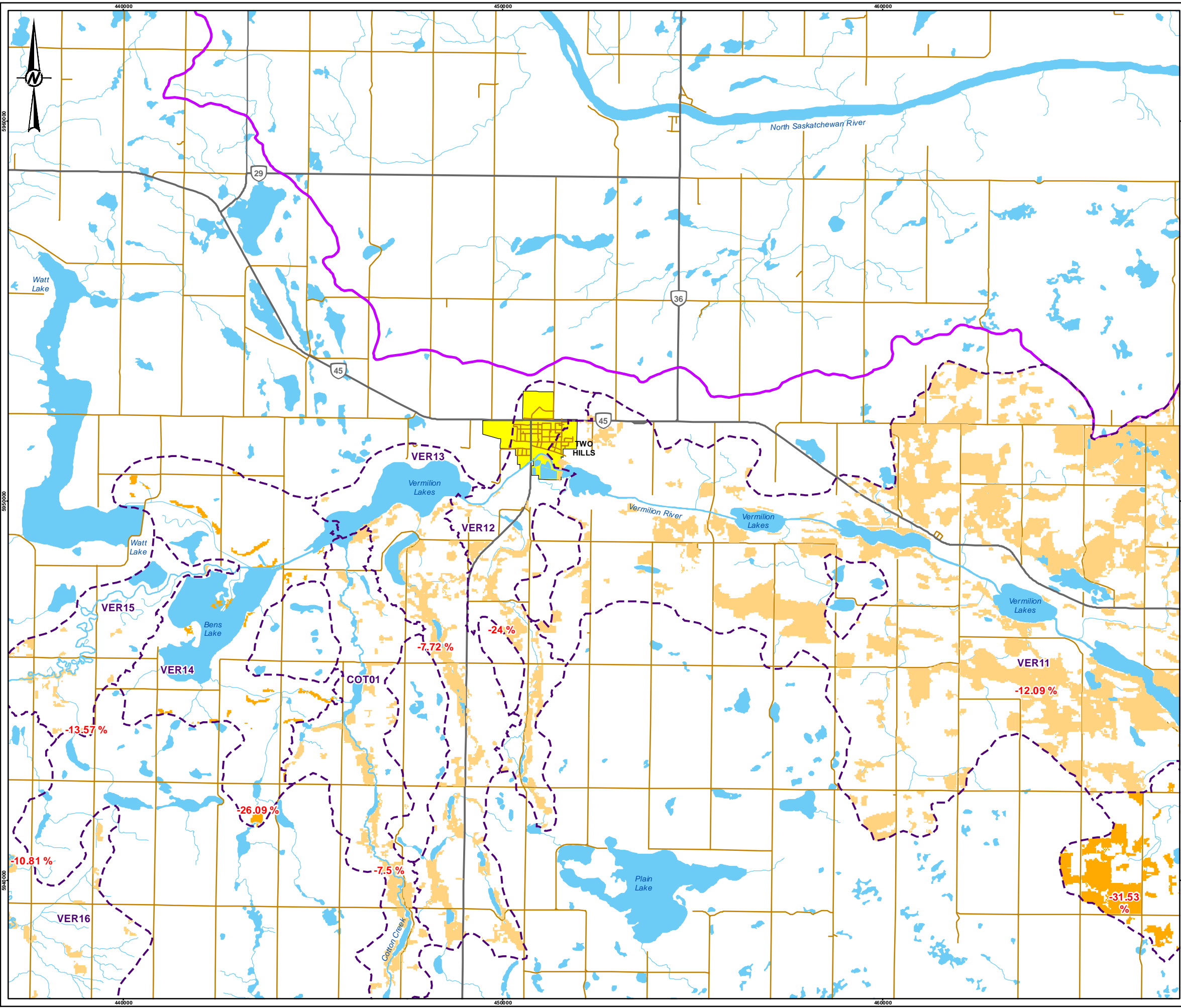
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-e

PATH: I:\010151524922\MapProj\MapProj\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:27:16 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



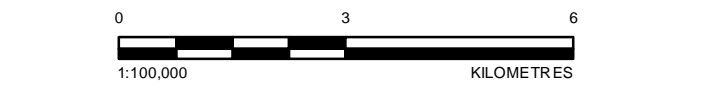
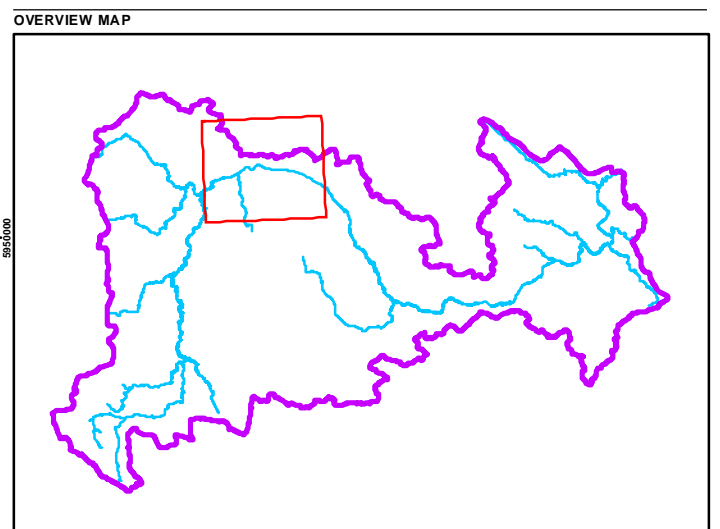


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

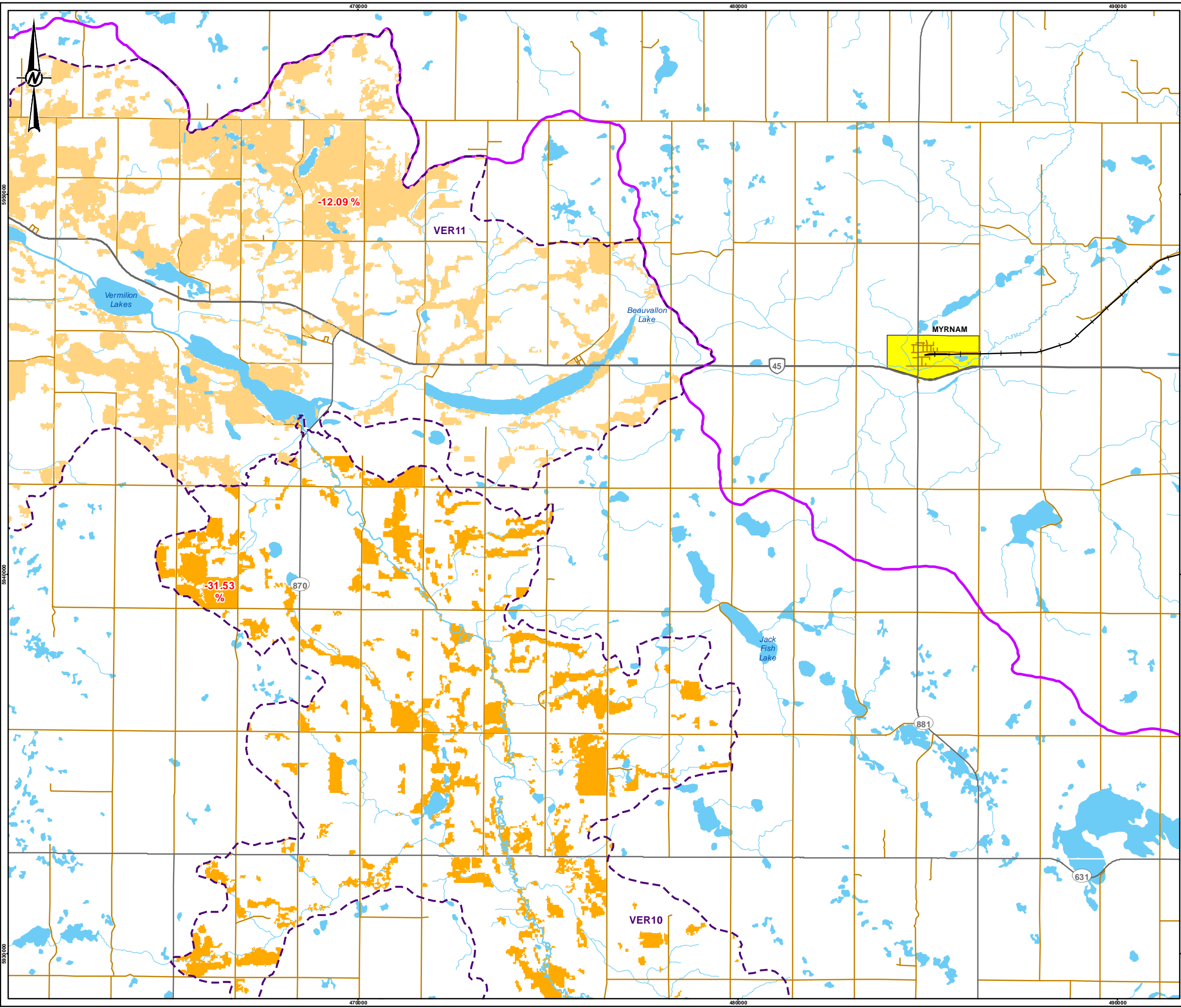
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

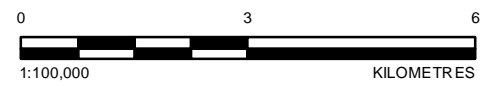
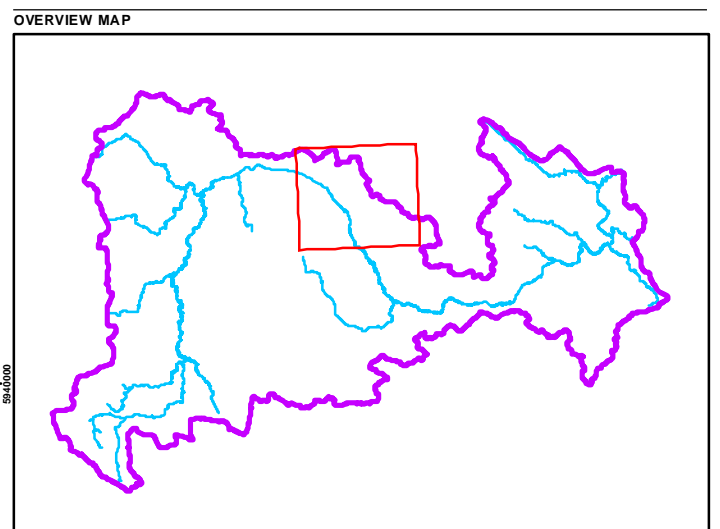
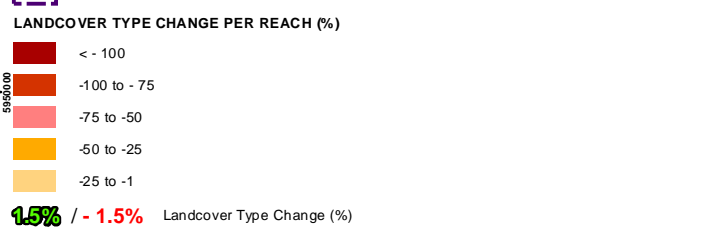
PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-f

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



- LEGEND**
- PRIMARY HIGHWAY
  - SECONDARY HIGHWAY
  - LOCAL ROAD
  - WATERCOURSE
  - WATERBODY
  - POPULATED PLACE
  - STUDY AREA
  - EFFECTIVE DRAINAGE AREA



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

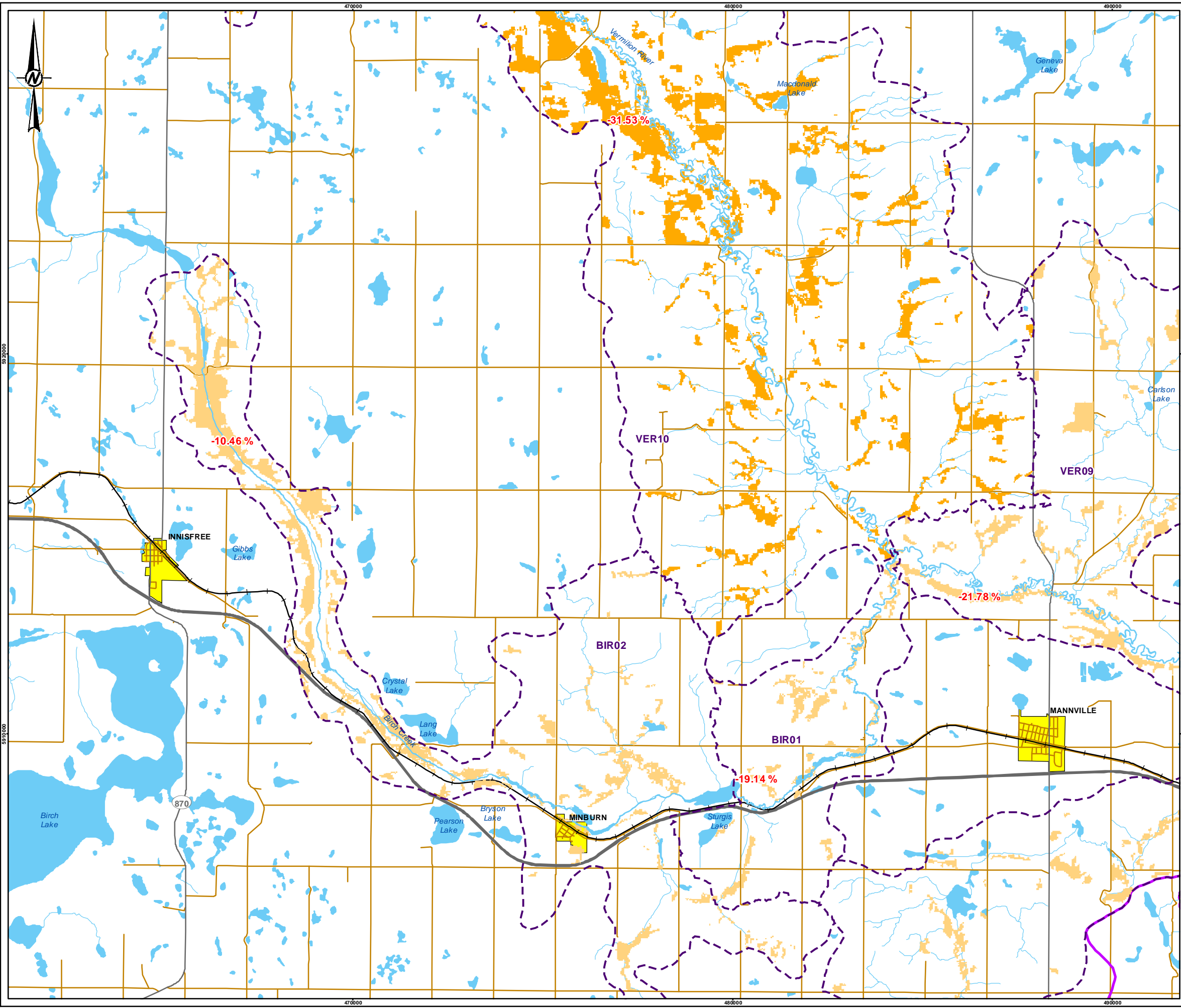
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:27:58 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



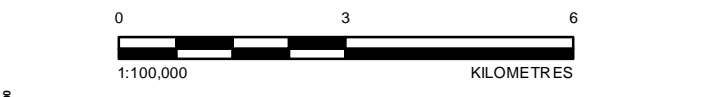
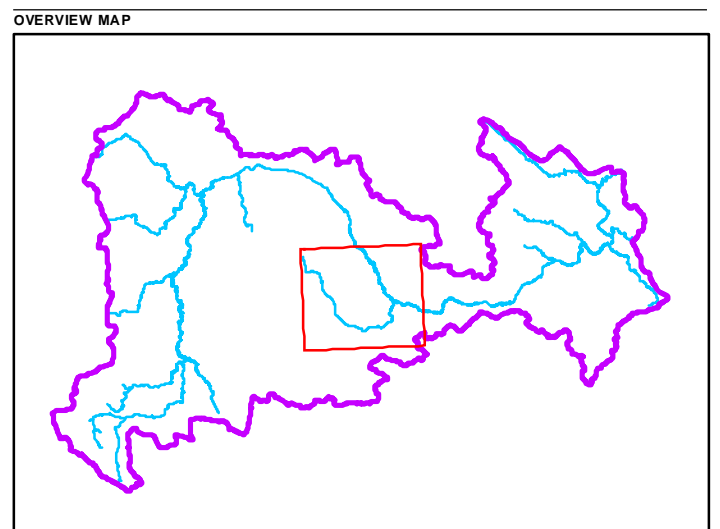
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

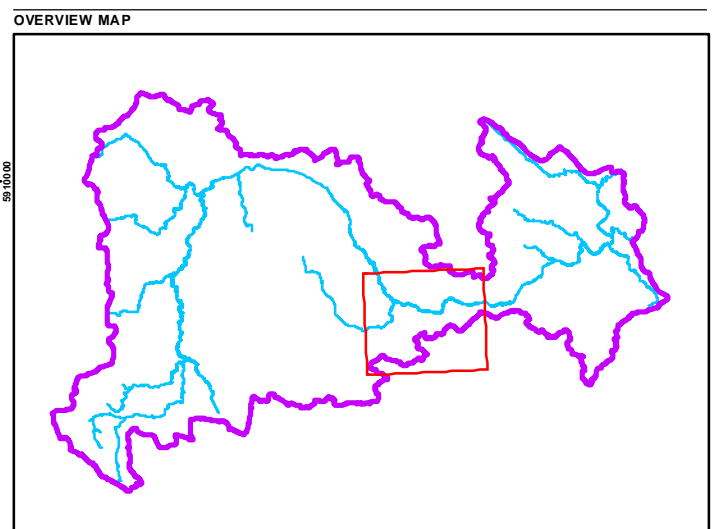
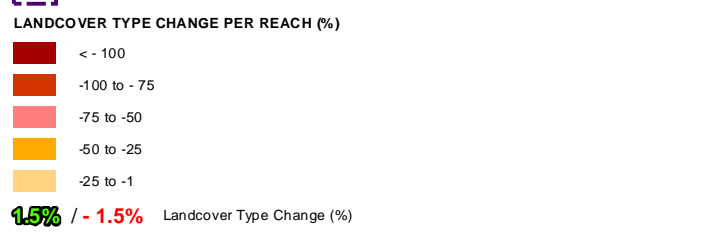
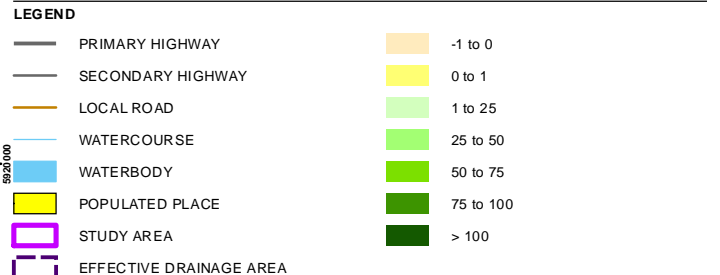
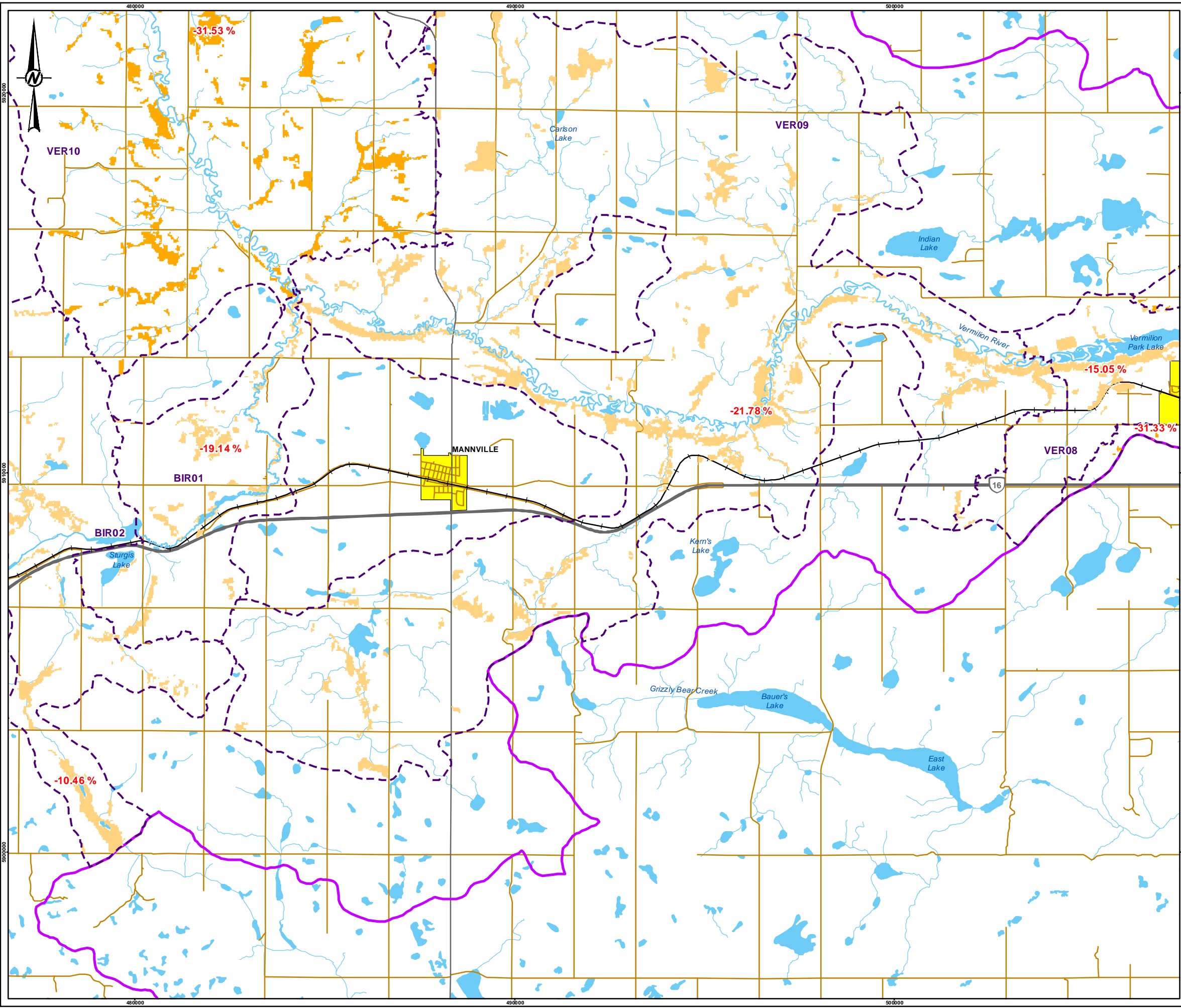
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-h

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:28:19 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

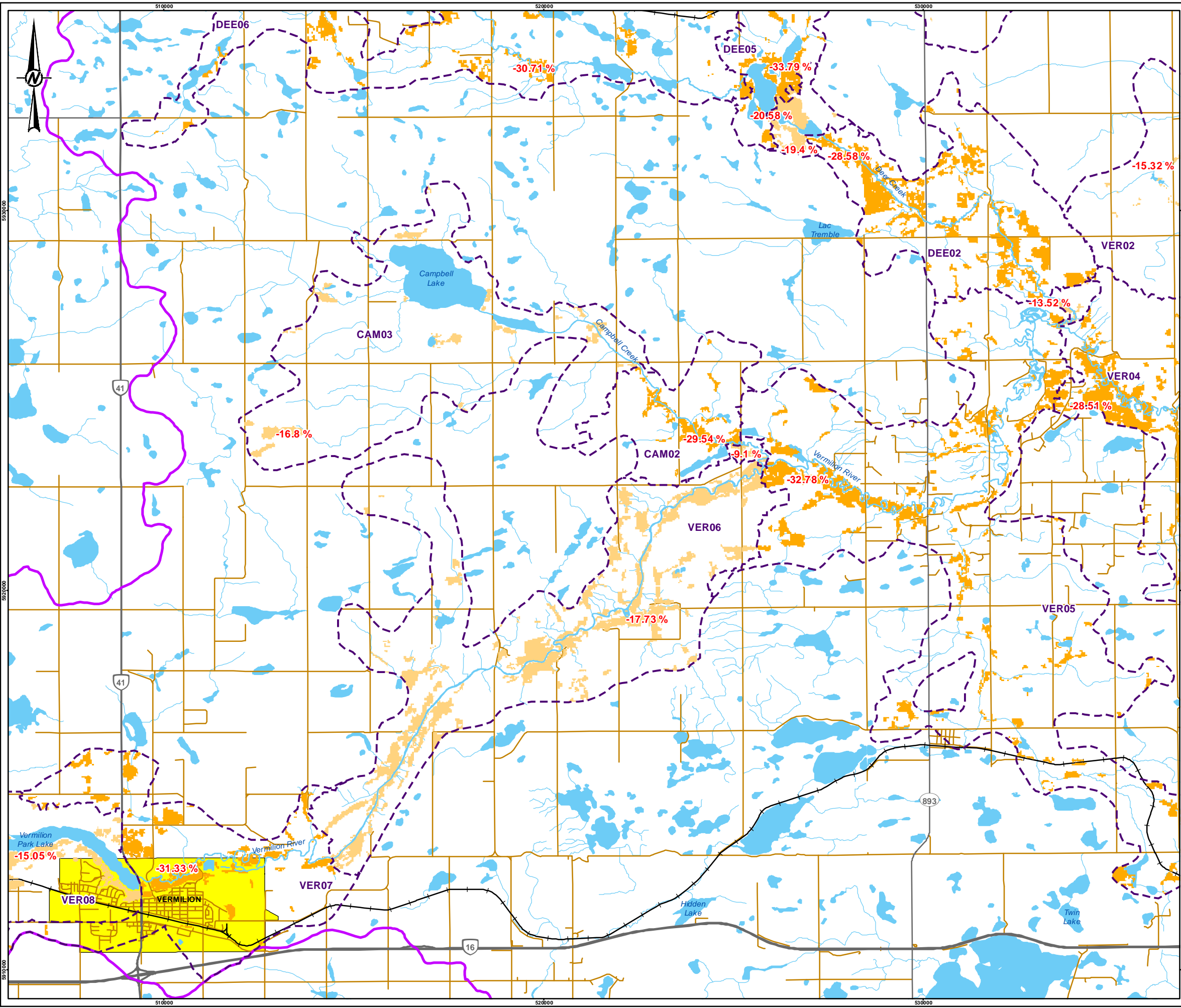
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B2-i

P:\14\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:28:38 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8

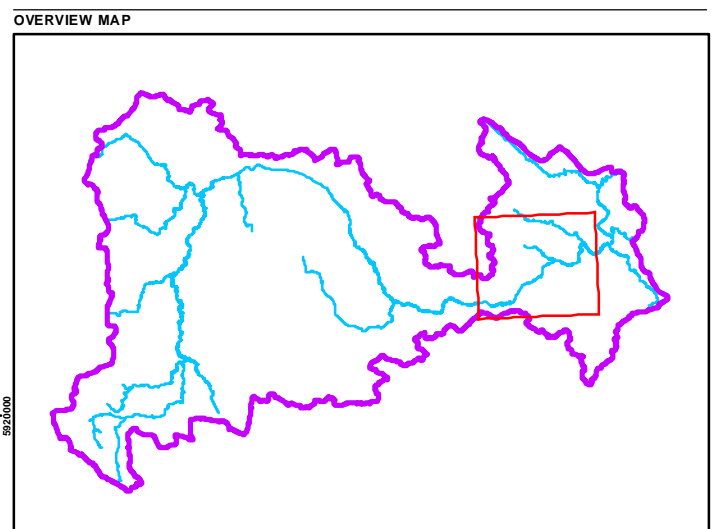


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
 ALL RIGHTS RESERVED, CANVEC, GEOBASE IHS ENERGY INC.  
 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

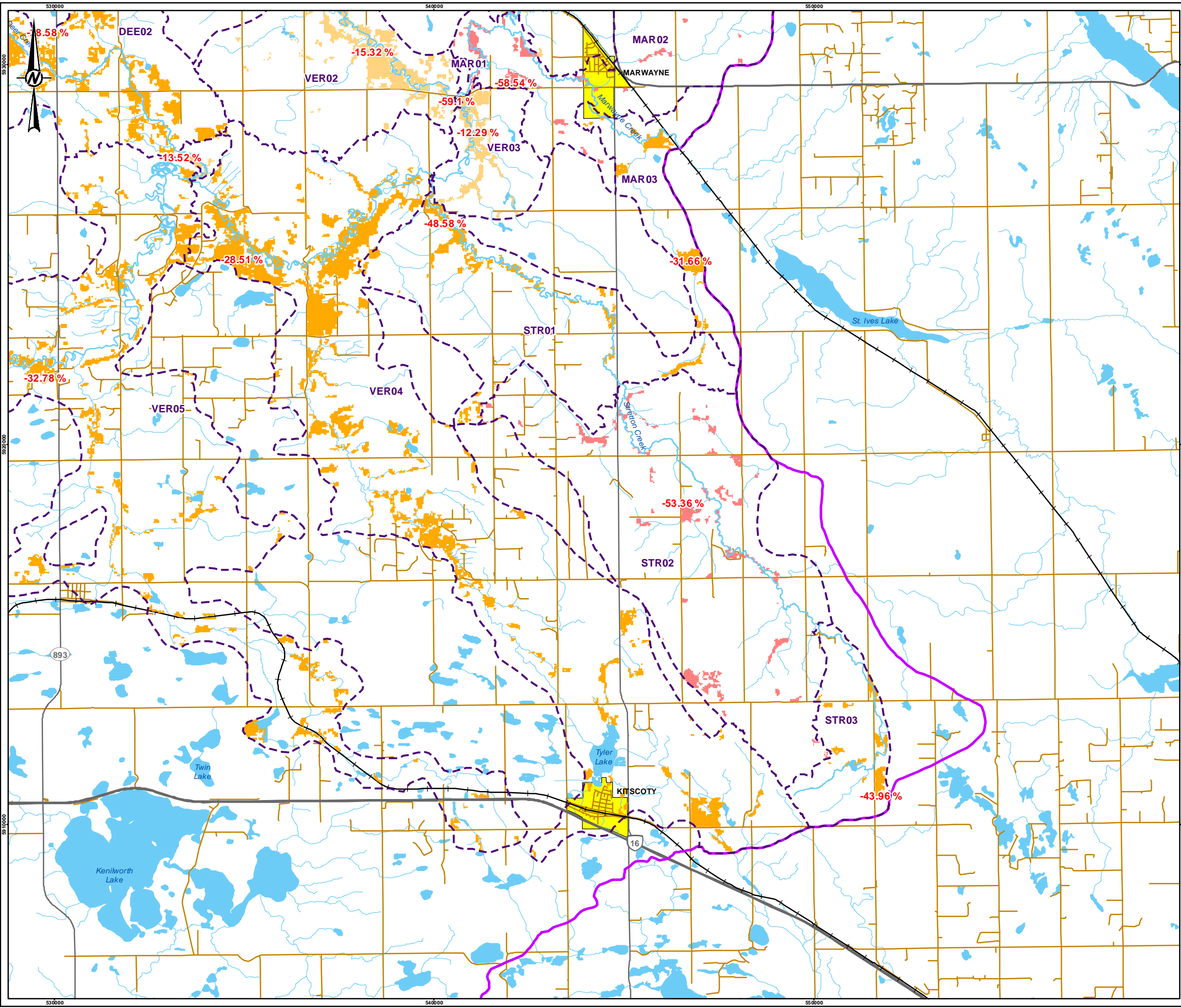
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\KCD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:28:59 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





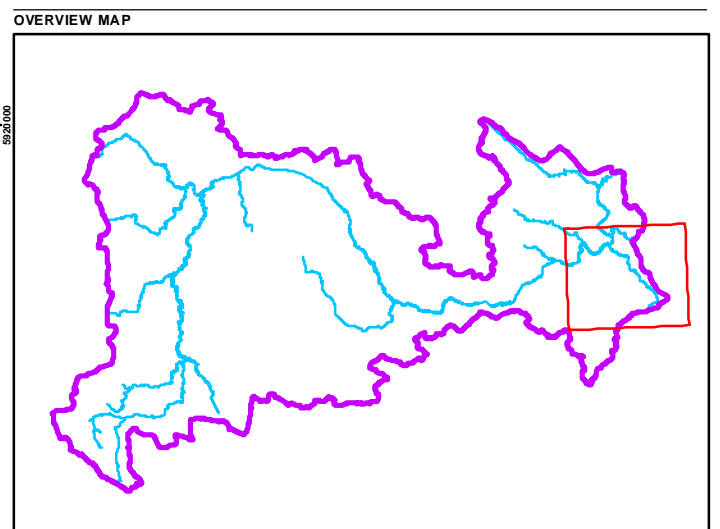
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

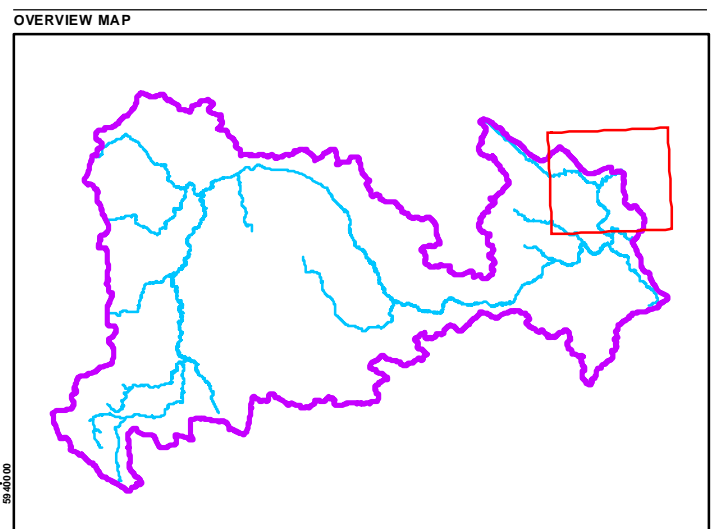
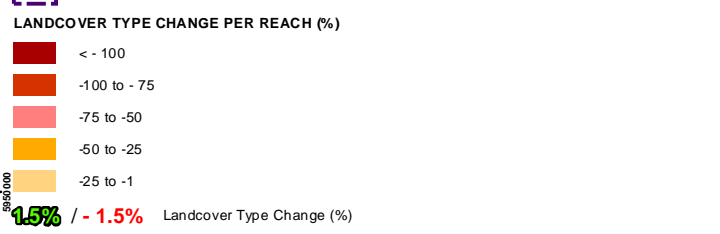
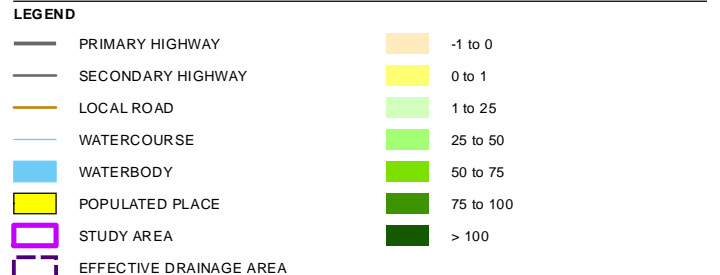
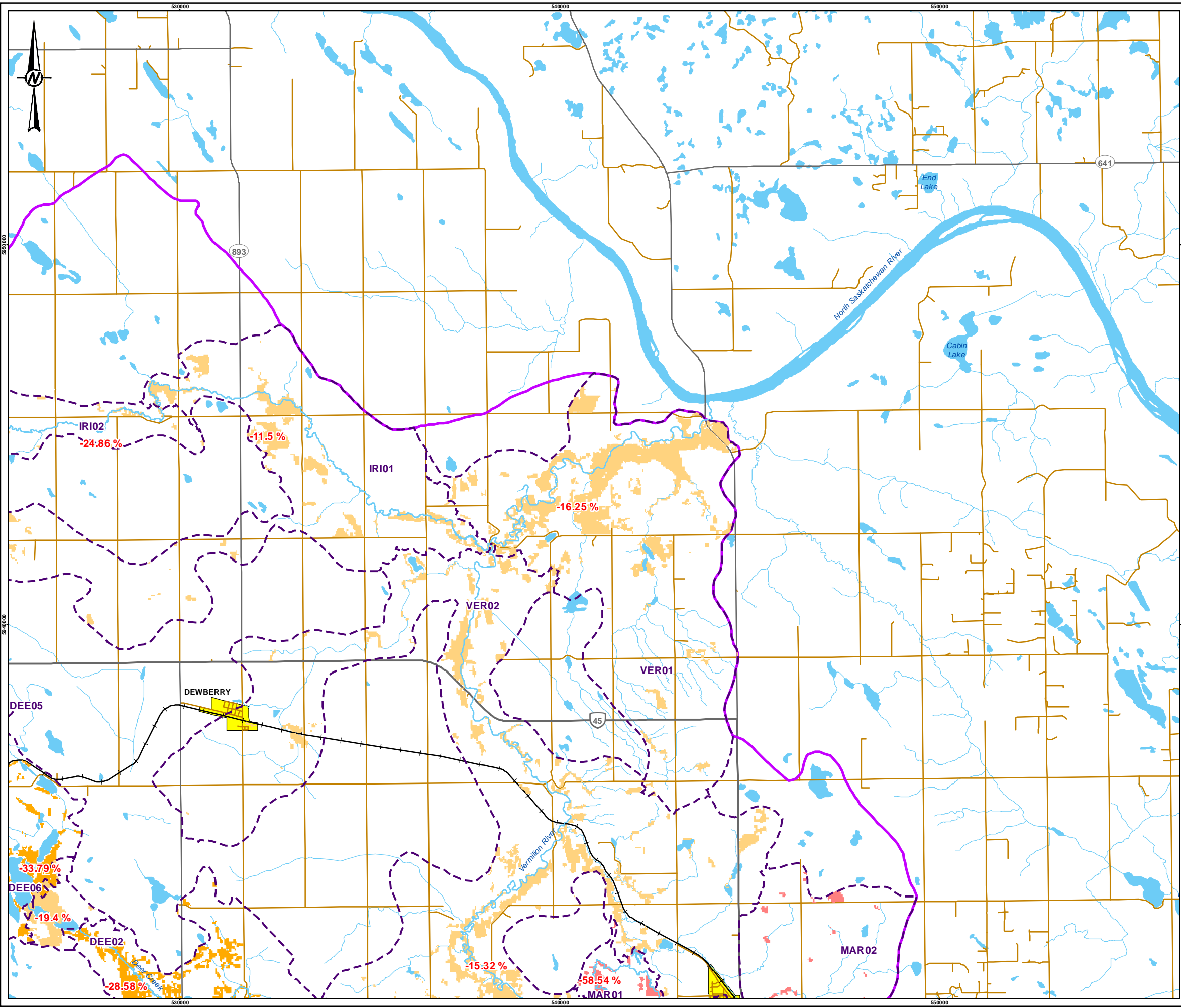
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Review.mxd PRINTED ON: 2016-03-21 AT: 3:29:19 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

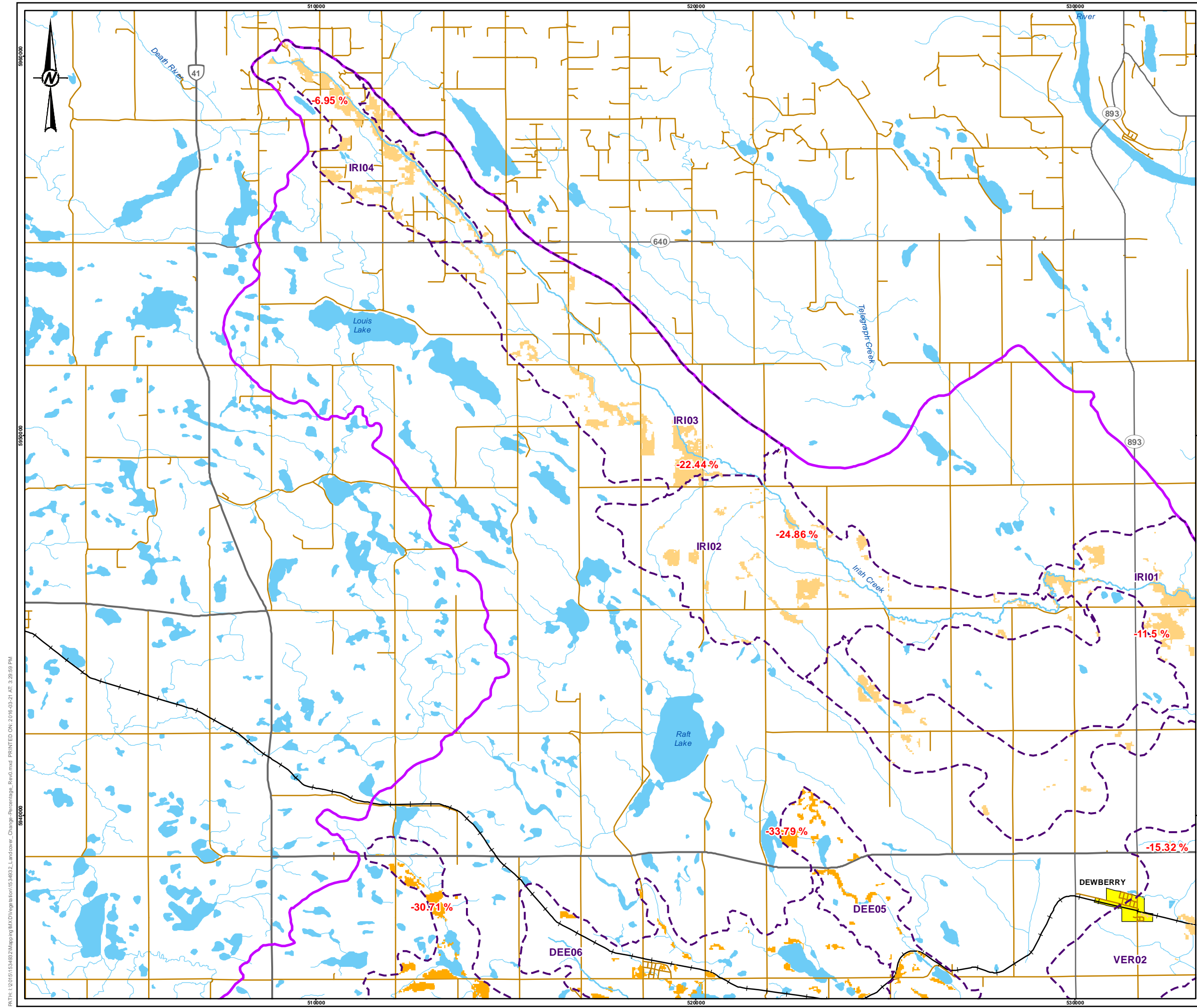
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:29:39 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



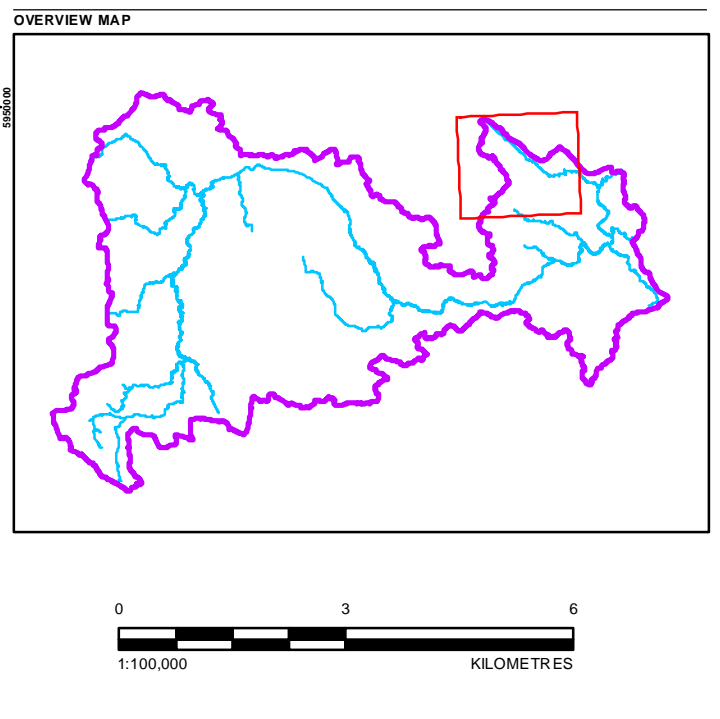
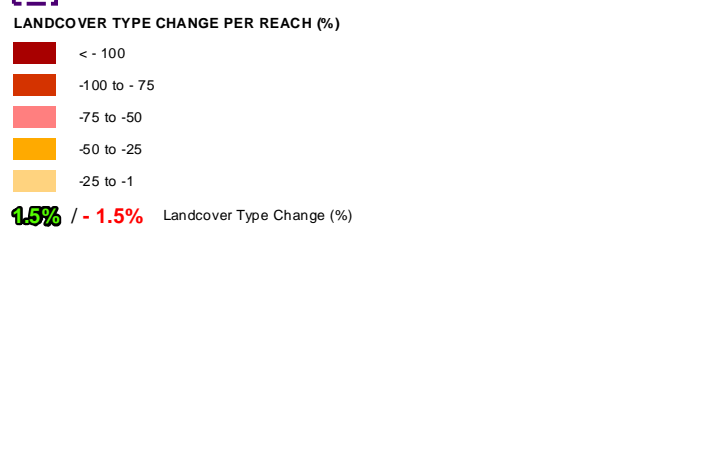
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

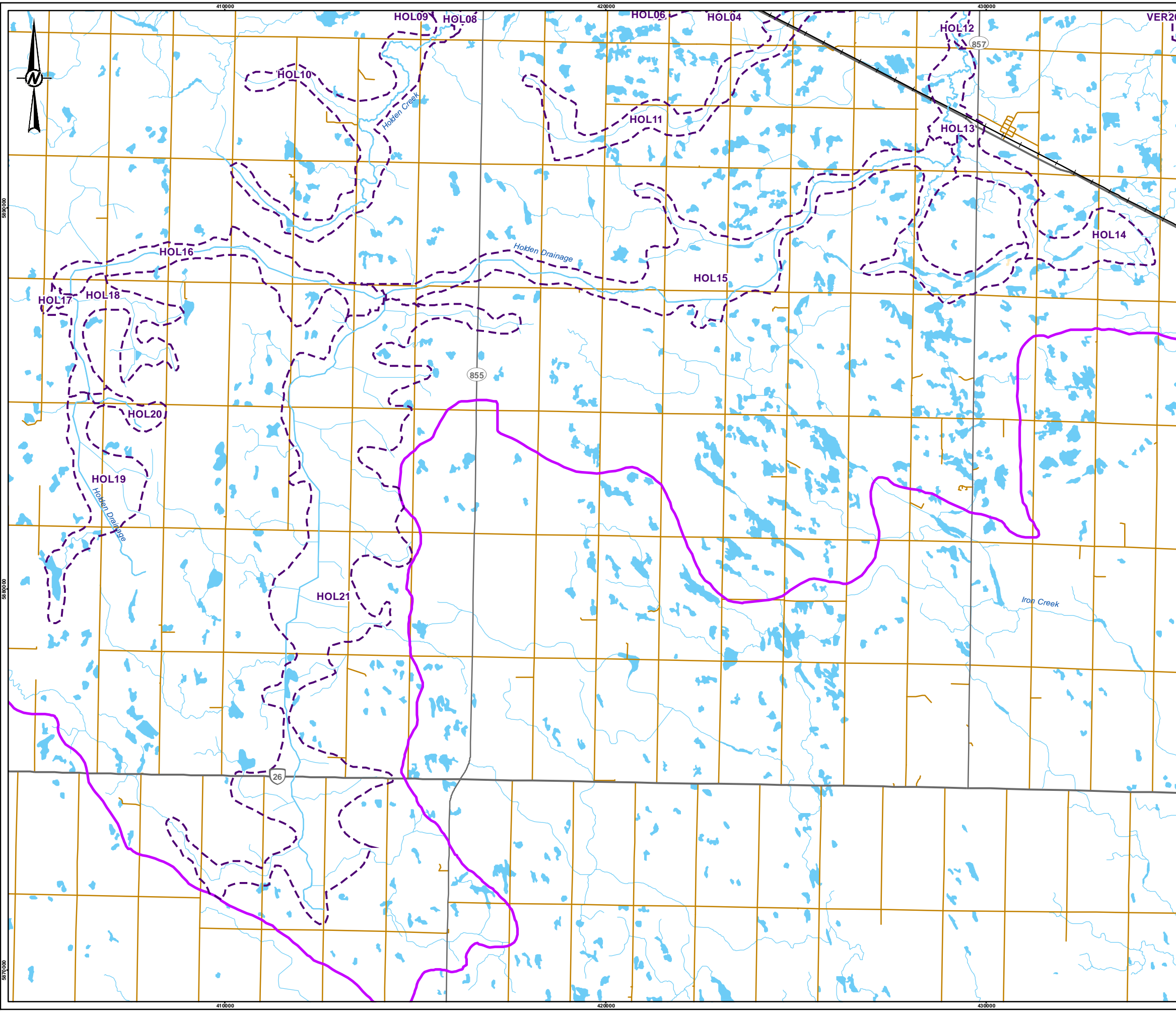
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST

CONSULTANT	YYYY-MM-DD	2016-03-21
DESIGNED	V.COENEN	
PREPARED	P.THIEDE	
REVIEWED	P.THIEDE	
APPROVED	V.COENEN	

**PROJECT NO.** 1534932      **CONTROL**      **REV.** A      **FIGURE** B2-m

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:29:59 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



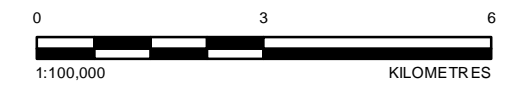
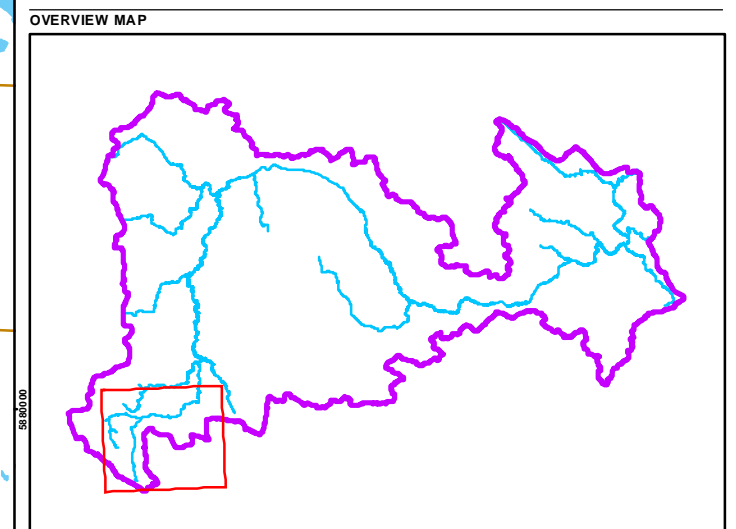
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

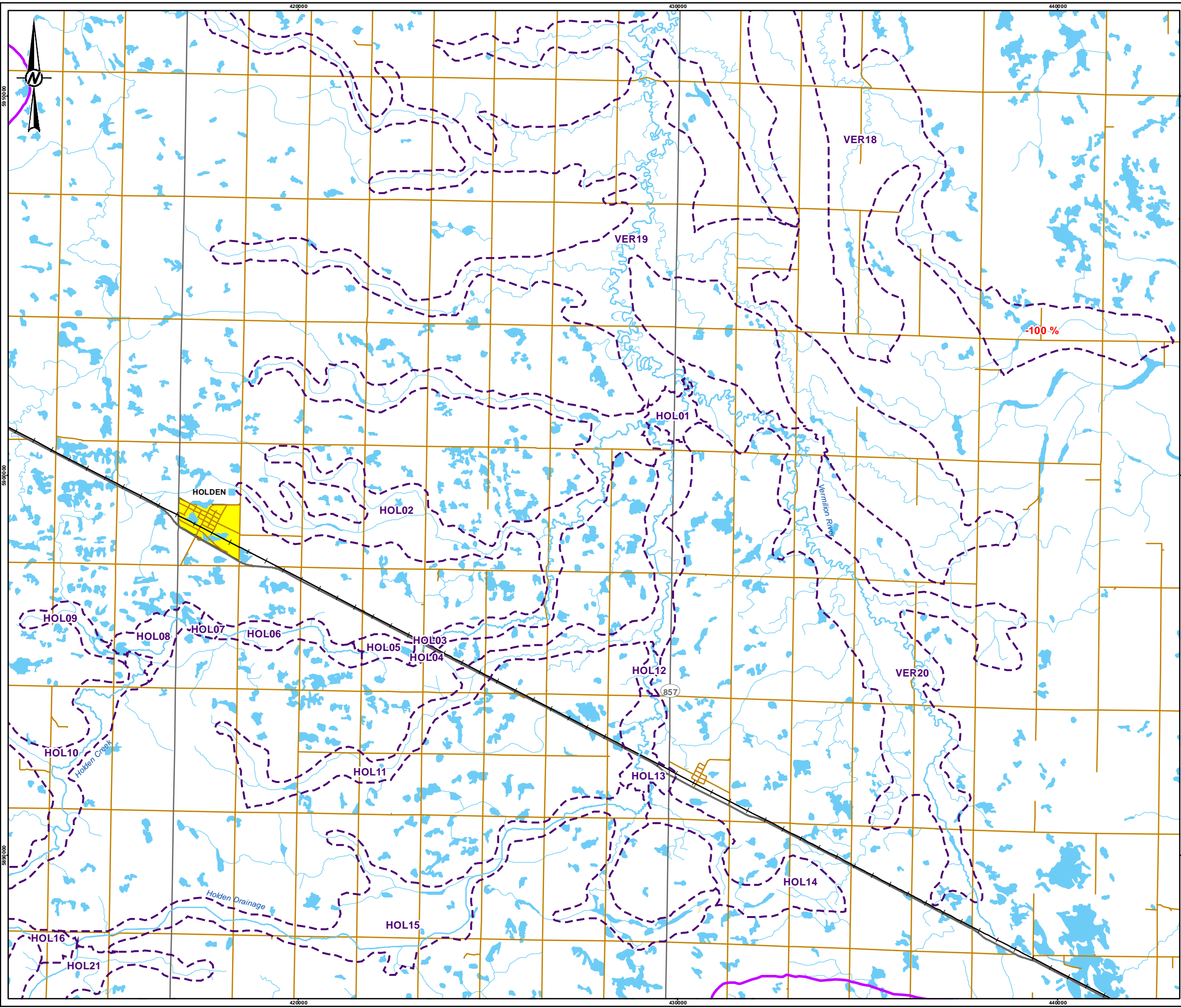
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-a

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:30:18 PM  
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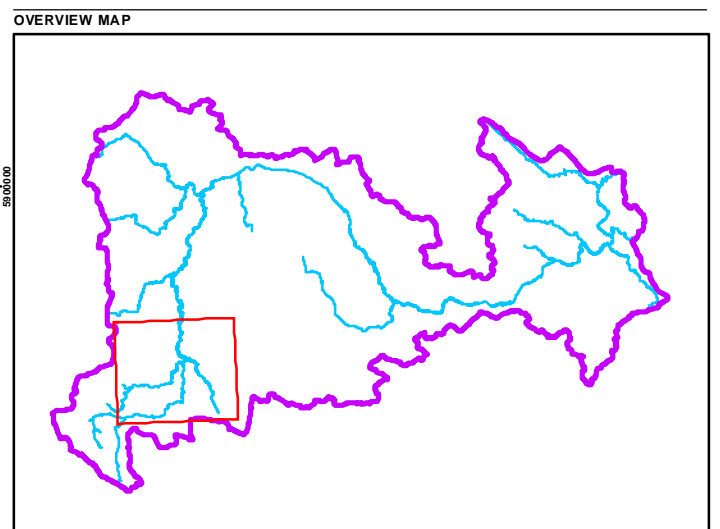
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

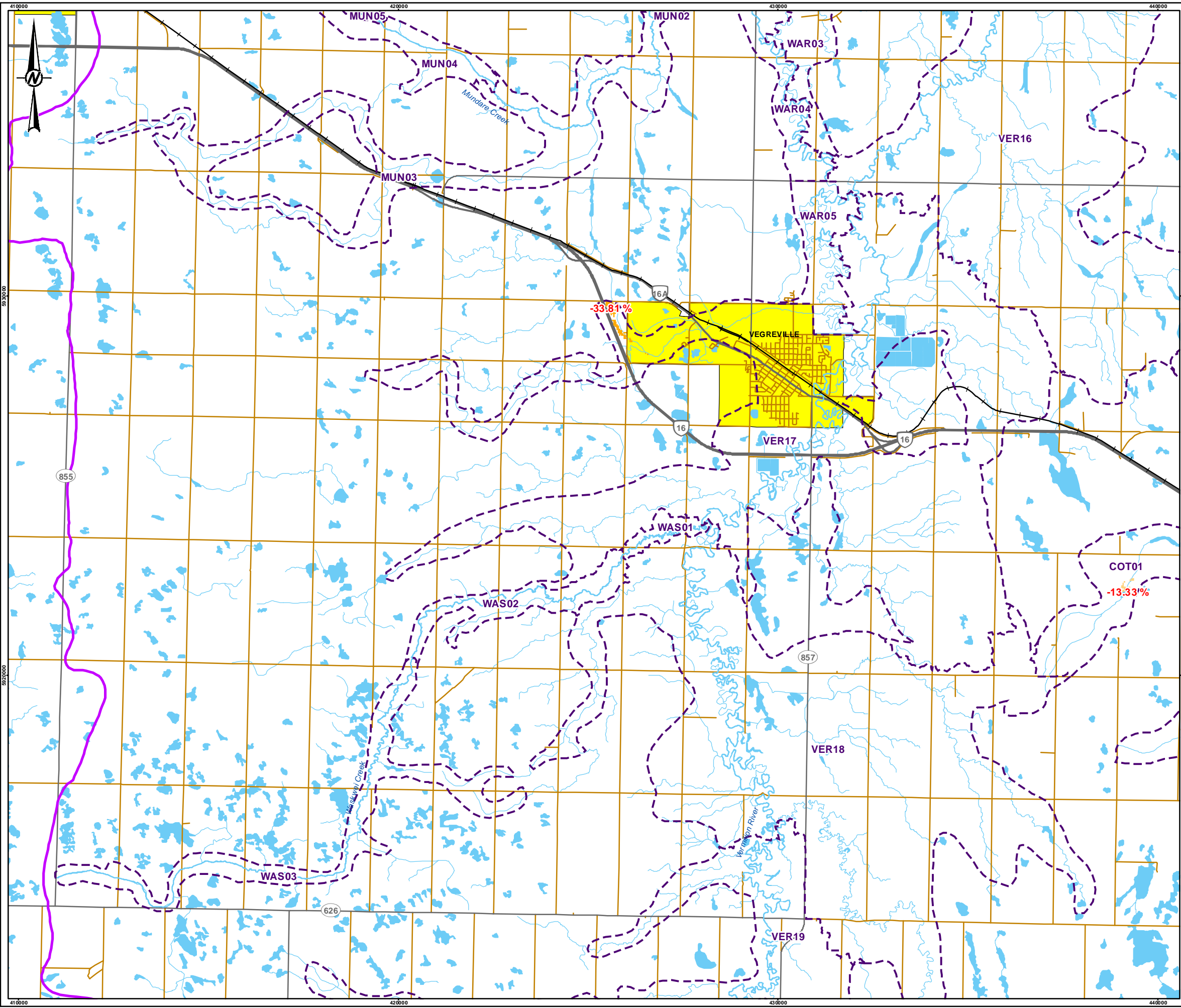
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B3-b**

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:30:37 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



**LEGEND**

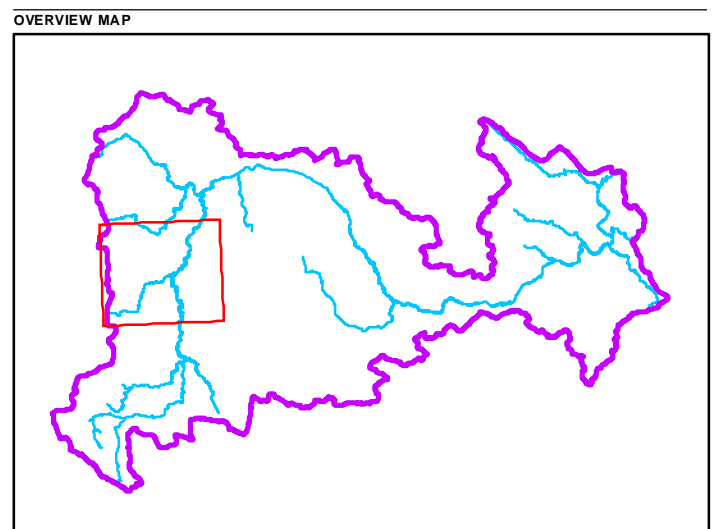
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

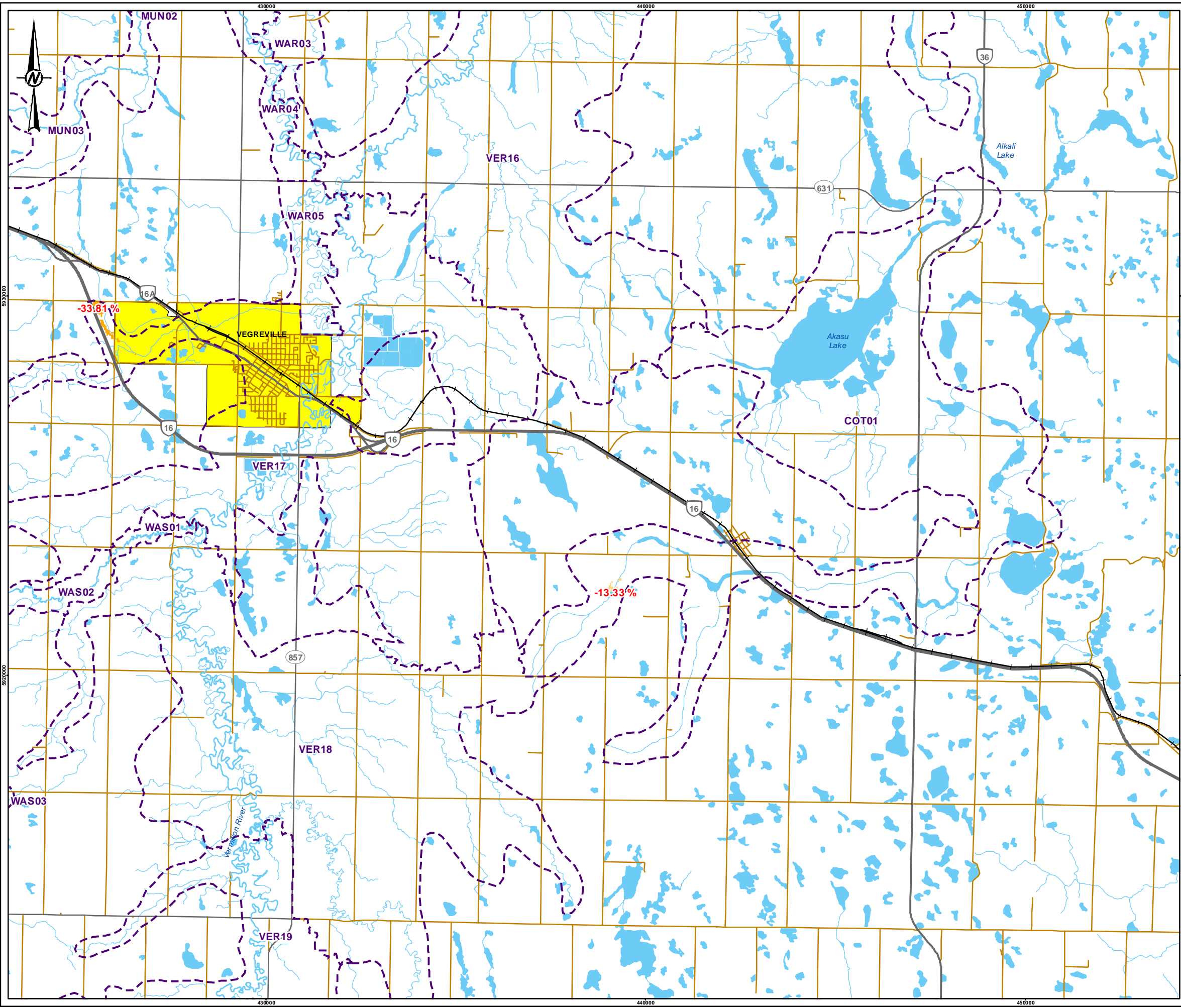
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:20:54 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





**LEGEND**

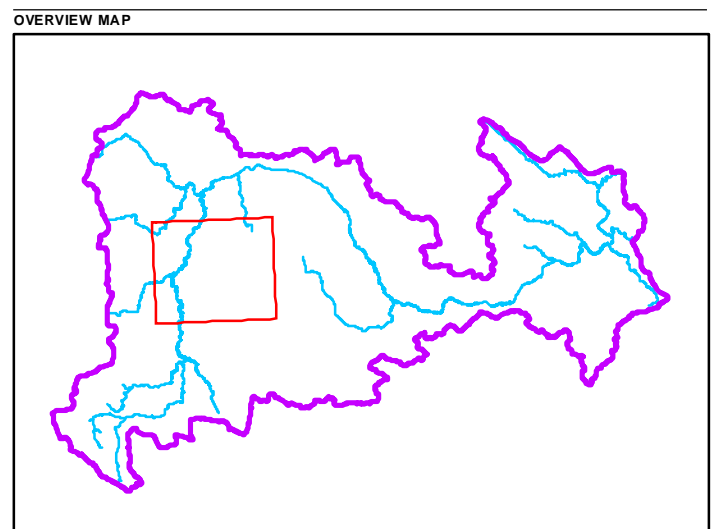
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

Color	Landcover Type Change (%)
Lightest Yellow	-1 to 0
Yellow	0 to 1
Light Green	1 to 25
Light Green	25 to 50
Medium Green	50 to 75
Dark Green	75 to 100
Darkest Green	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

Dark Red	< -100
Red	-100 to -75
Light Red	-75 to -50
Orange	-50 to -25
Yellow-Orange	-25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

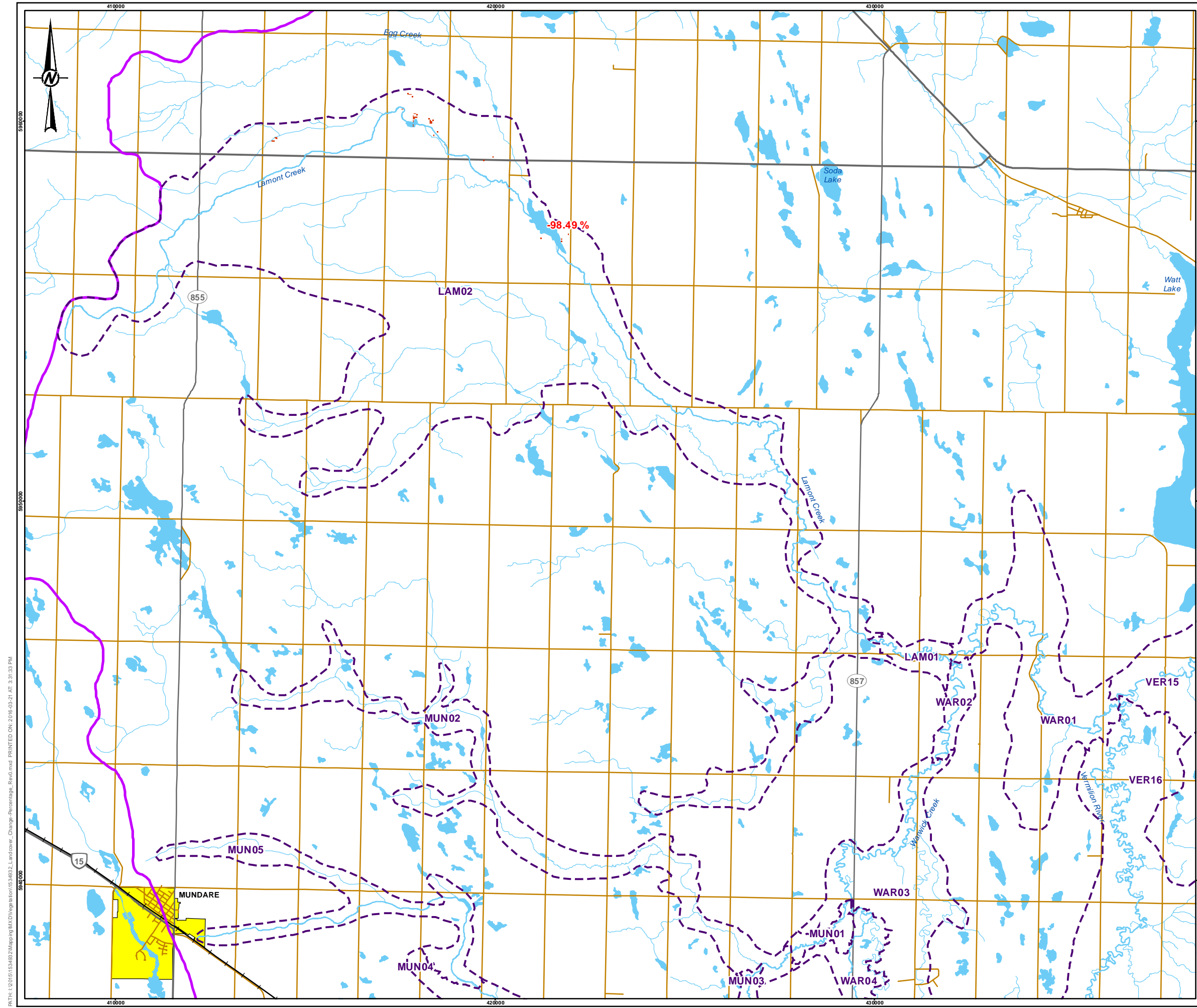
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-d

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:31:14 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

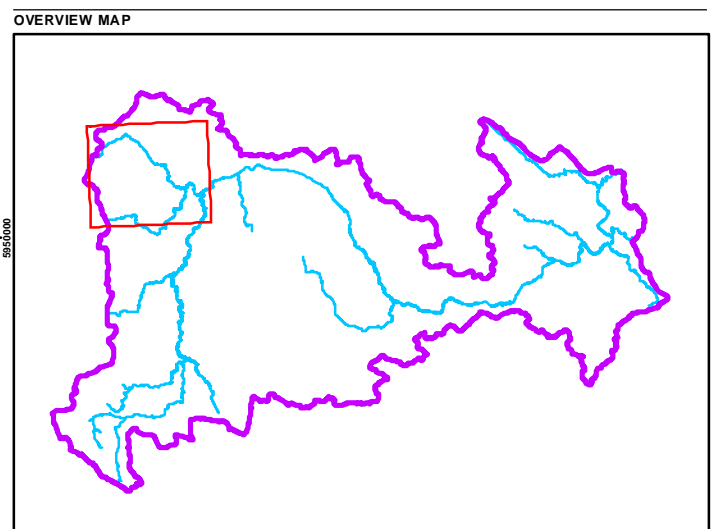
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

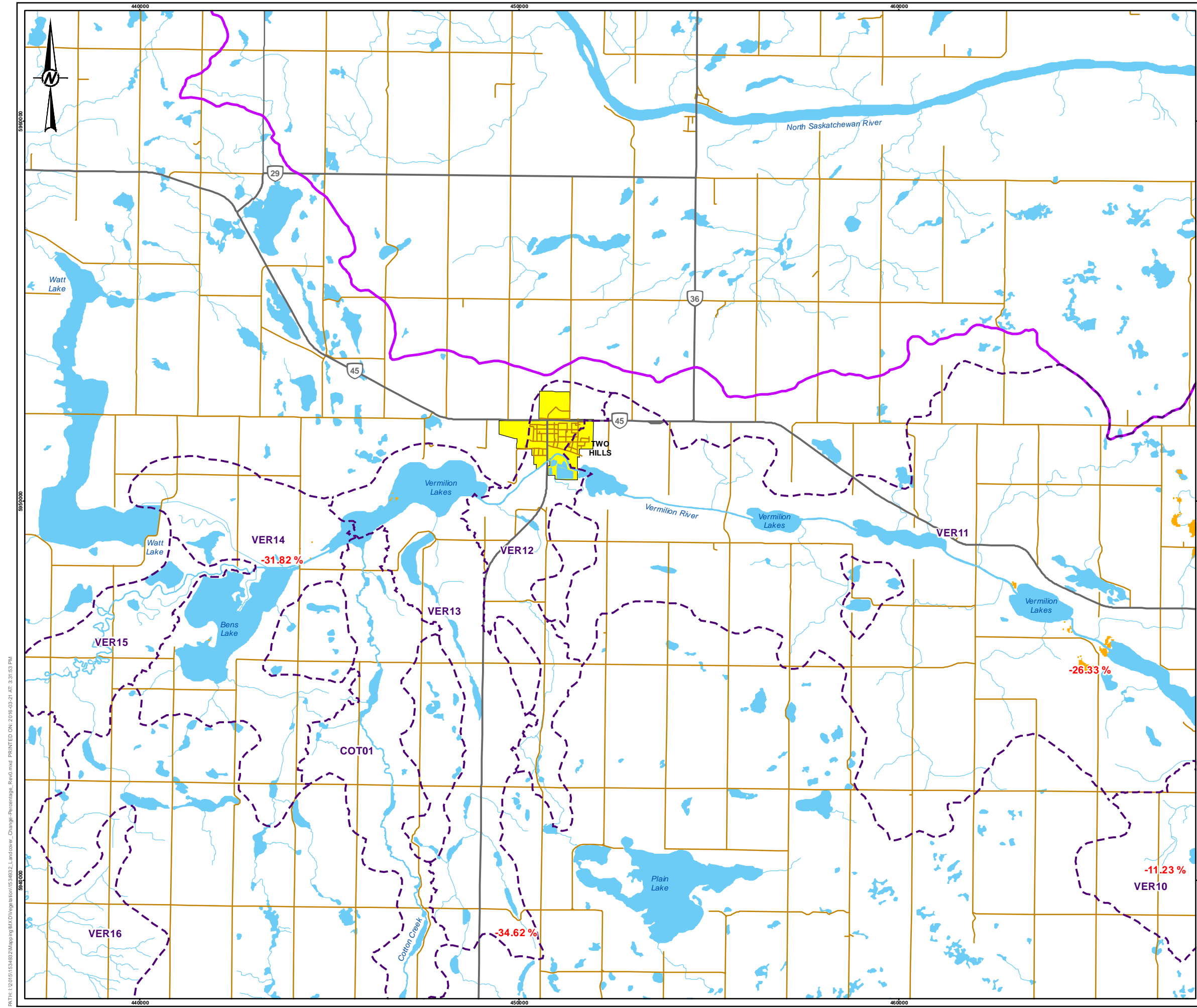
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:31:33 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 6



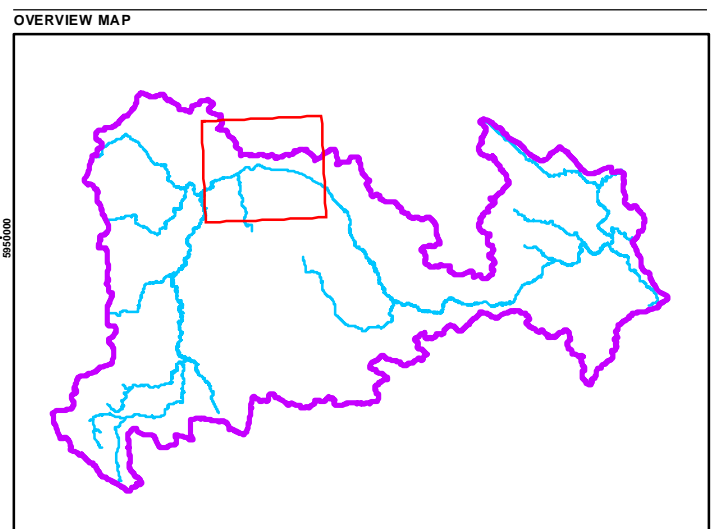
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

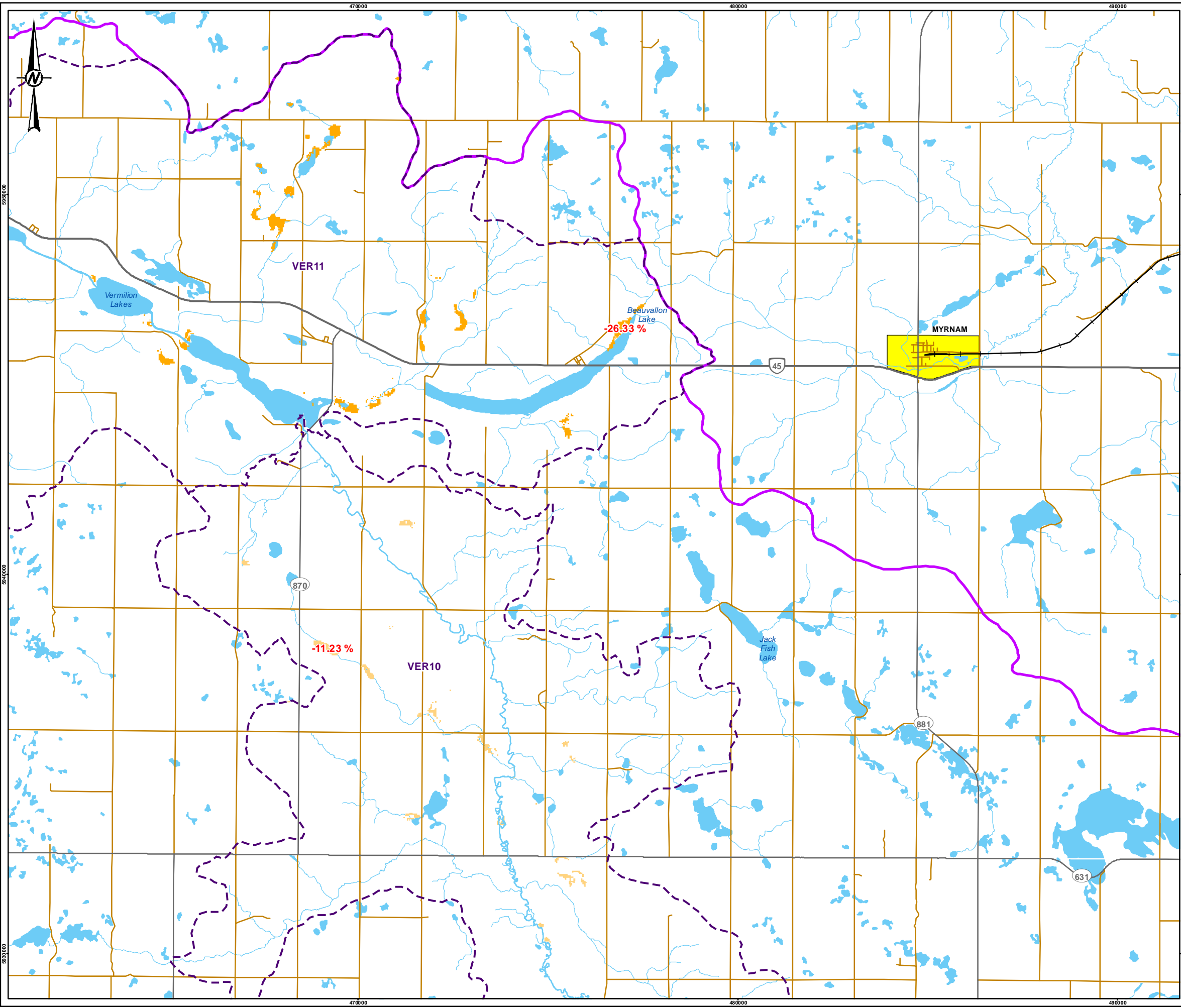
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-f

PATH: I:\2016\1534932\Maping\Map\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 At: 3:31:53 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



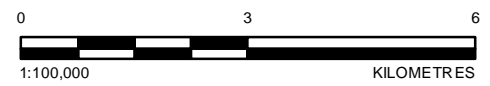
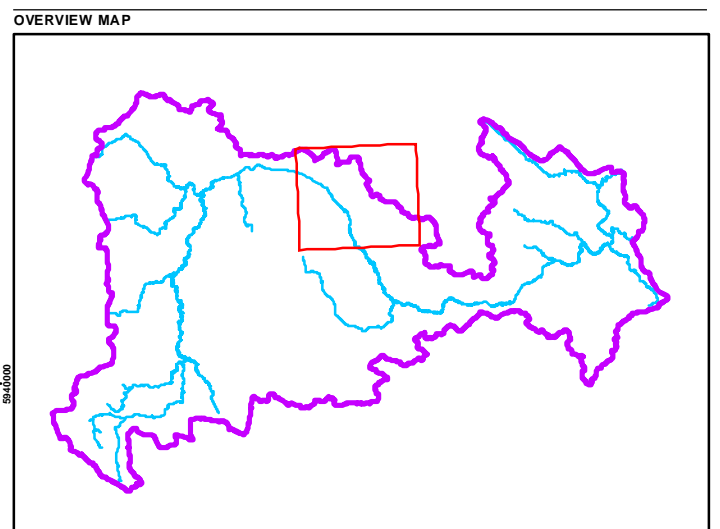
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

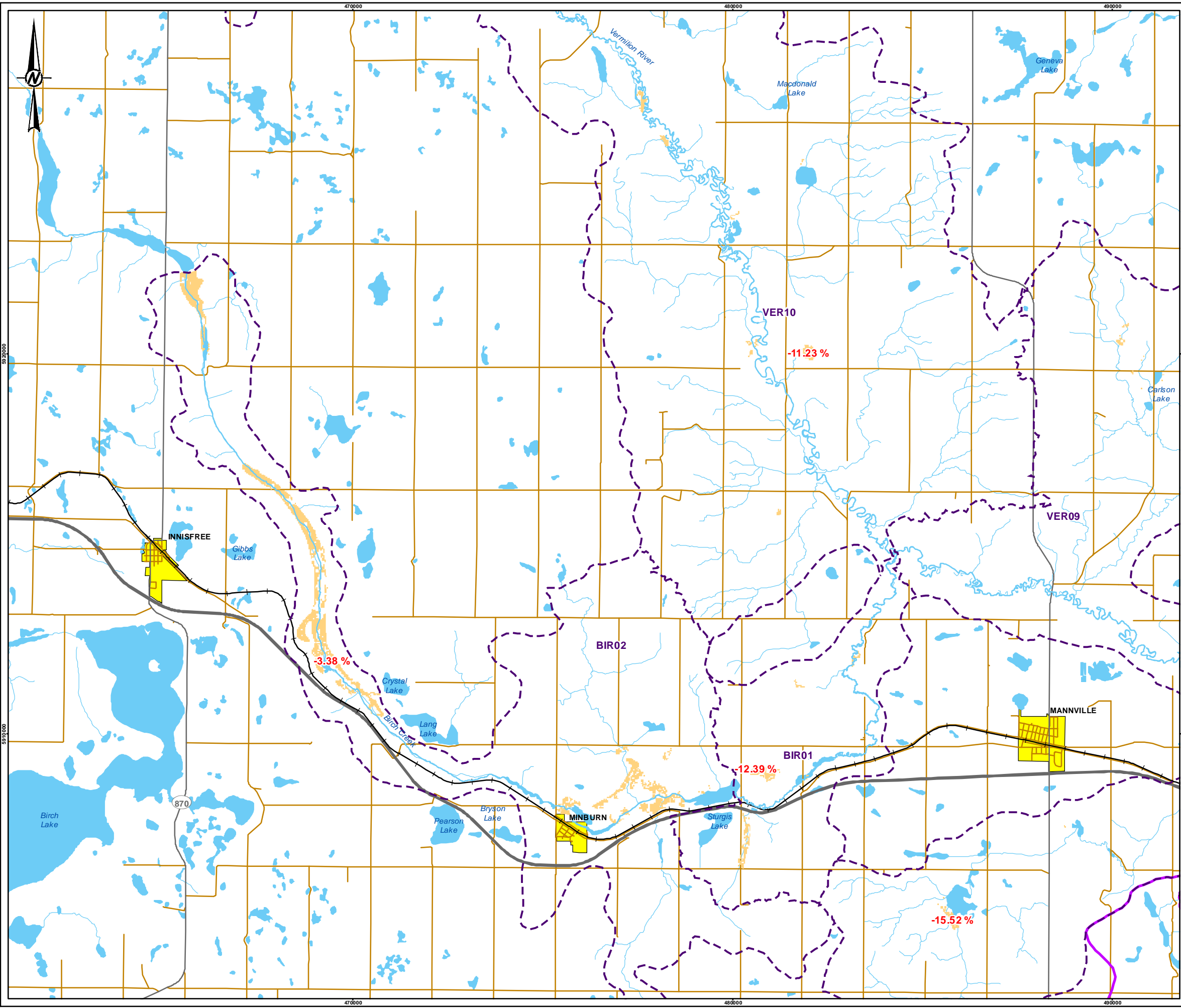
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:32:12 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





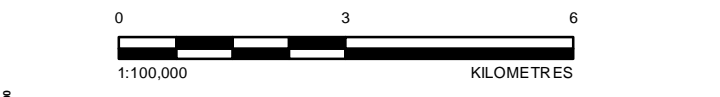
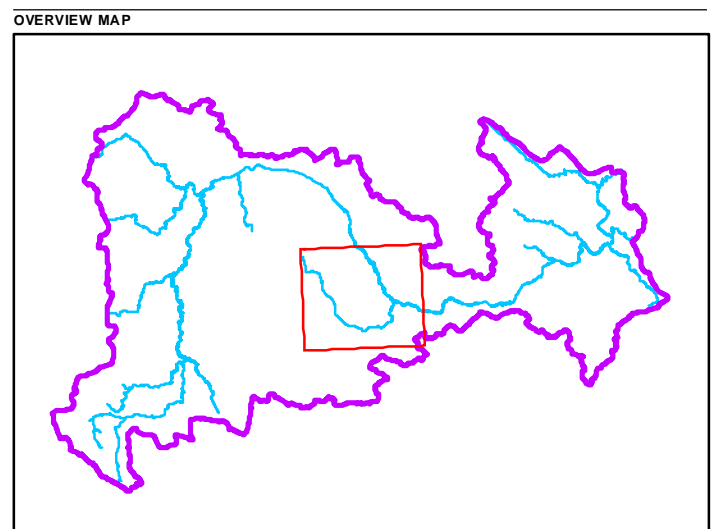
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

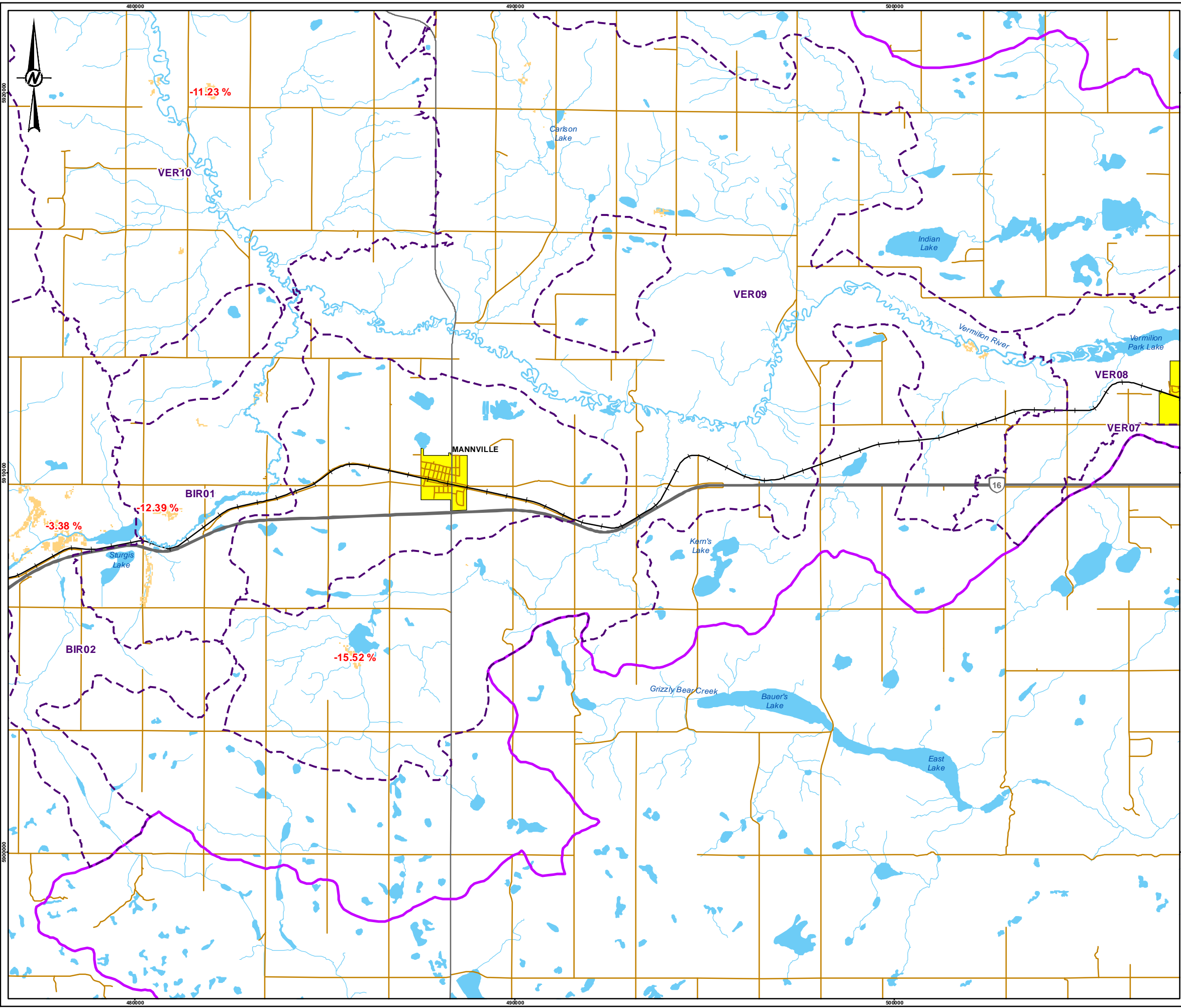
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-h

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:23:31 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

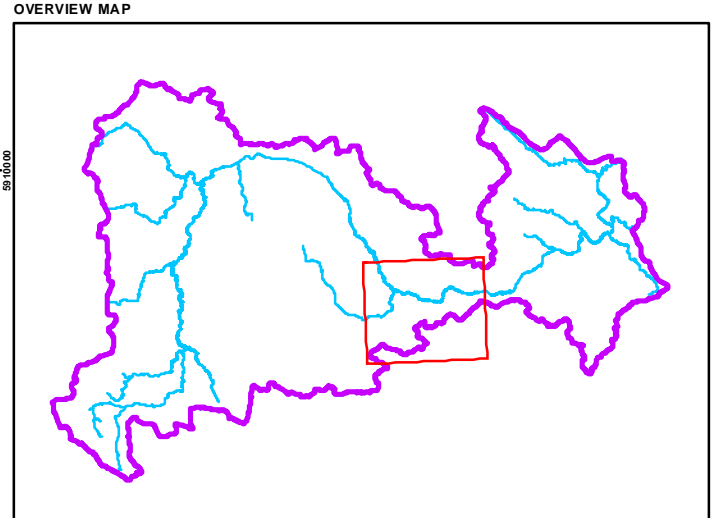


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

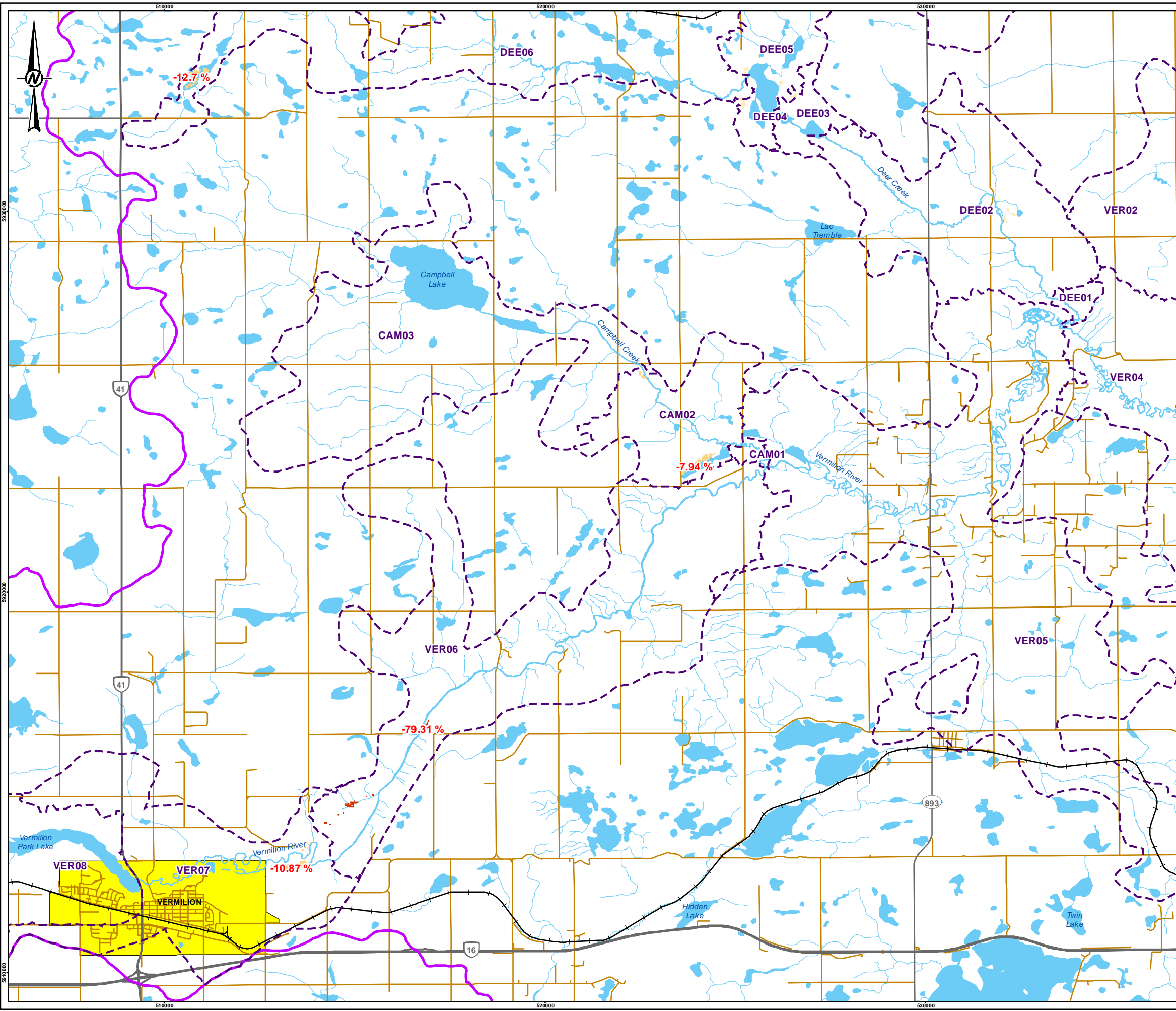
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-i

PATH: I:\2016\1534932\Maping\MXD\fig\B3-i\B3-i\_1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:32:49 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 6



**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

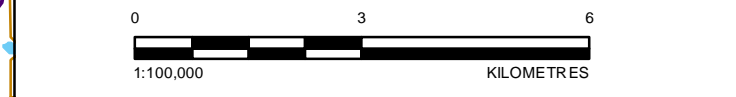
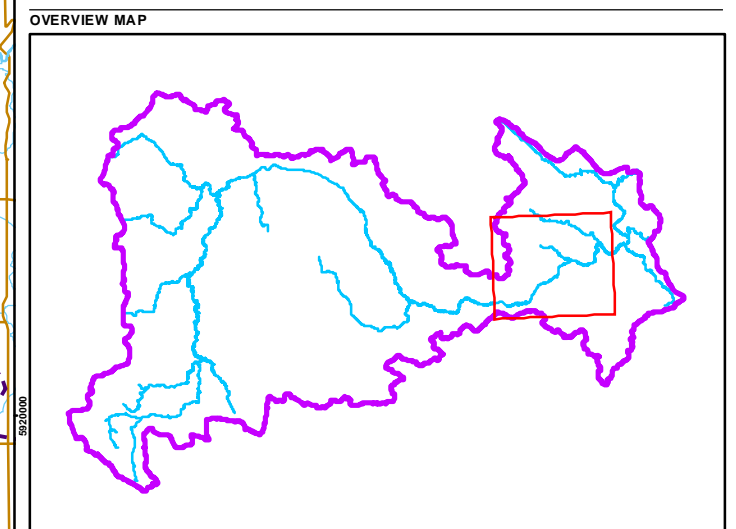
**LANDCOVER TYPE CHANGE PER REACH (%)**

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

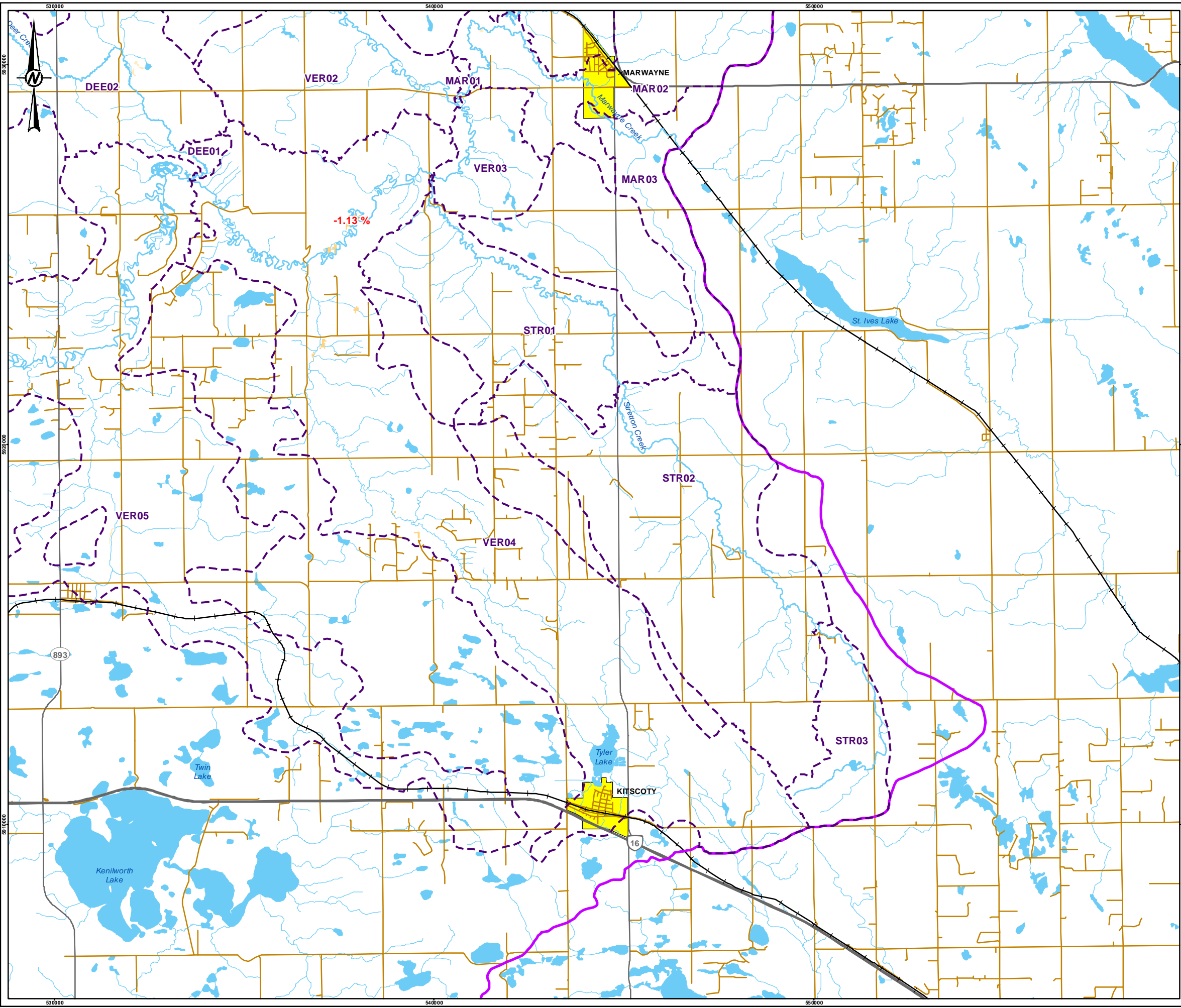
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-j

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:30:09 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



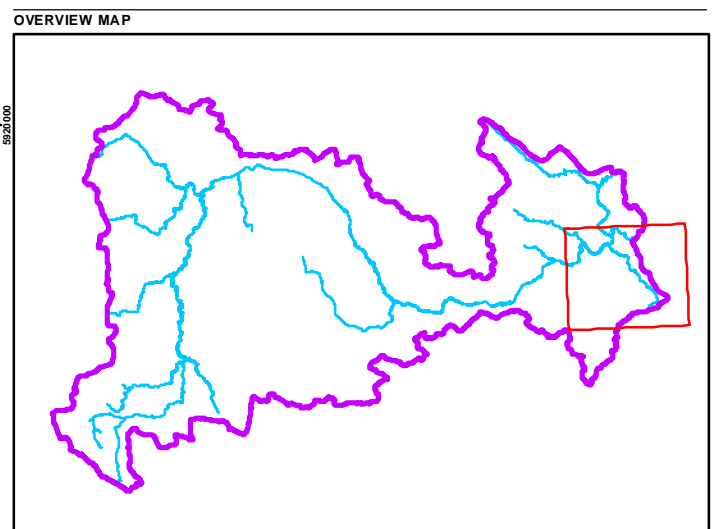


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%
- Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

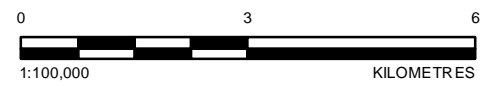
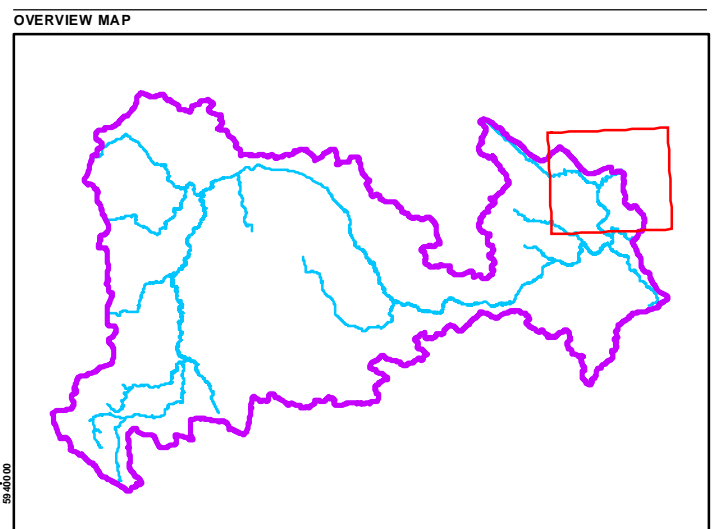
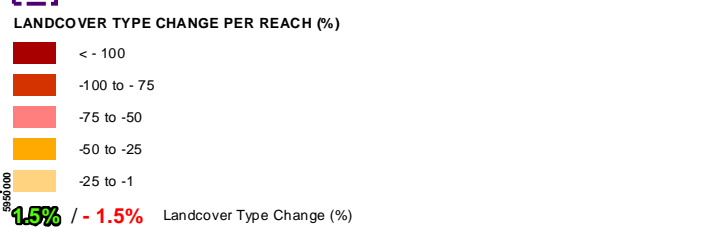
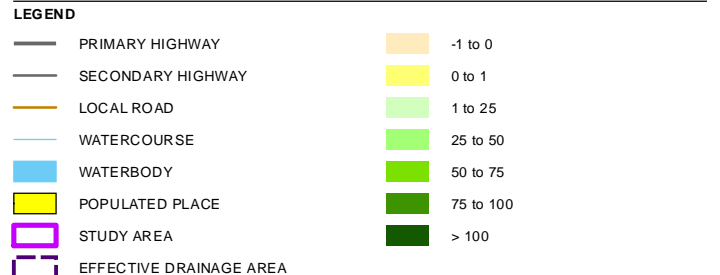
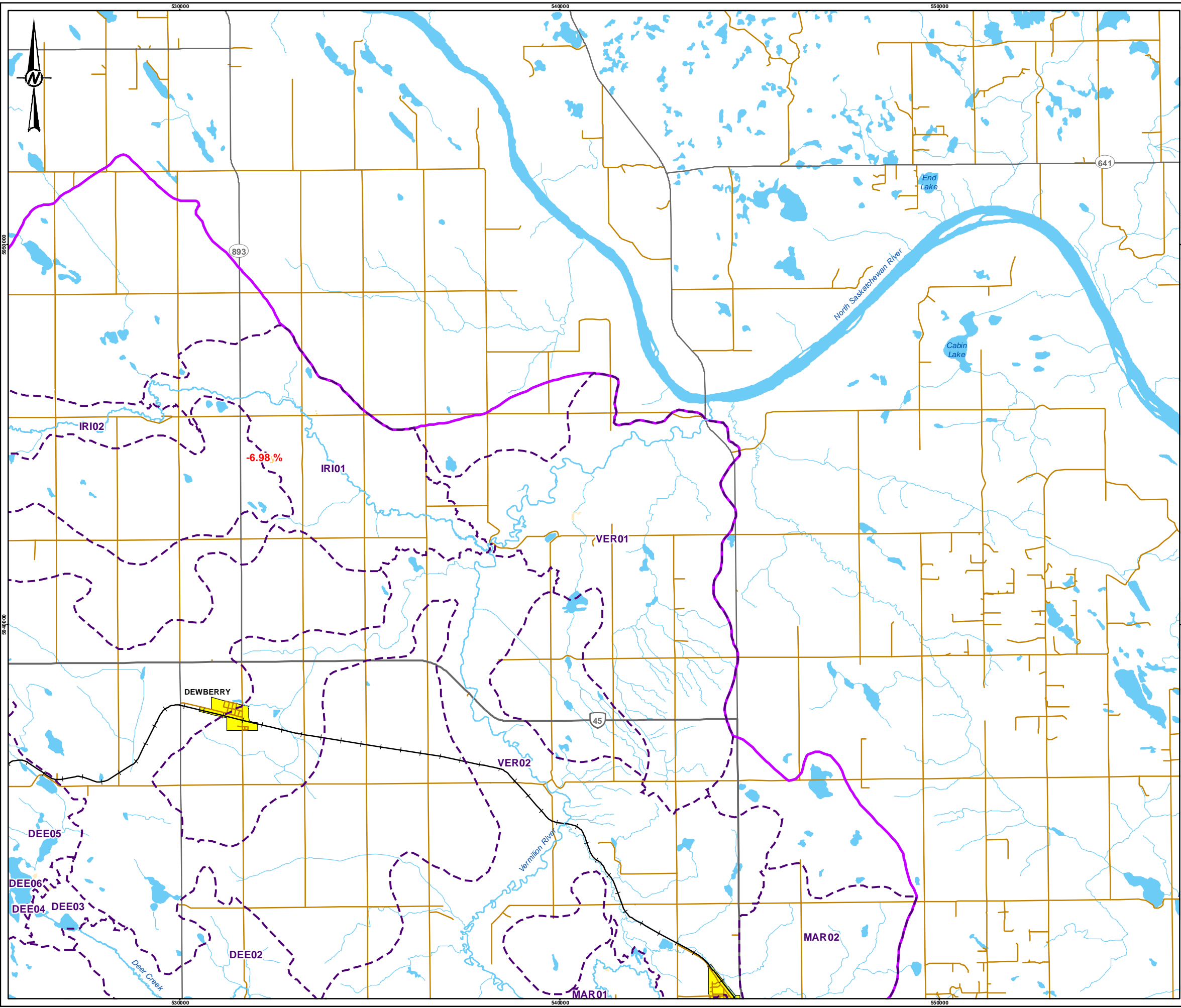
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\TM\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Review\Maping\_Review.mxd PRINTED ON: 2016-03-21 AM 3:32:26 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

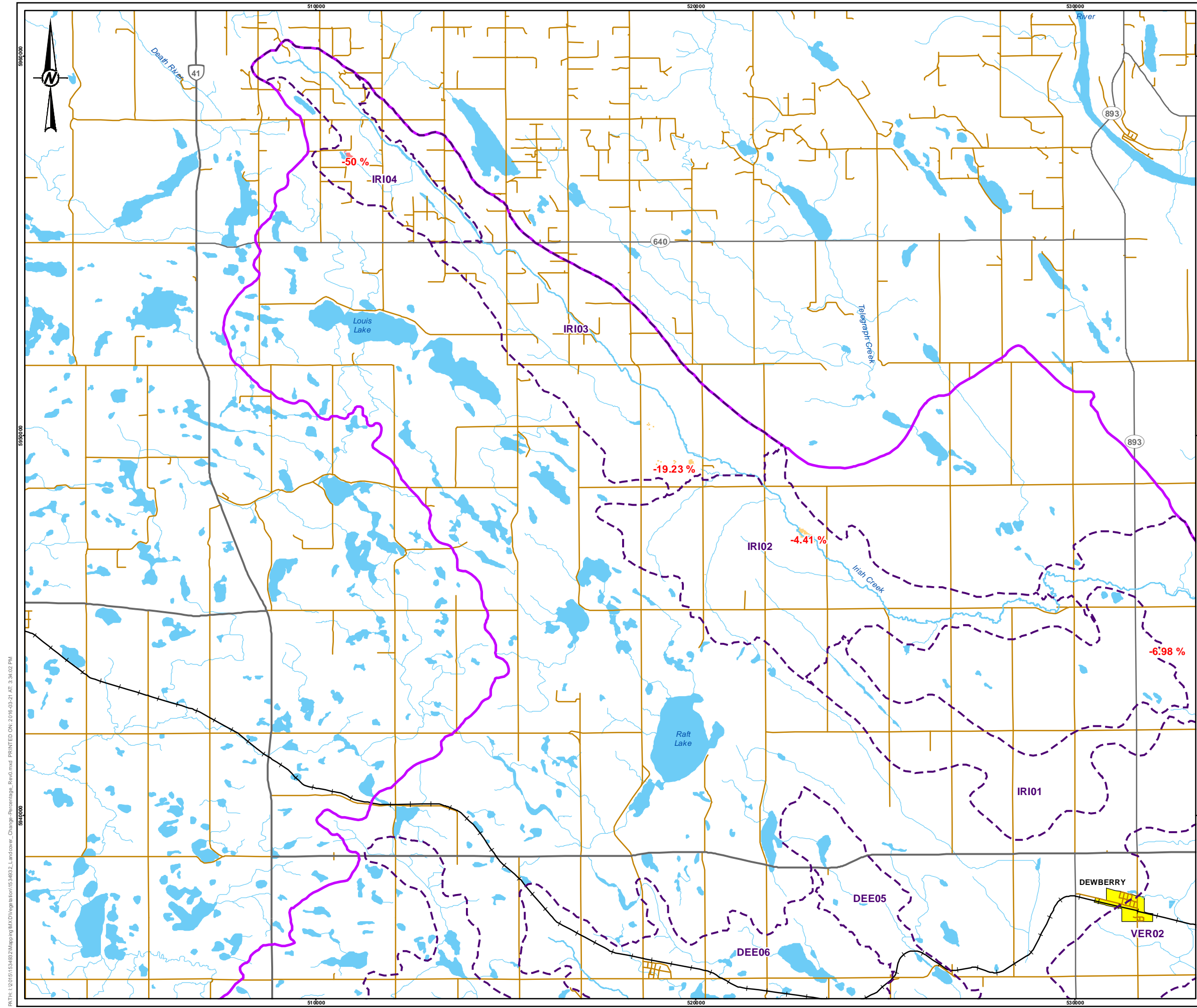
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B3-1

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:30:44 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

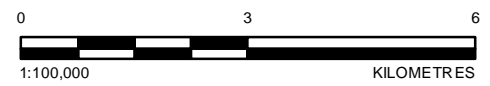
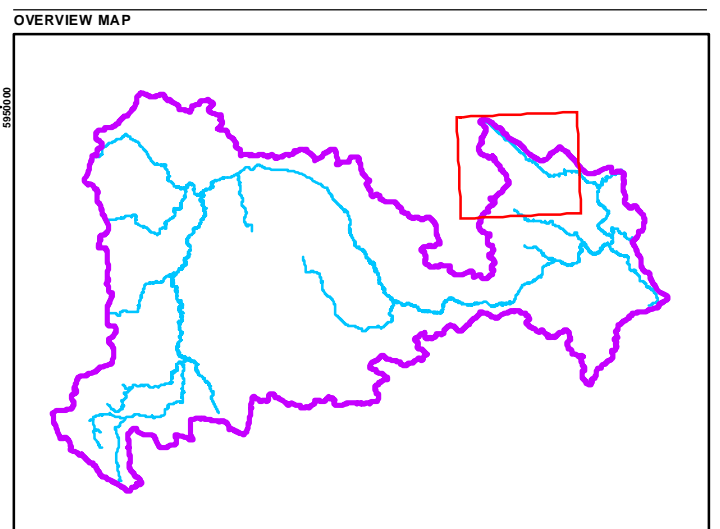
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - FOREST WETLAND

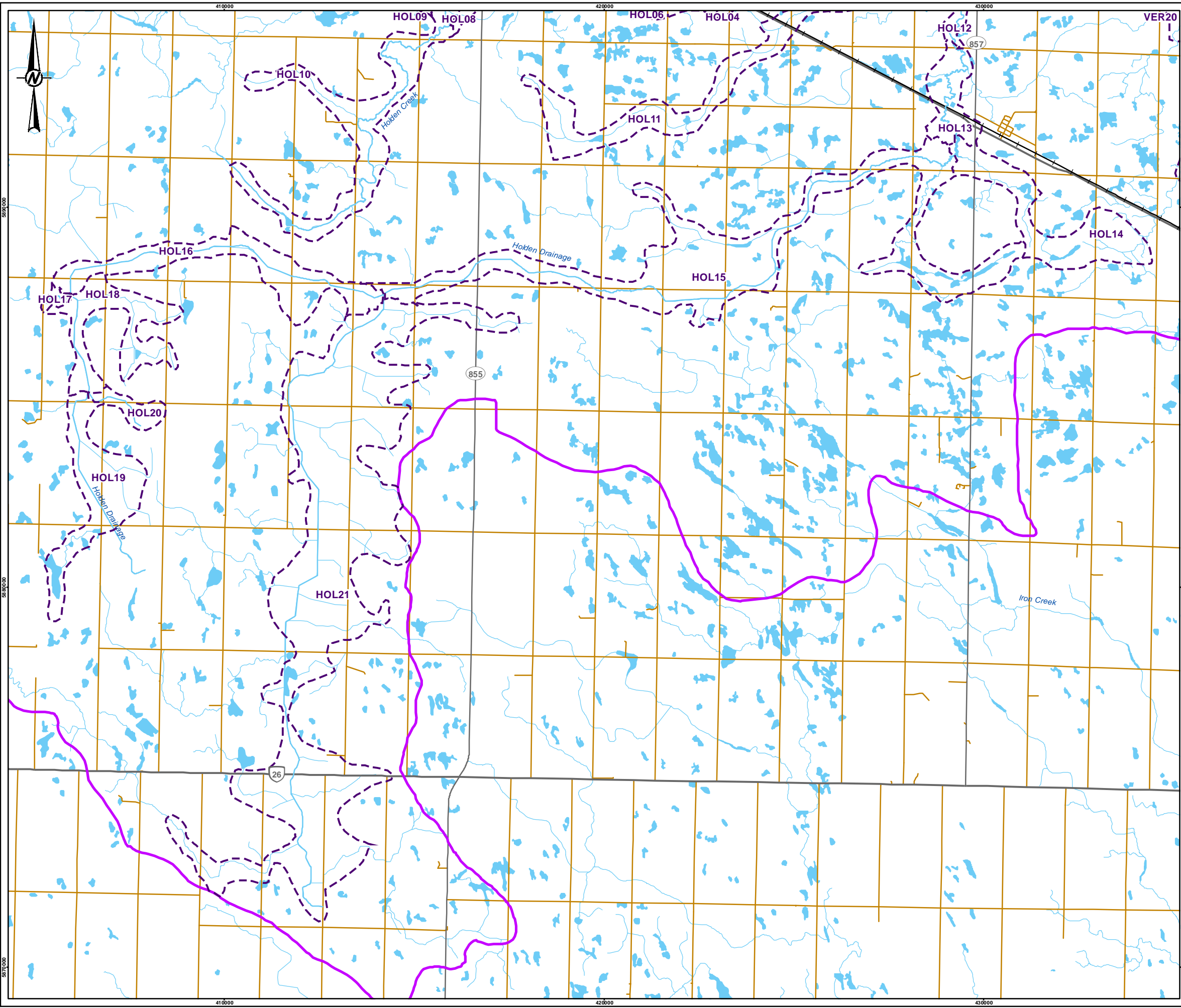
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B3-m**

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Overview.aprx PRINTED ON: 2016-03-21 AT: 3:34:02 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





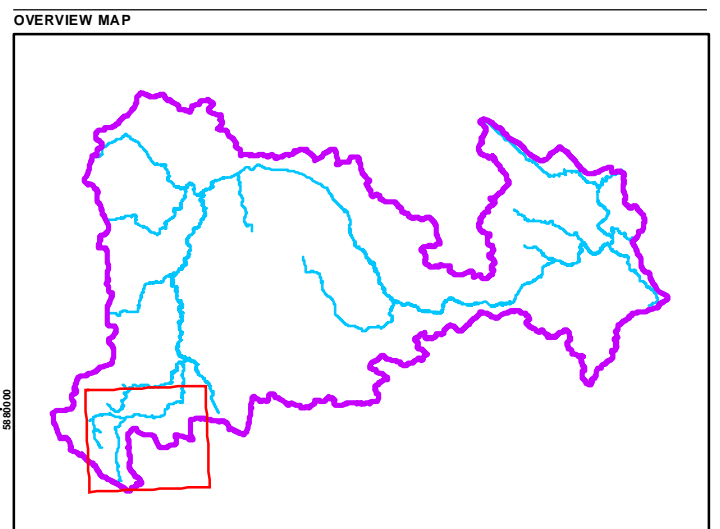
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**1.5% / -1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

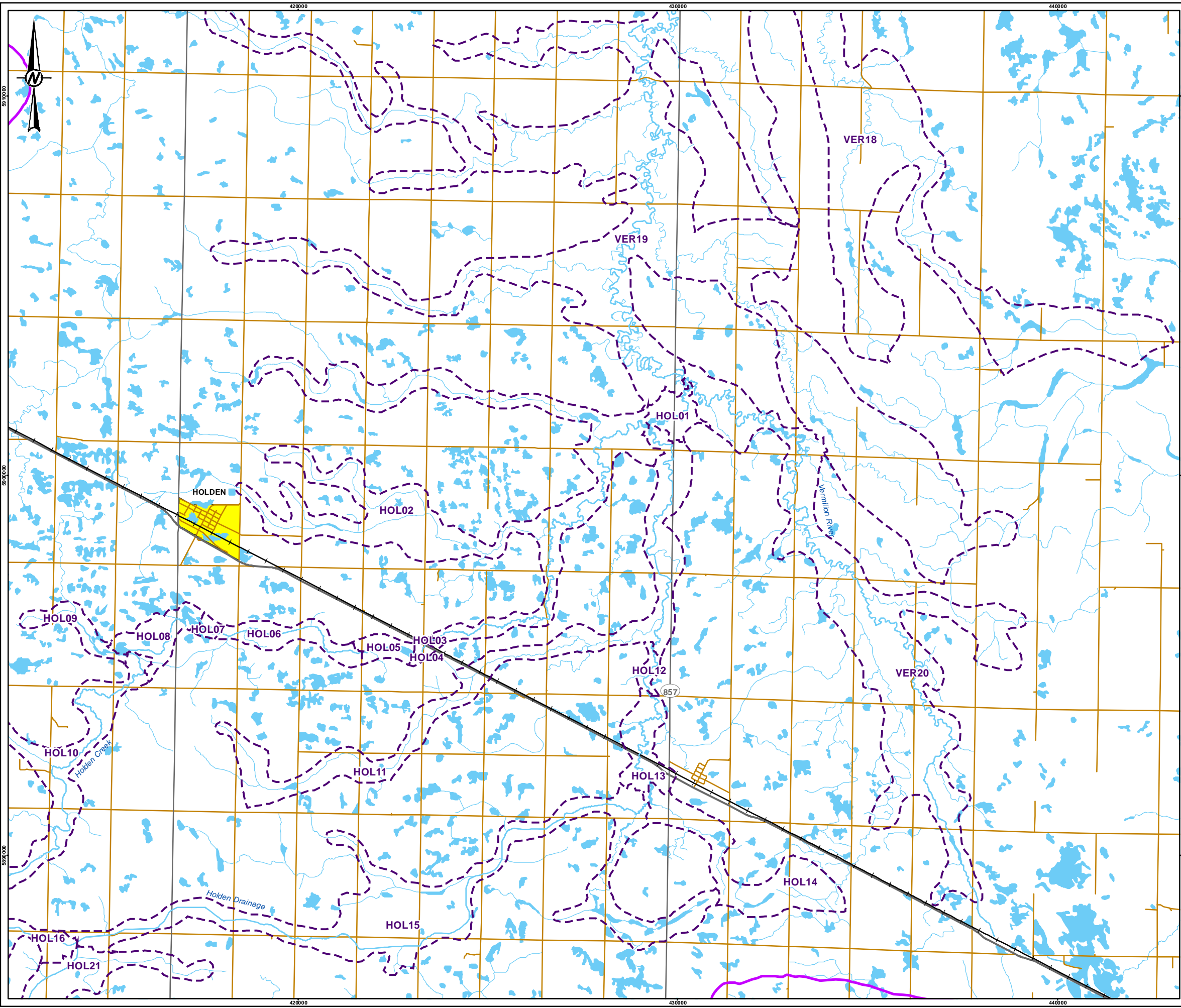
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-a

PATH: I:\01615422\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:34:20 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



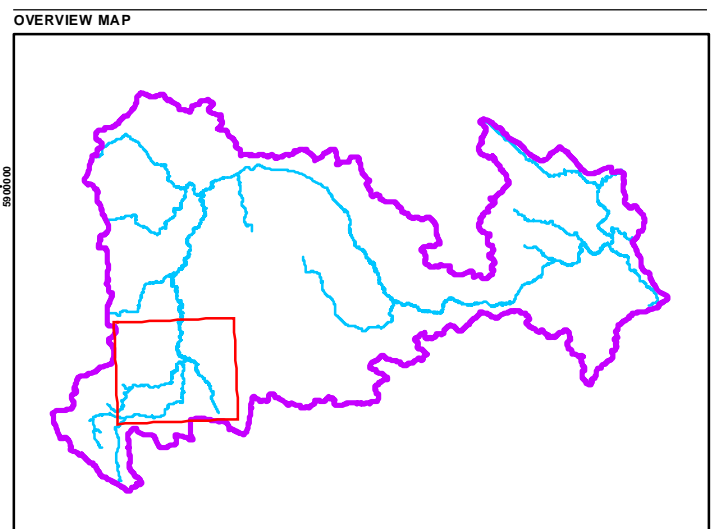
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

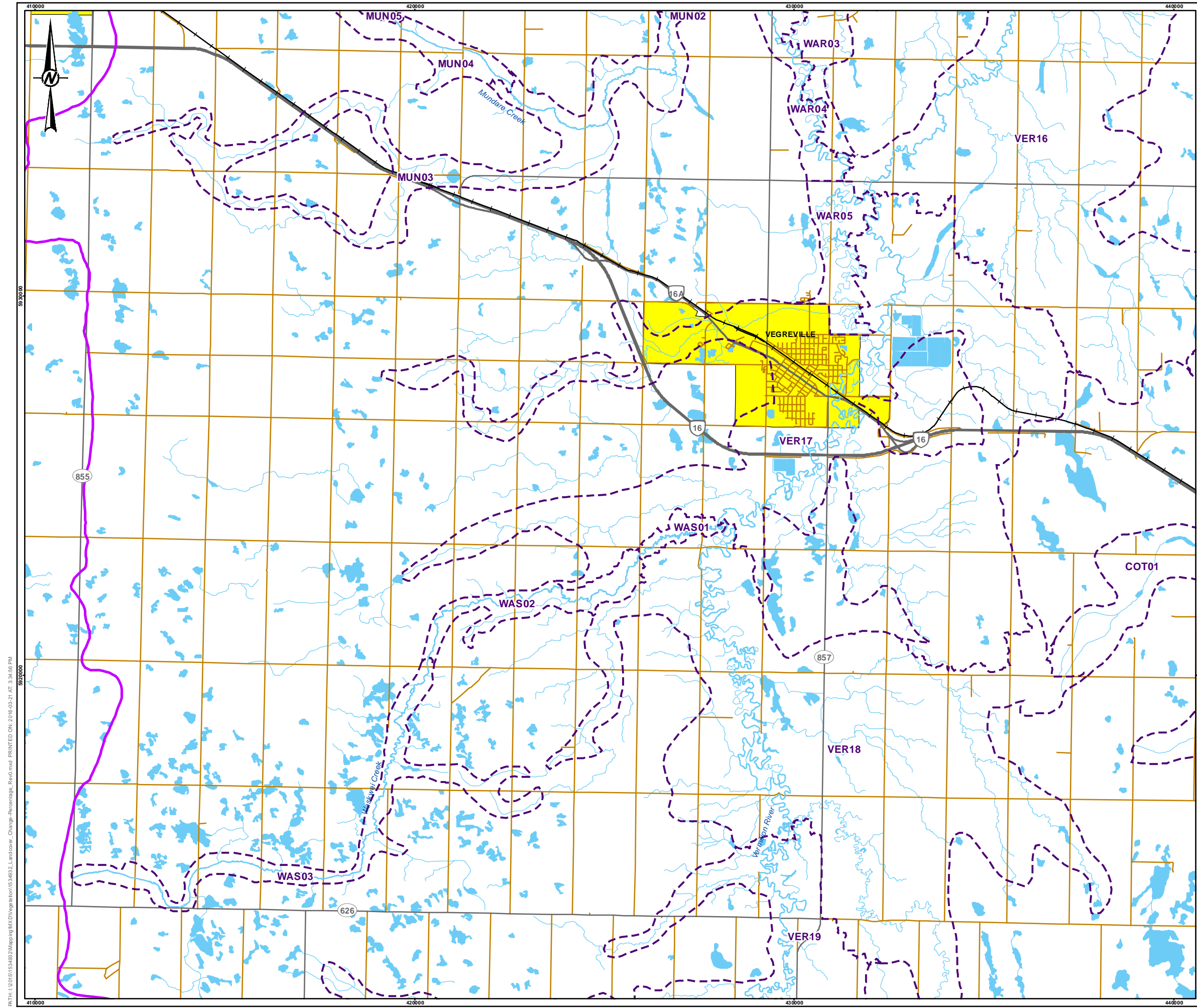
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-b

PATH: I:\2015\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:34:38 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





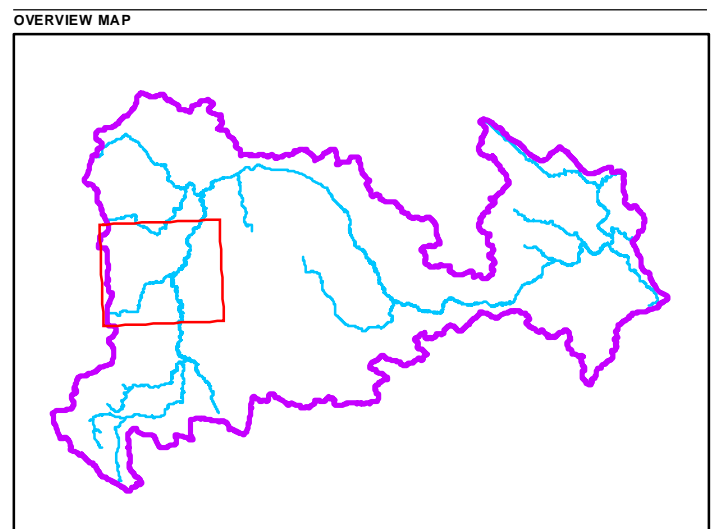
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

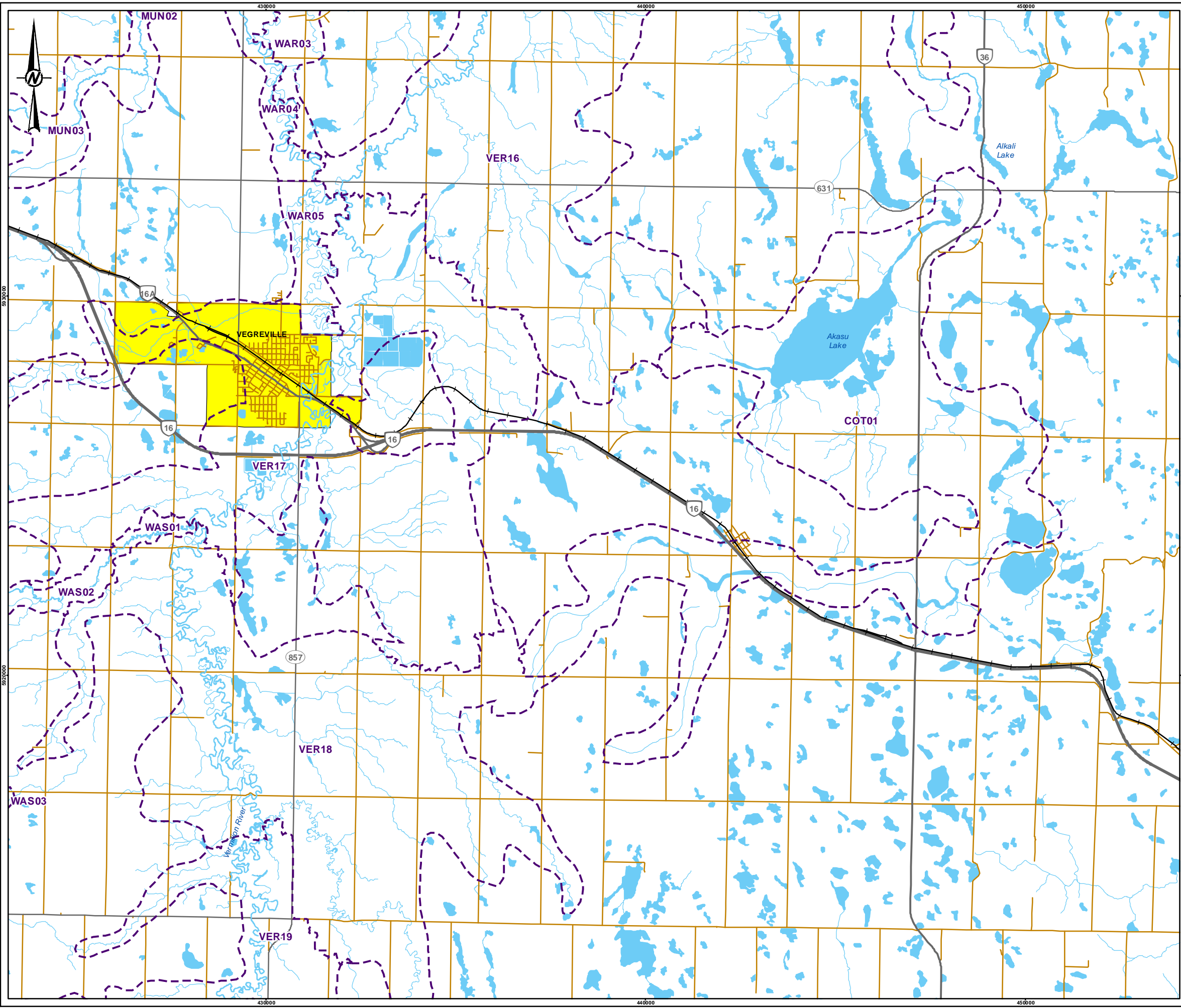
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:24:56 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





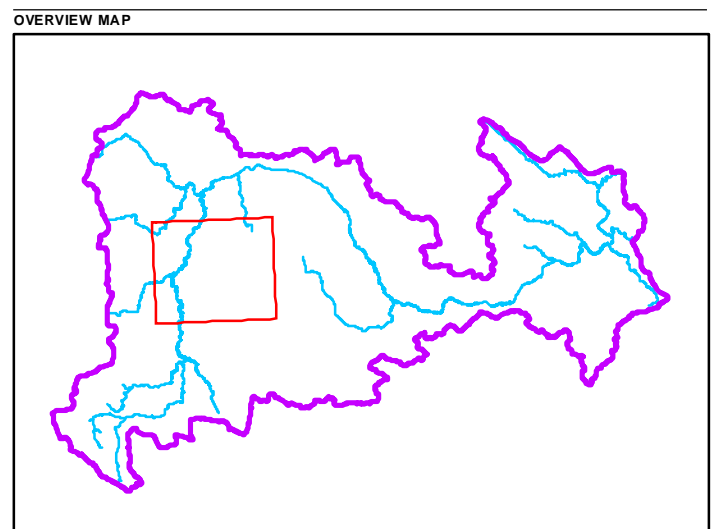
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100	Lightest Yellow
-100 to -75	Yellow
-75 to -50	Light Green
-50 to -25	Green
-25 to -1	Dark Green
-1 to 0	Orange
0 to 1	Light Yellow
1 to 25	Light Green
25 to 50	Green
50 to 75	Dark Green
75 to 100	Dark Green
> 100	Dark Green

**1.5% / -1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

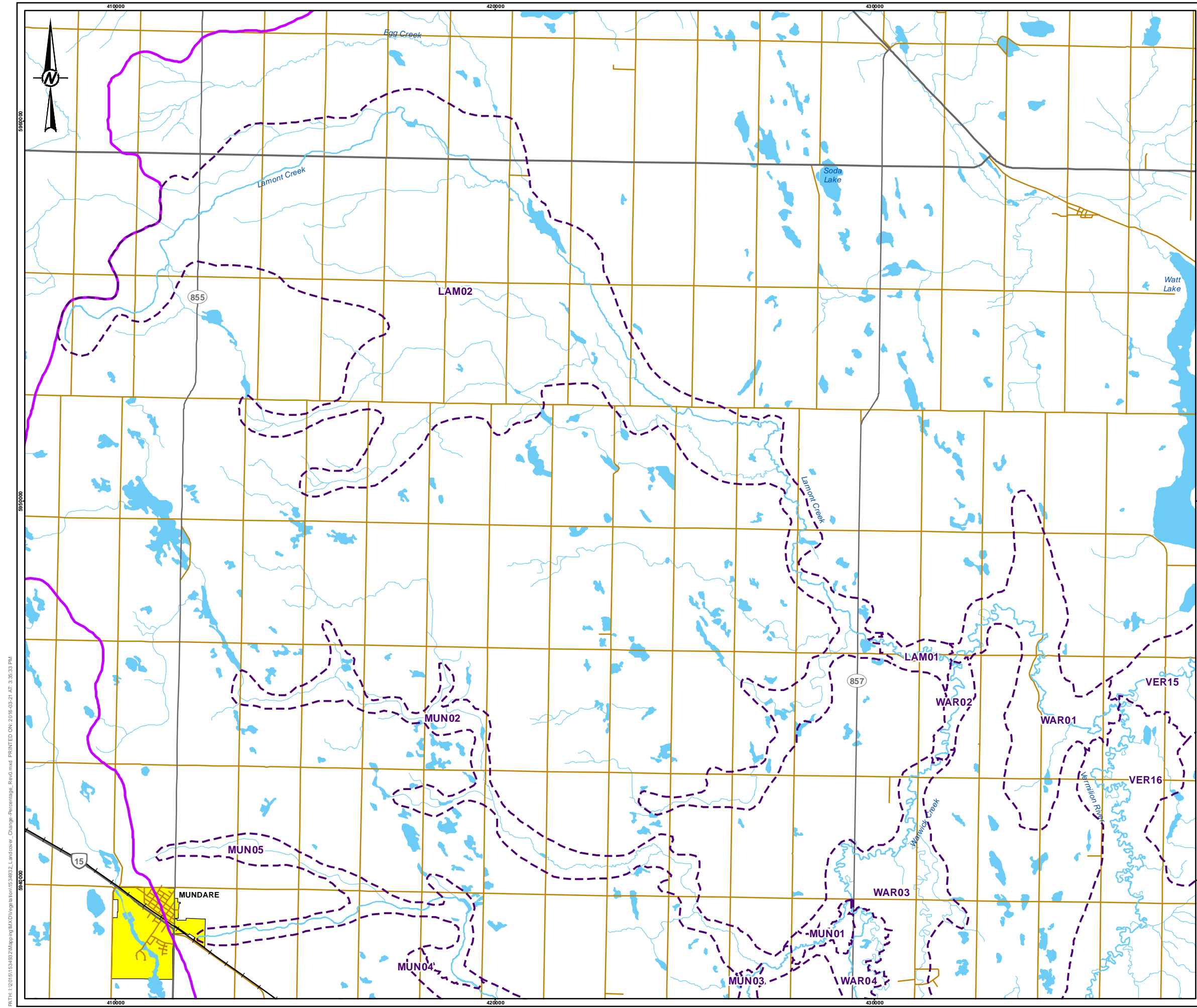
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-d

P:\TM\1\31015154922\Maping\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:36:14 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

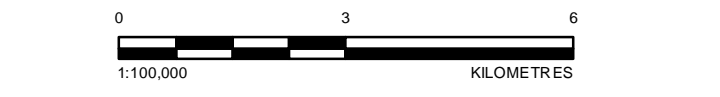
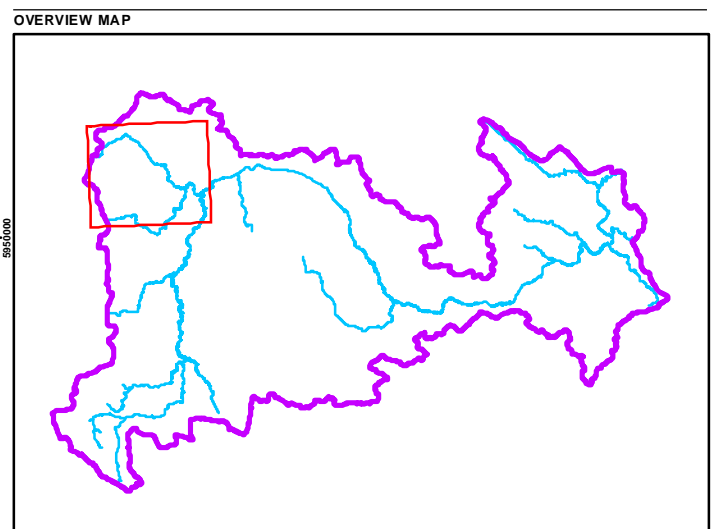
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100
-100 to - 75
-75 to -50
-50 to -25
-25 to -1
1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

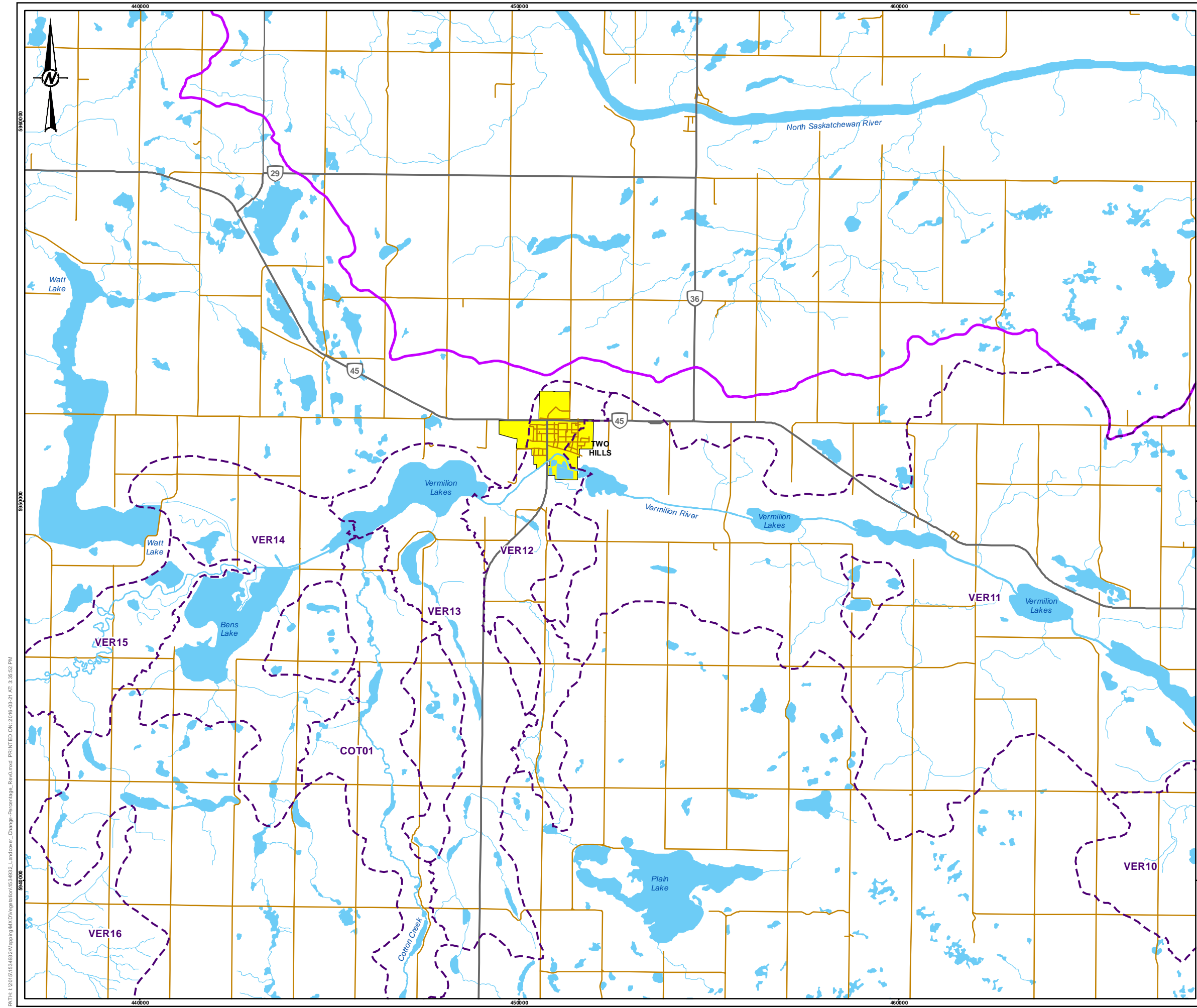
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:35:33 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



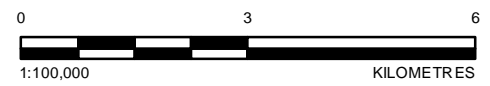
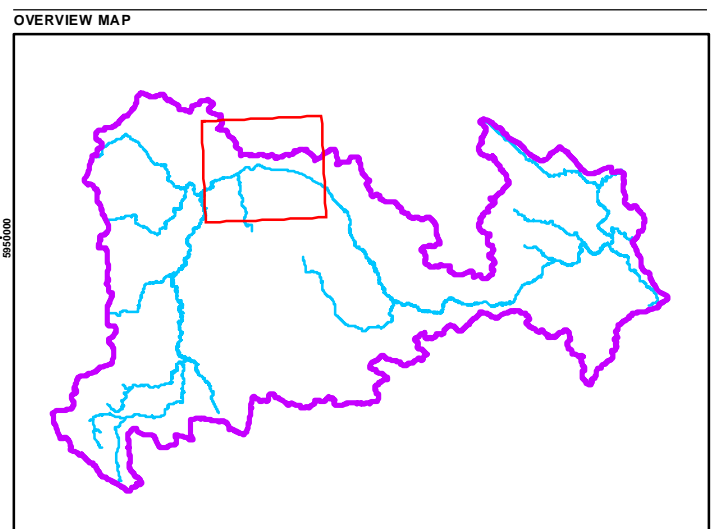
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100	-1 to 0
-100 to - 75	0 to 1
-75 to -50	1 to 25
-50 to -25	25 to 50
-25 to -1	50 to 75
	75 to 100
	> 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

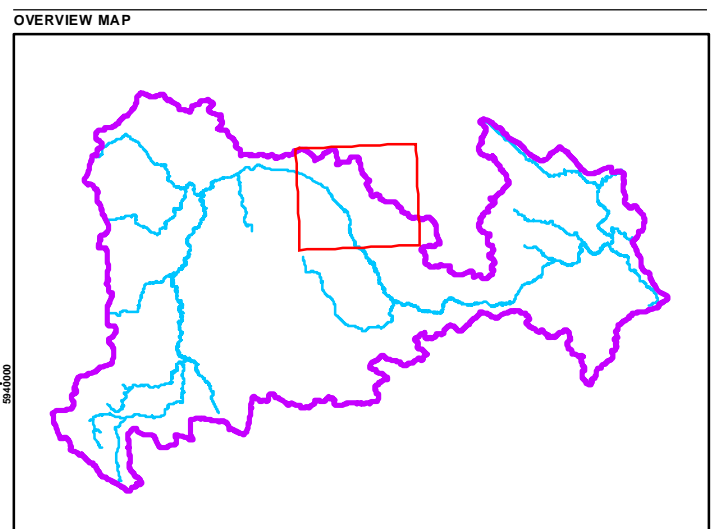
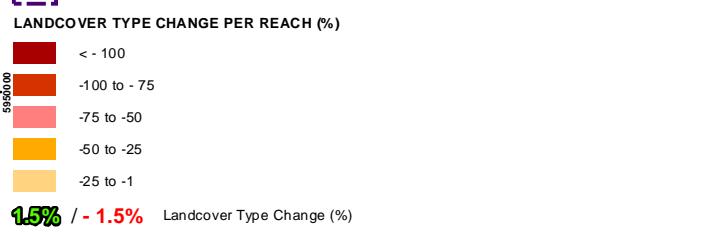
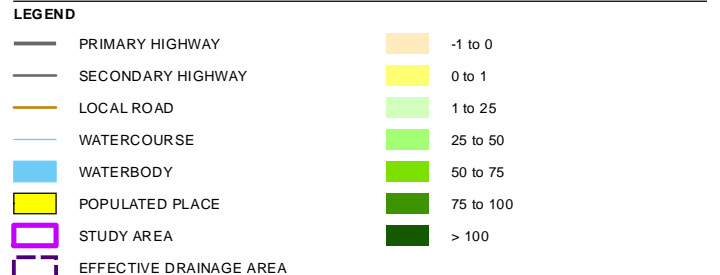
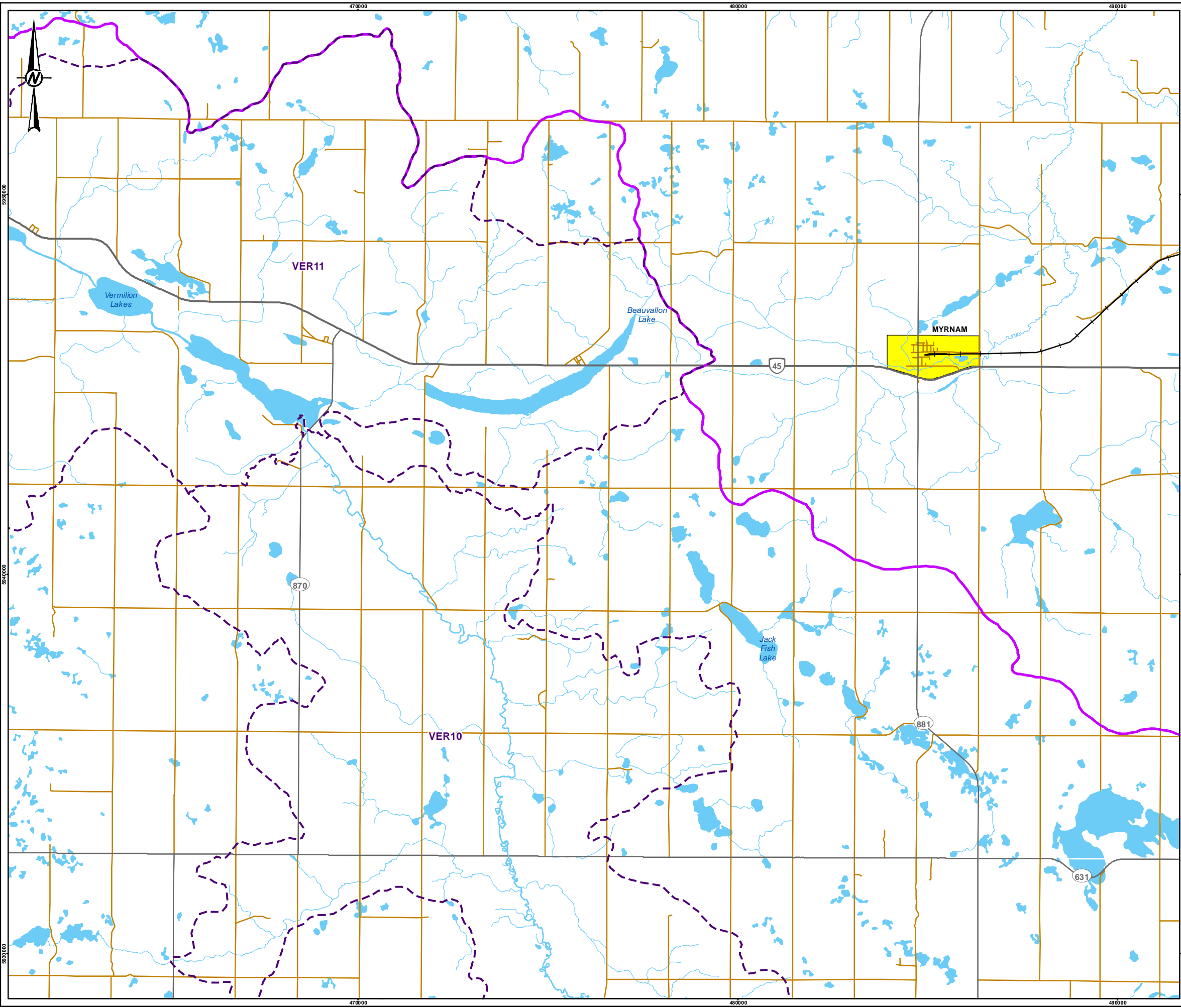
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-f

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:35:52 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

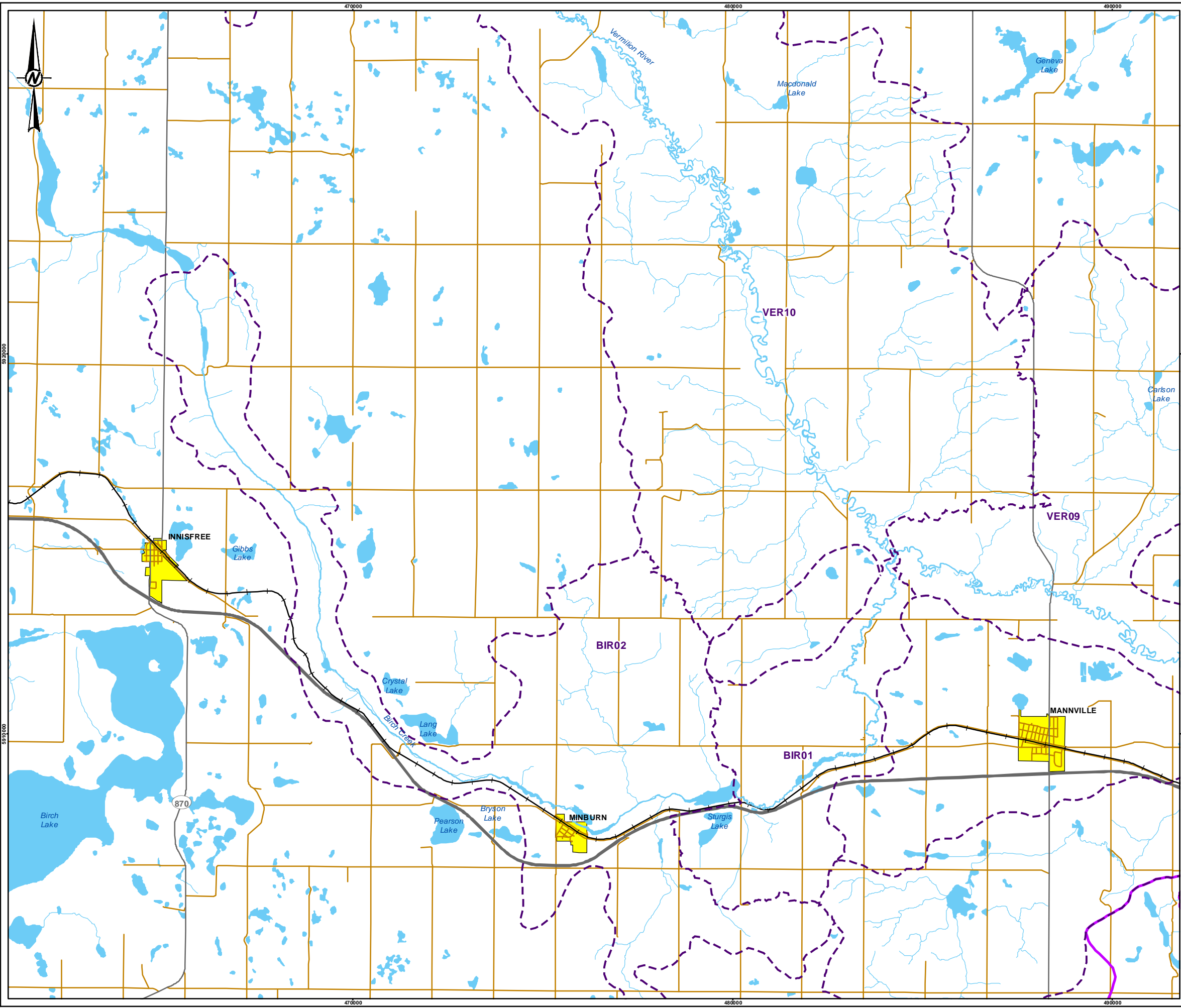
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:36:09 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**LEGEND**

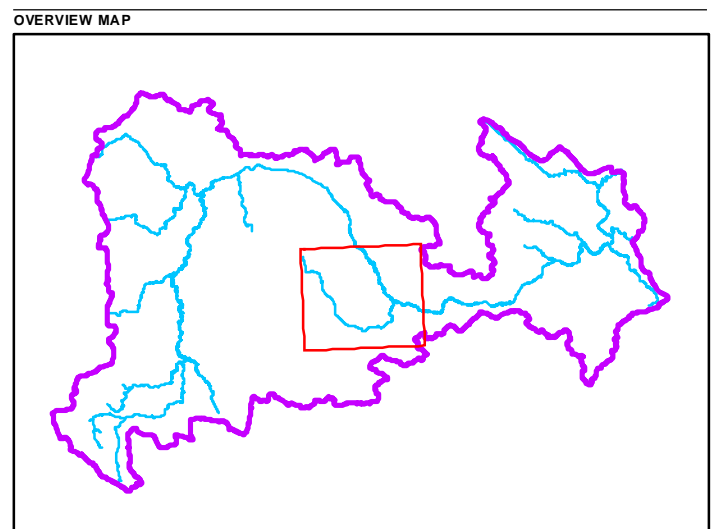
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100
-100 to - 75
-75 to -50
-50 to -25
-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

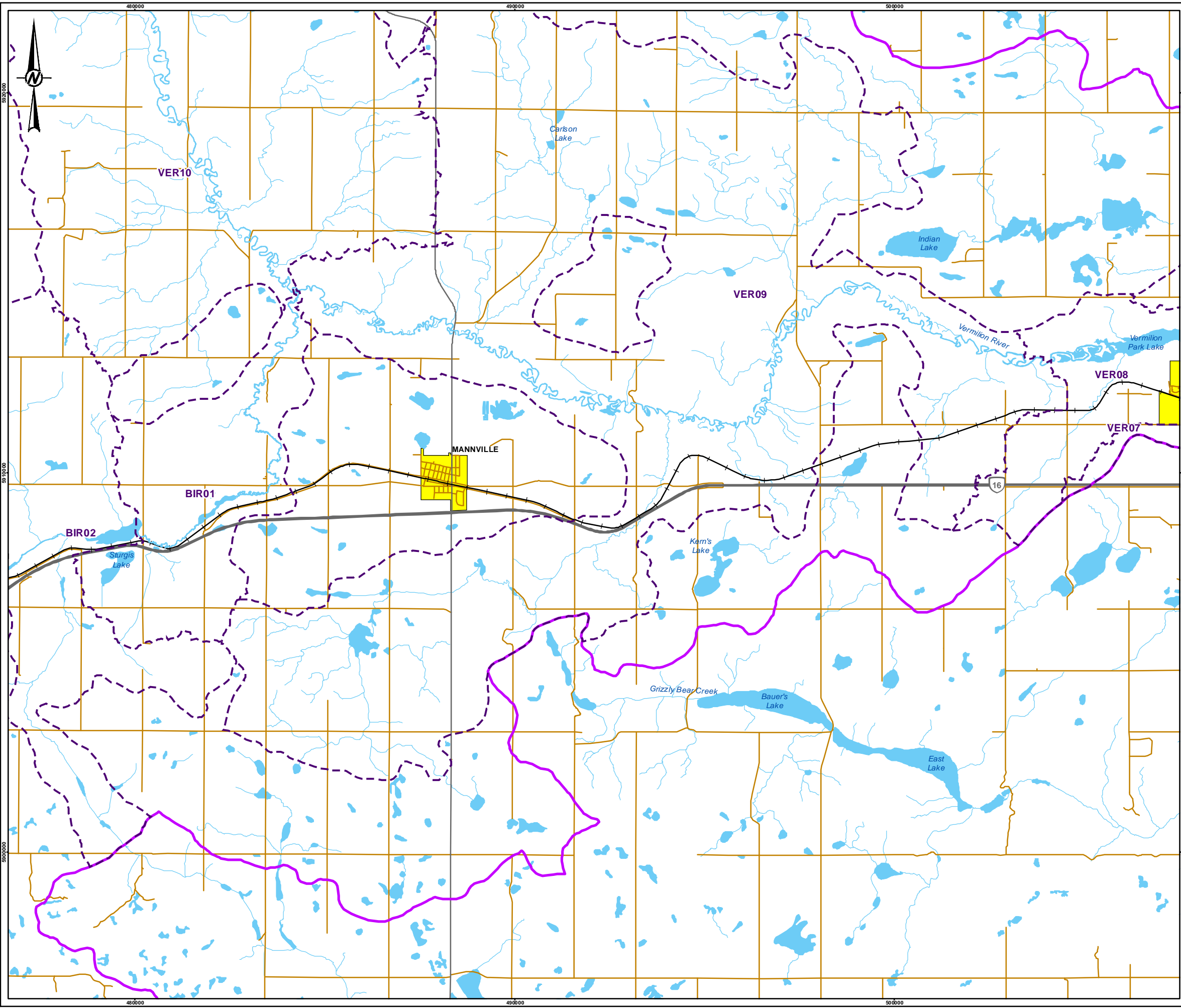
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-h

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:36:28 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8

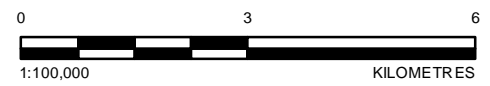
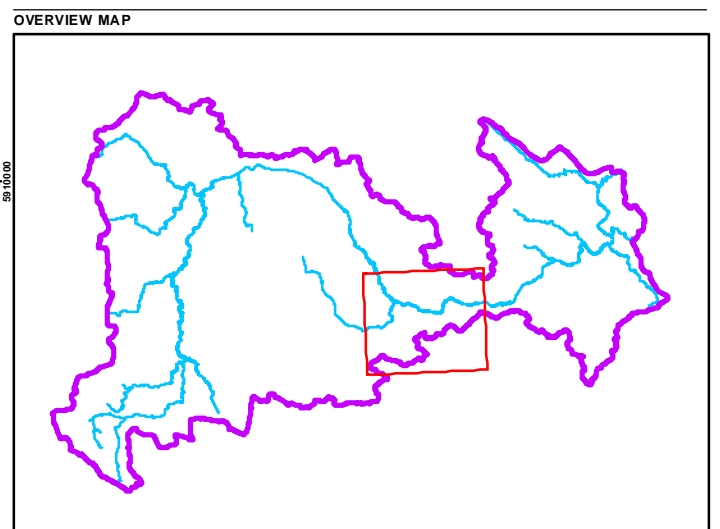


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

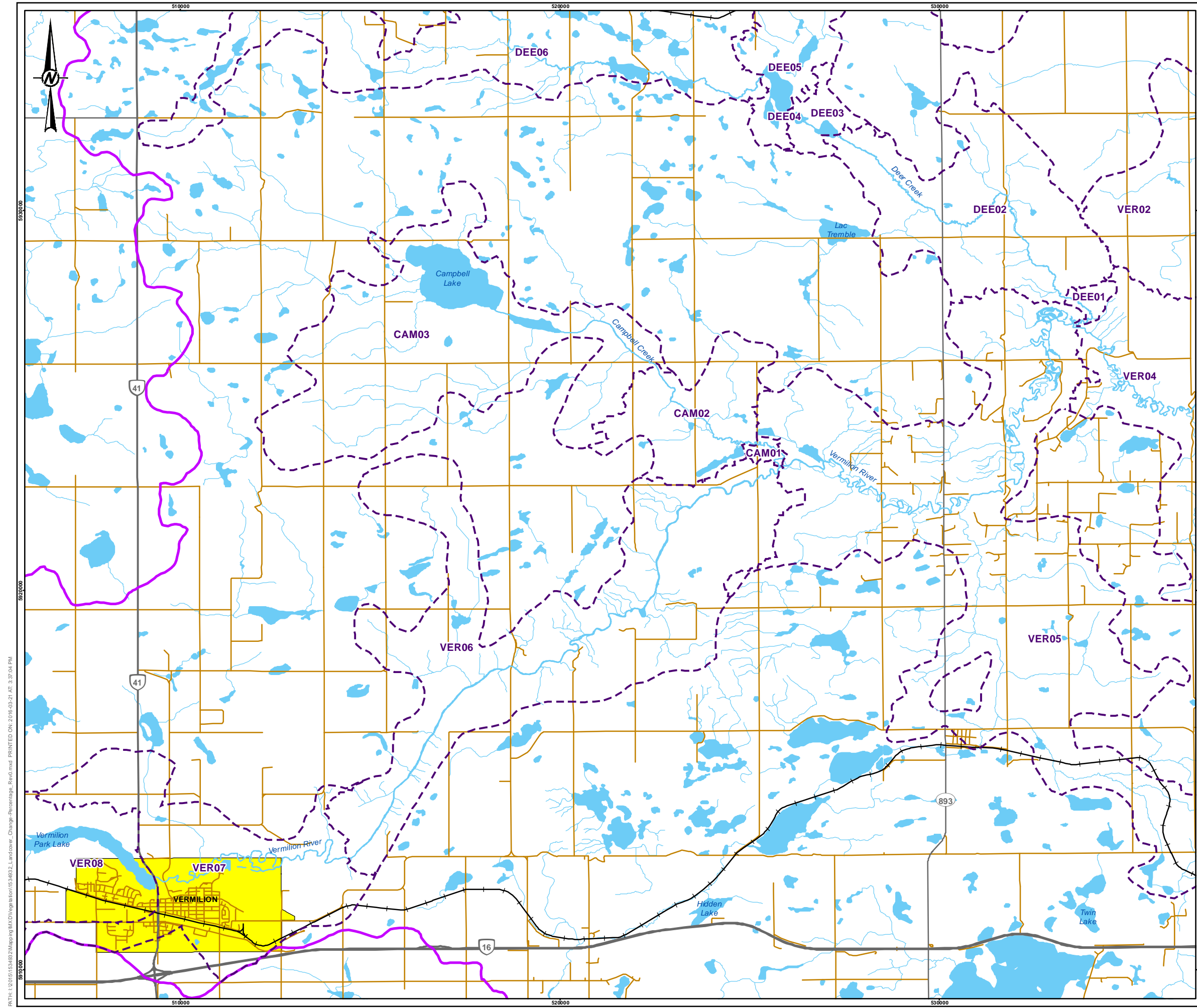
CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-i

PATH: I:\2016\1534932\Maping\MXD\fig\B4-i\B4-i\_1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:36:46 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

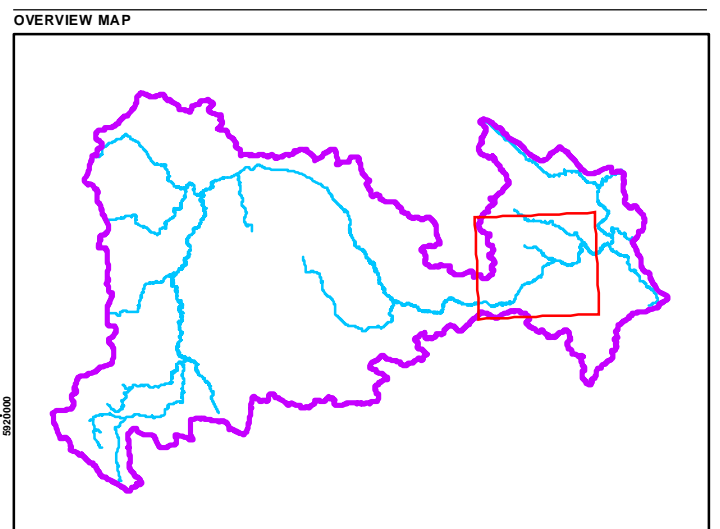
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

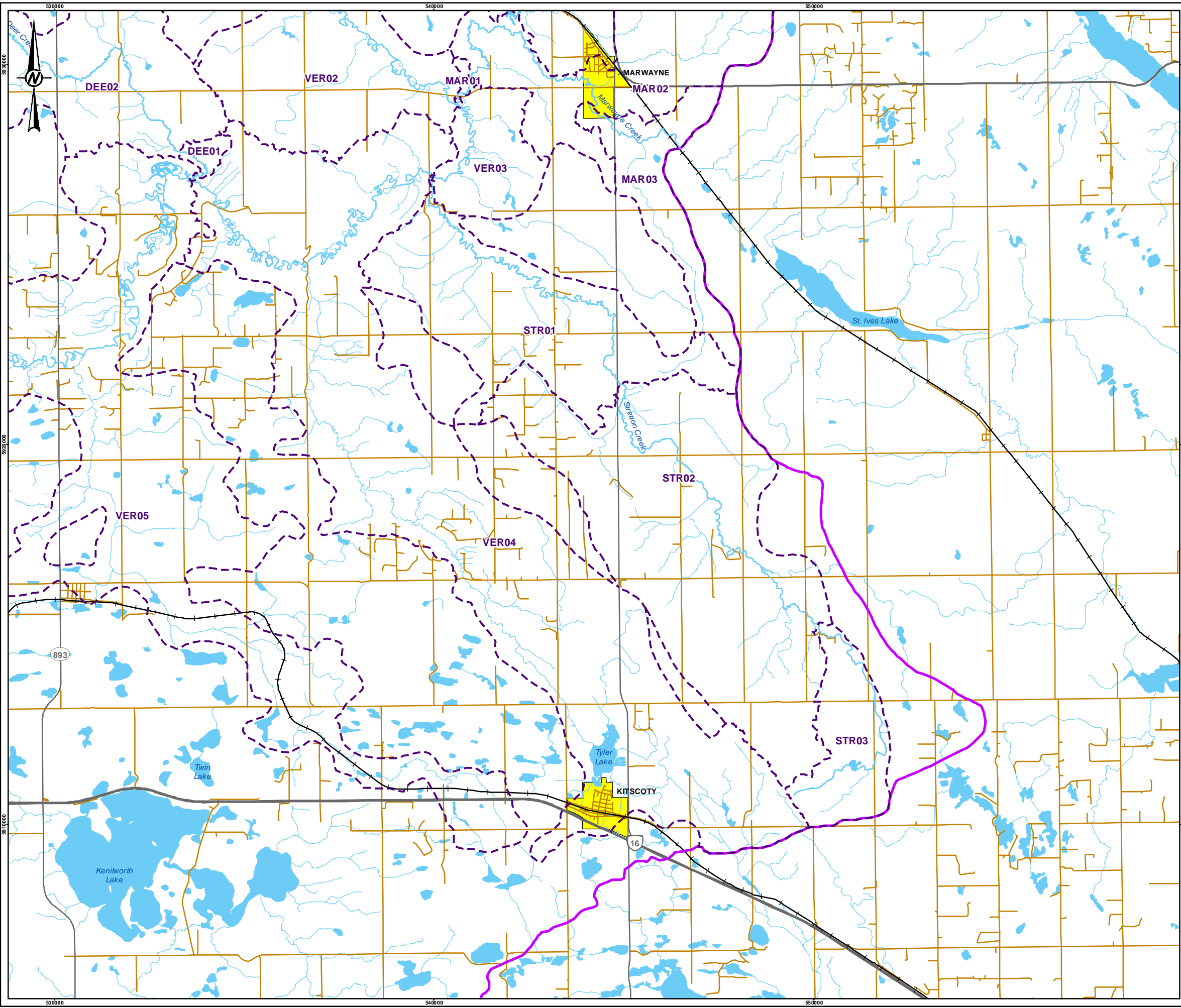
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-j

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:37:04 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



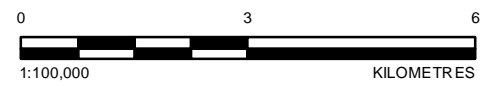
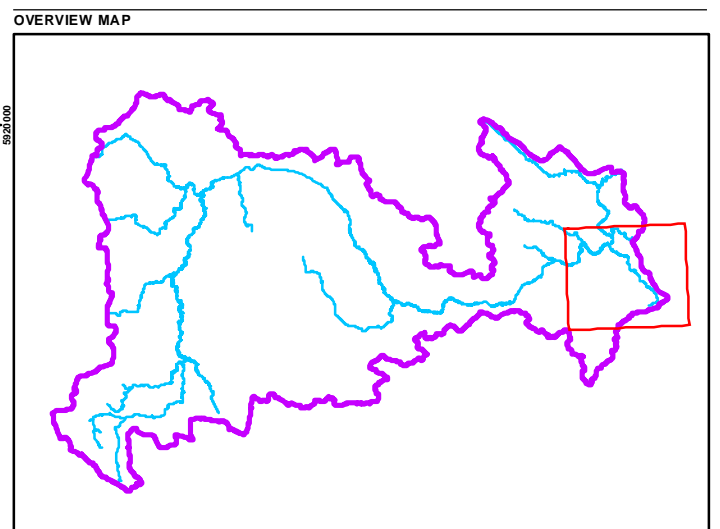
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**1.5% / -1.5%** Landcover Type Change (%)




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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

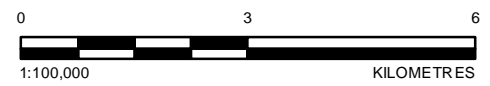
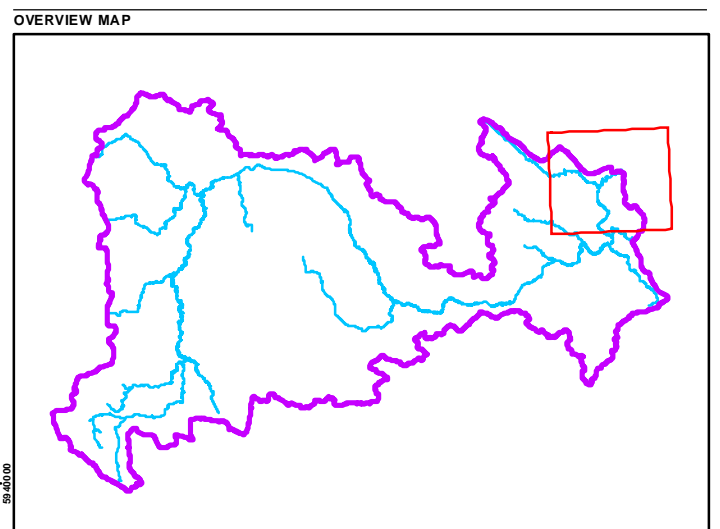
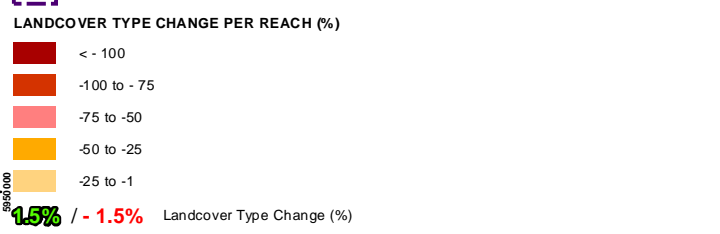
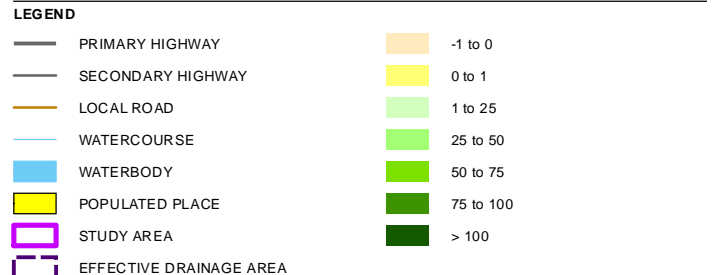
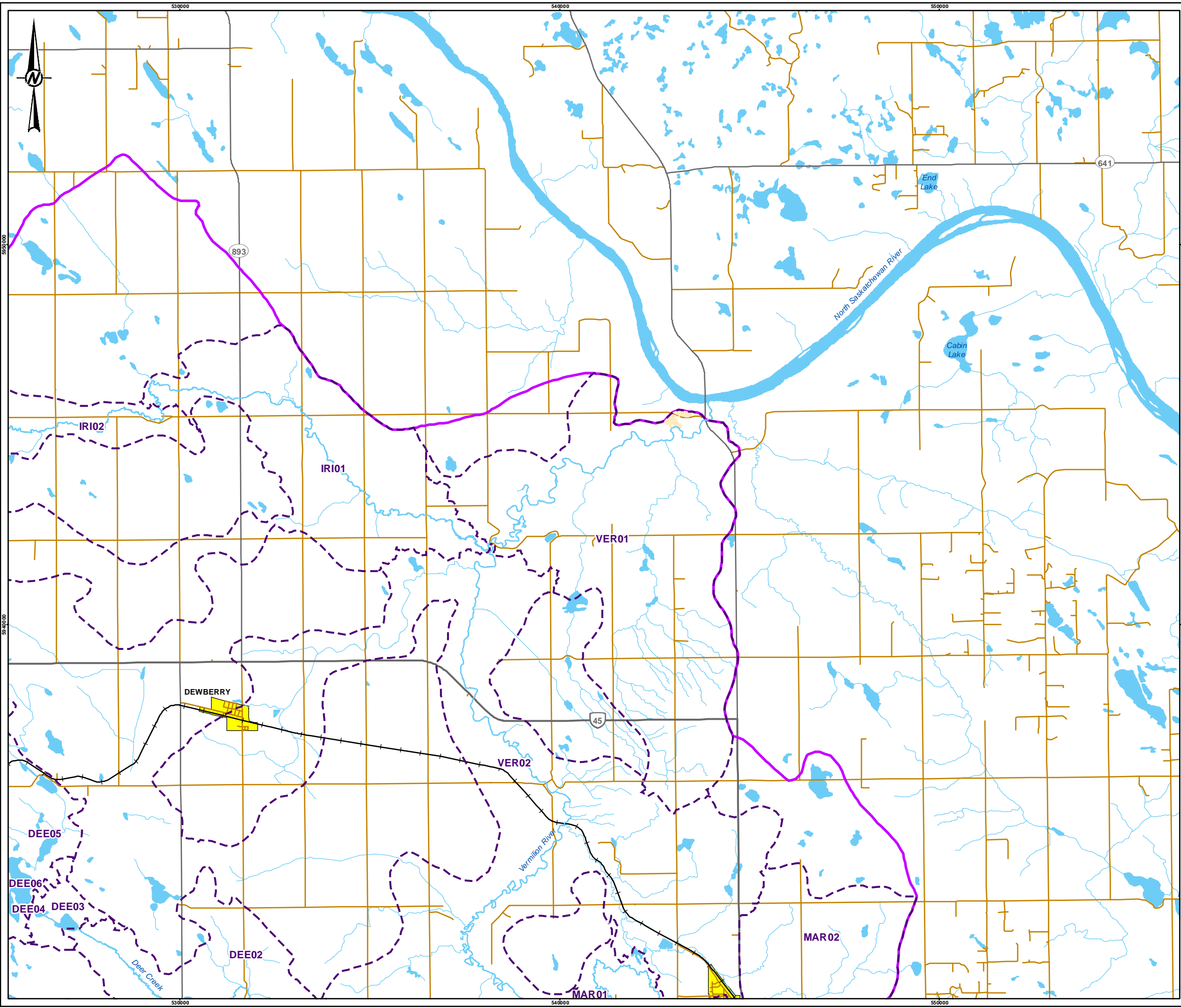
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Review\Maping\_Review.mxd PRINTED ON: 2016-03-21 AM 3:37:24 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

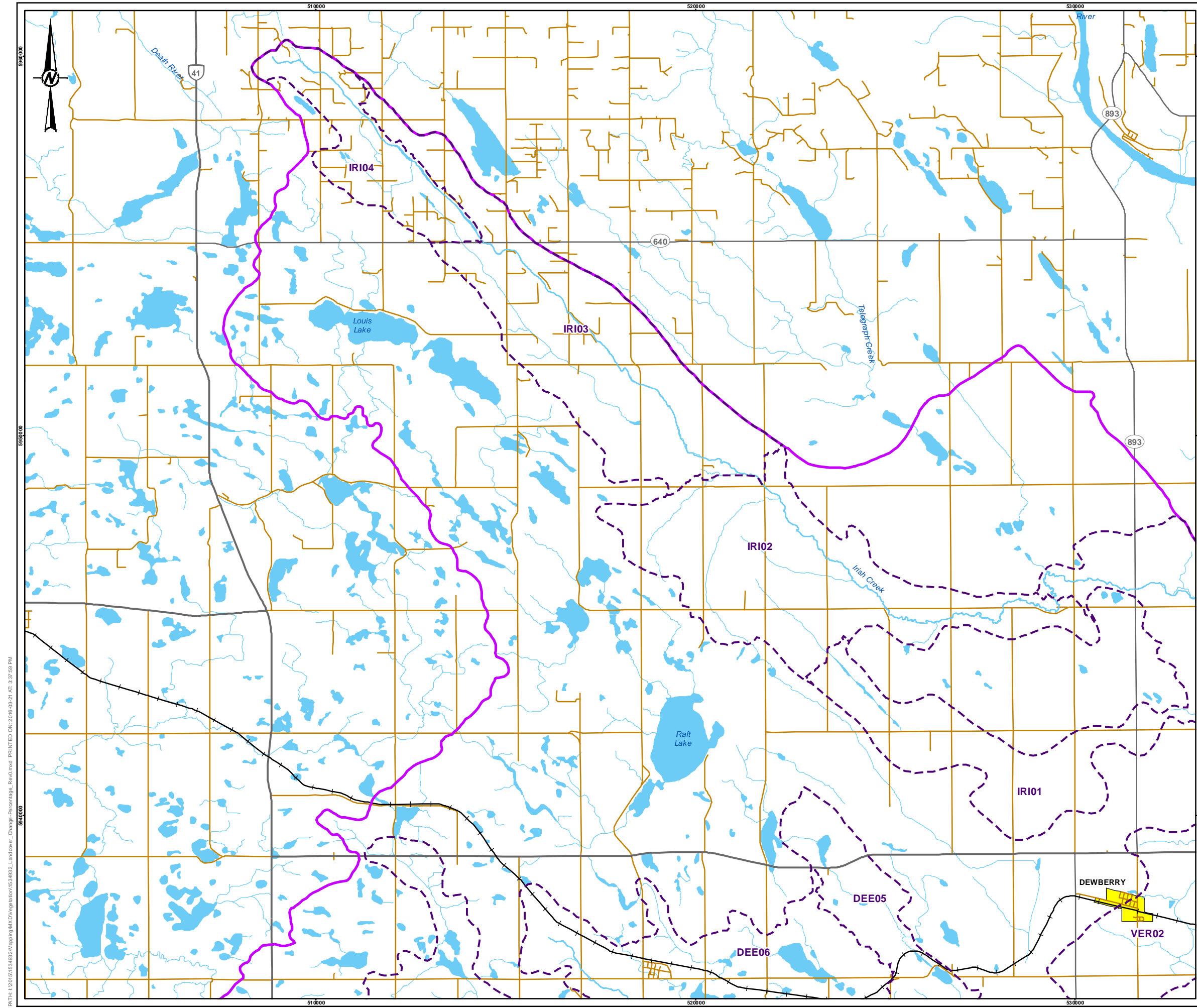
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:37:42 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**LEGEND**

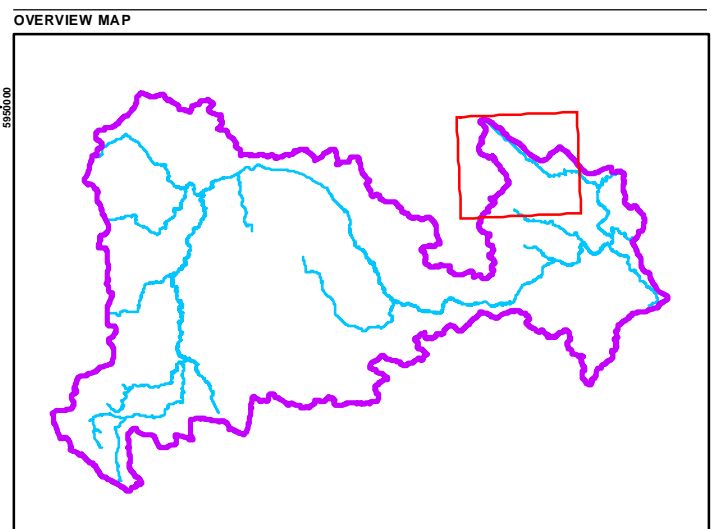
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

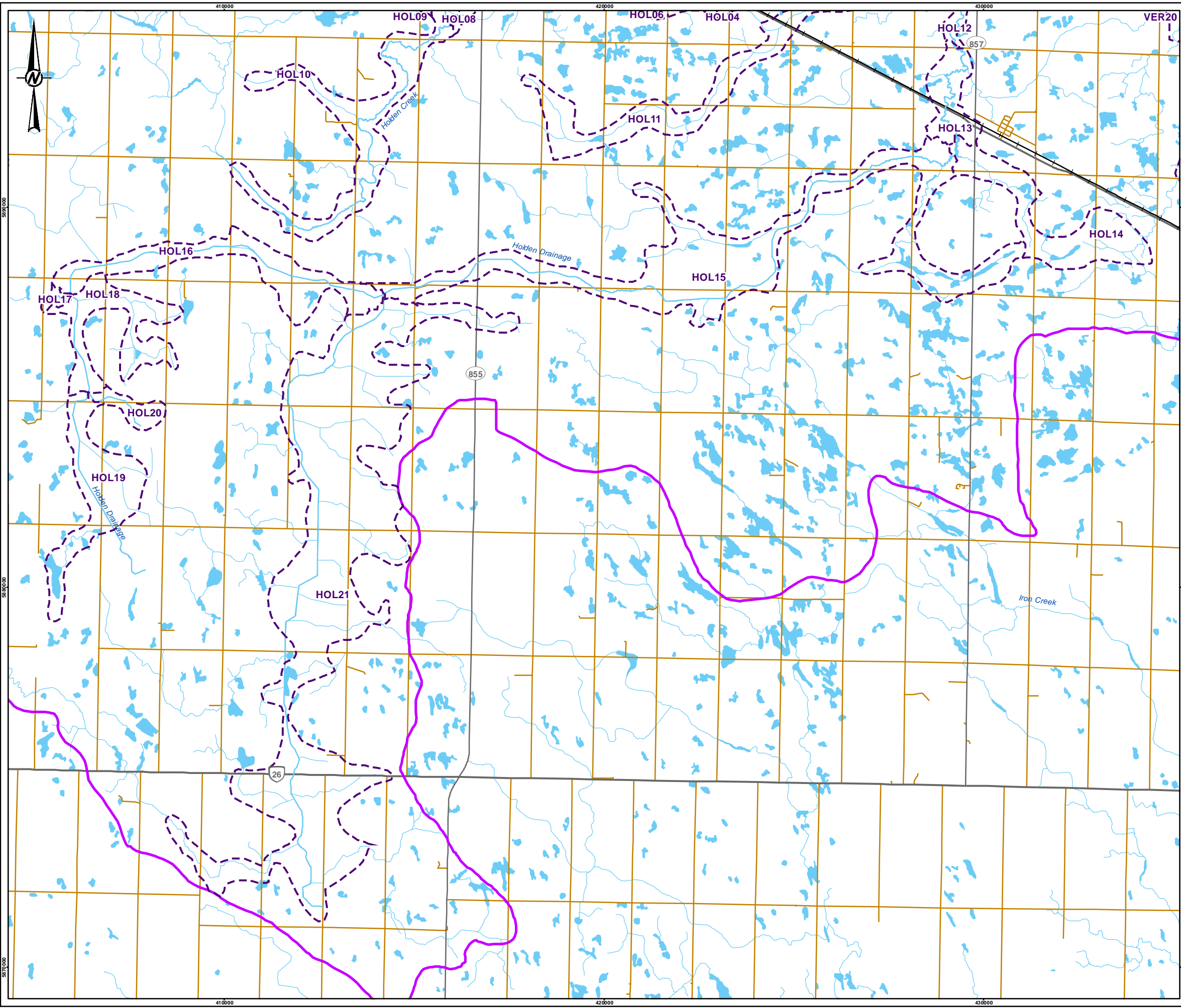
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - GRASSLAND MANAGED

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B4-m

PATH: I:\2016\1534932\MapProj\MapProj\1534932\_Landcover\_Change\_Overview.aprx Printed on: 2016-03-21 AM 3:37:59 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



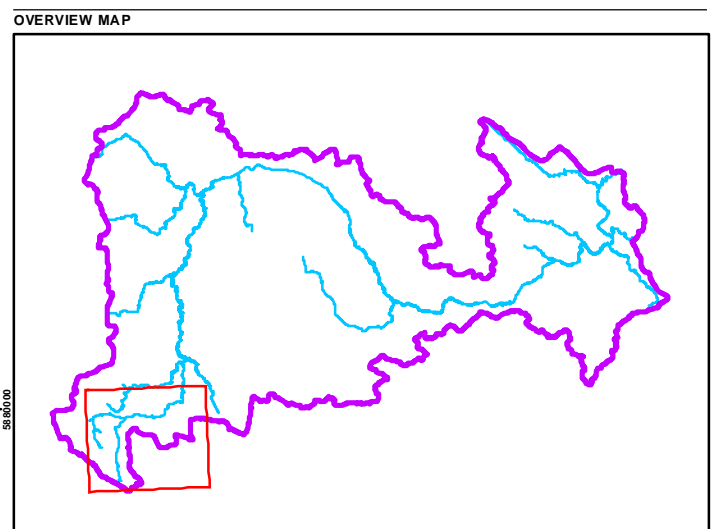
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

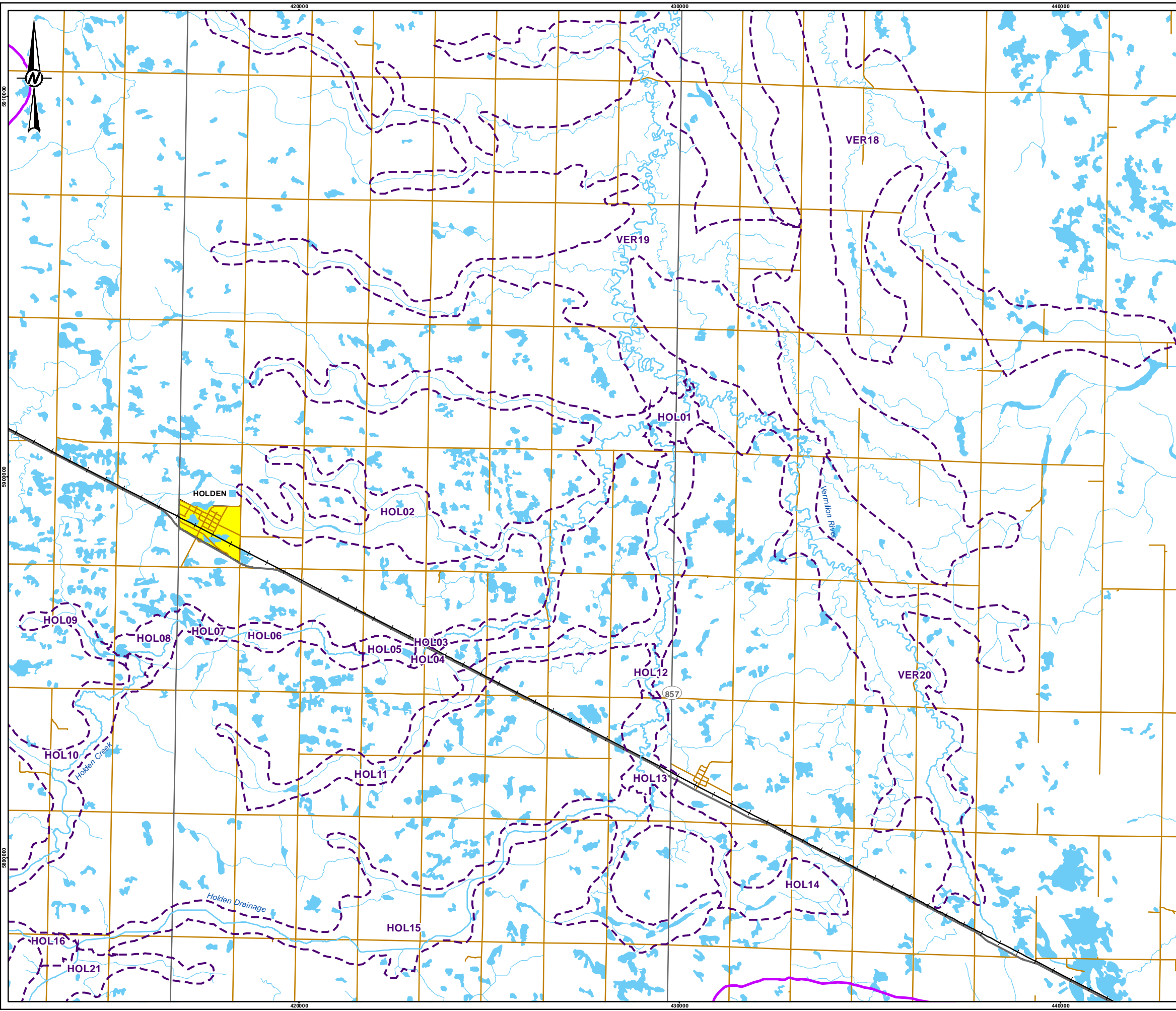
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

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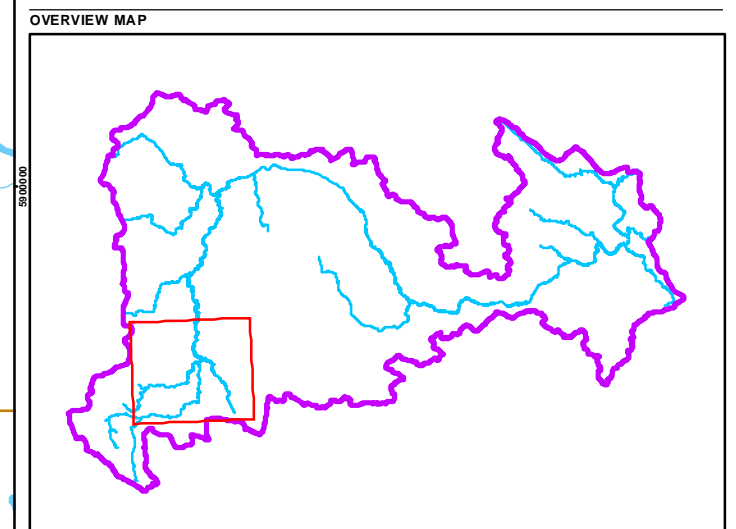
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

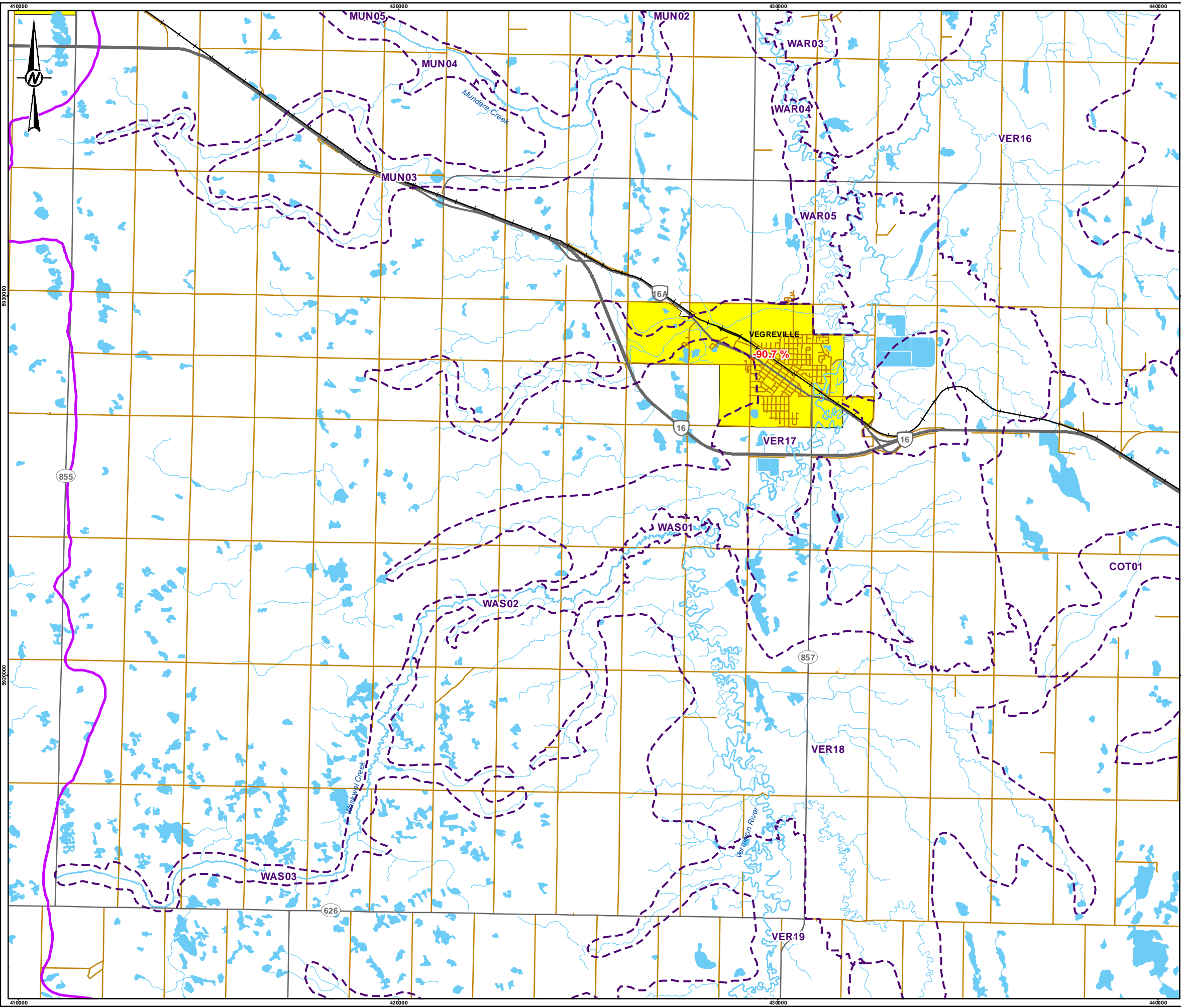
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-b

PATH: I:\010515422\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:30:37 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





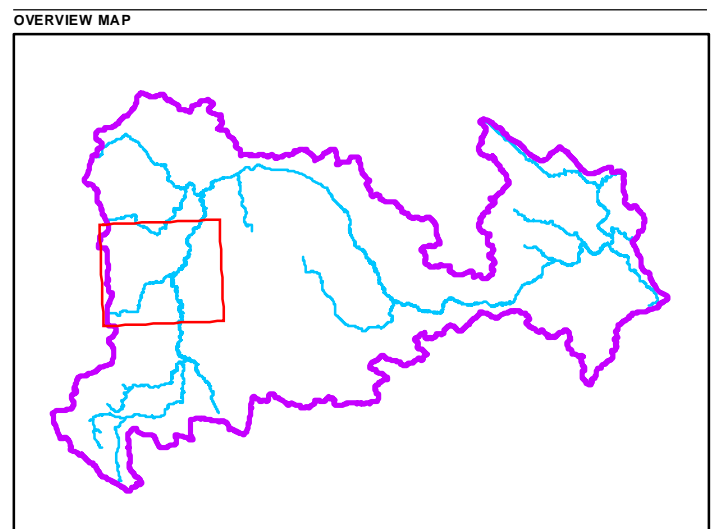
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

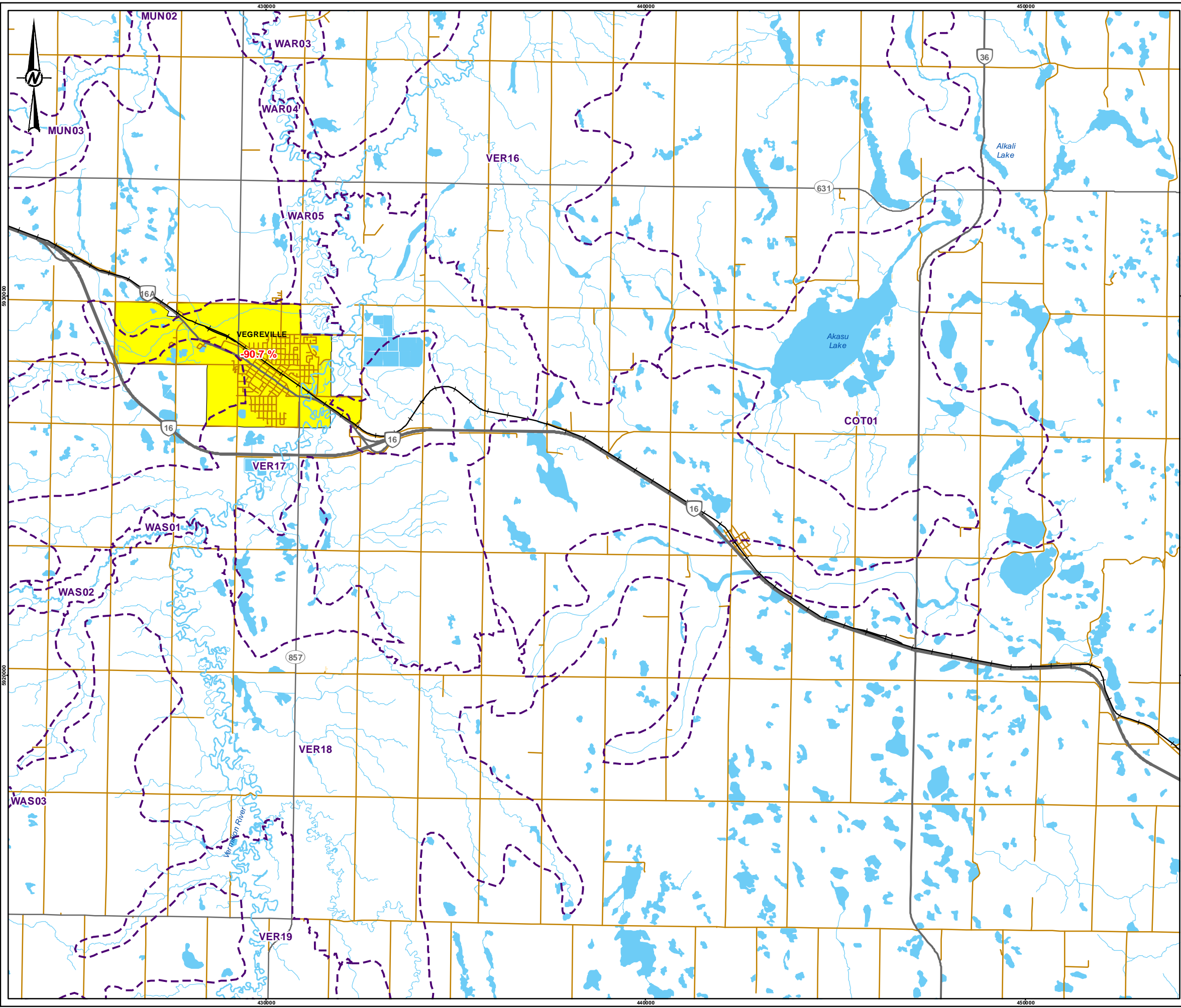
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Presentation\_Rev0.mxd PRINTED ON: 2016-03-21 AT: 3:36:57 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



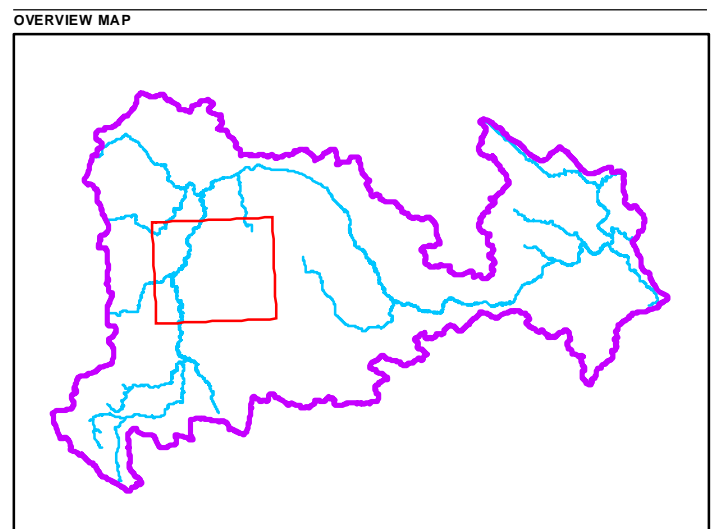
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100	Dark Red
-100 to -75	Red
-75 to -50	Light Red
-50 to -25	Orange
-25 to -1	Light Orange
-1 to 0	Yellow
0 to 1	Light Green
1 to 25	Green
25 to 50	Light Green
50 to 75	Green
75 to 100	Dark Green
> 100	Dark Green

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

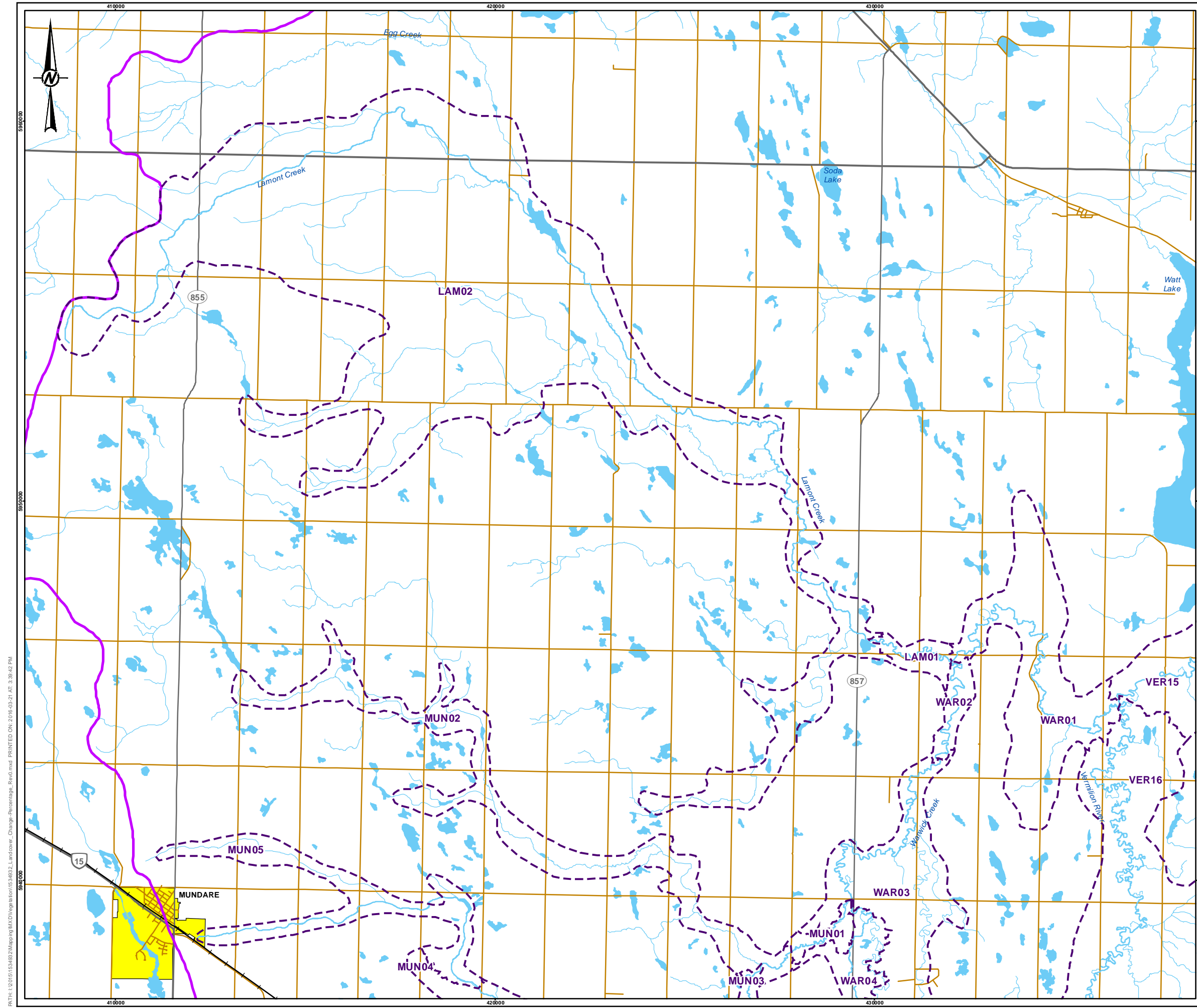
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:20:20 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

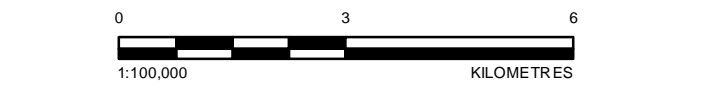
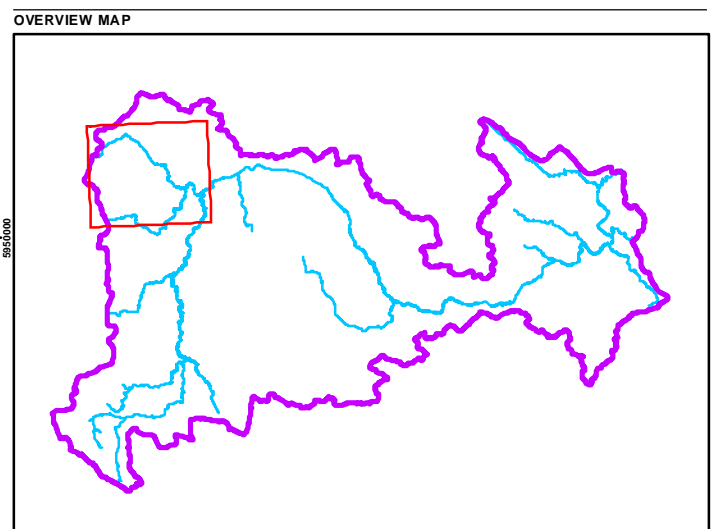
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

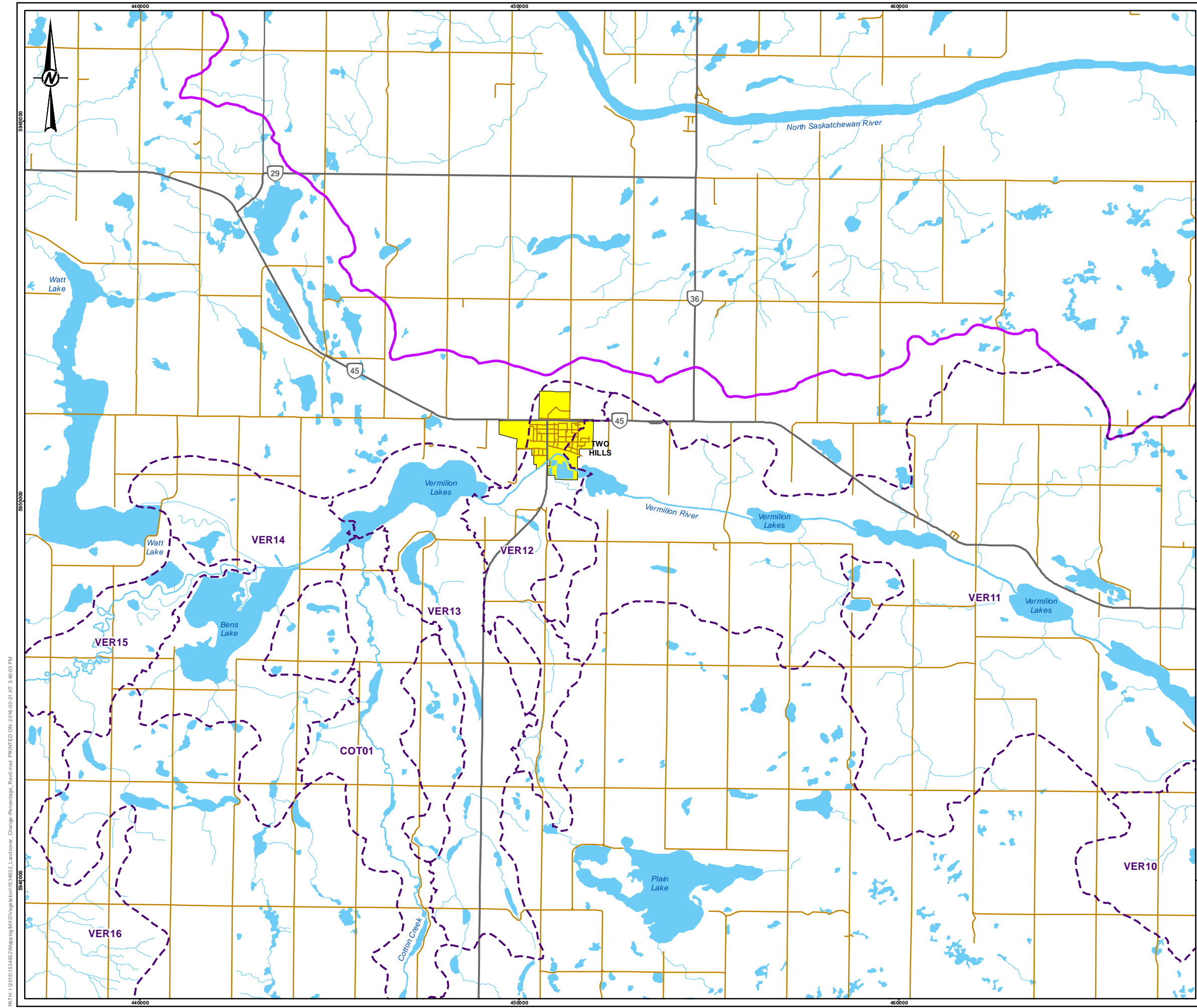
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-e

PATH: I:\2016\1534932\Maping\KCD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:30:42 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





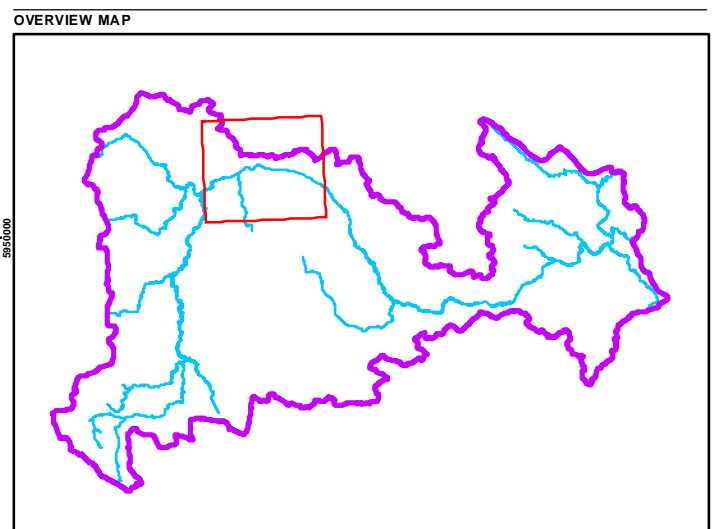
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

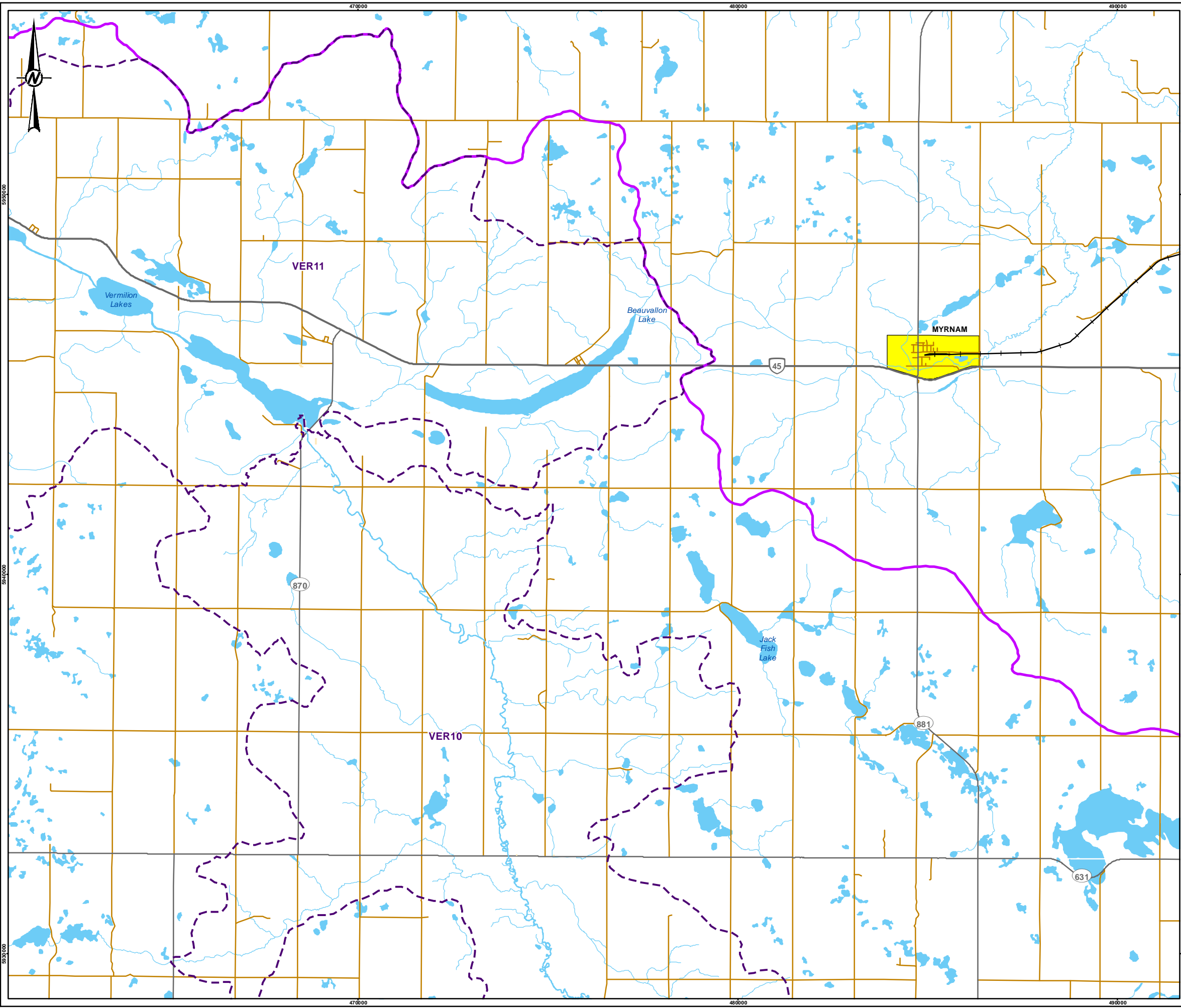
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-f

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:40:03 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



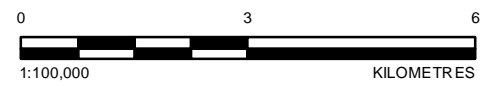
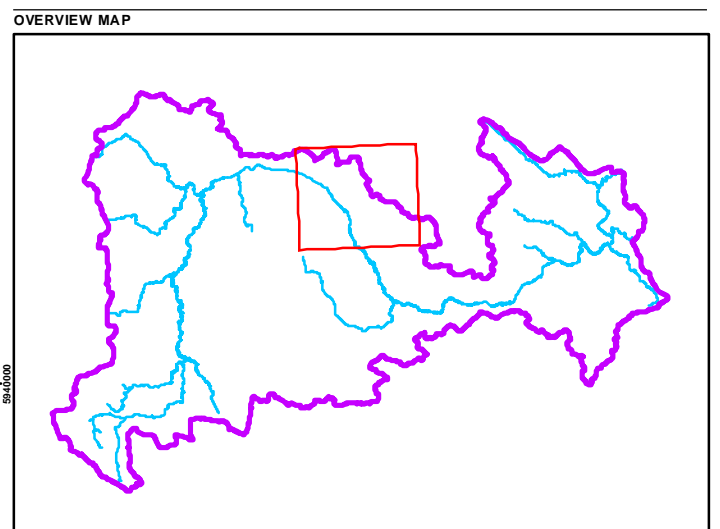
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

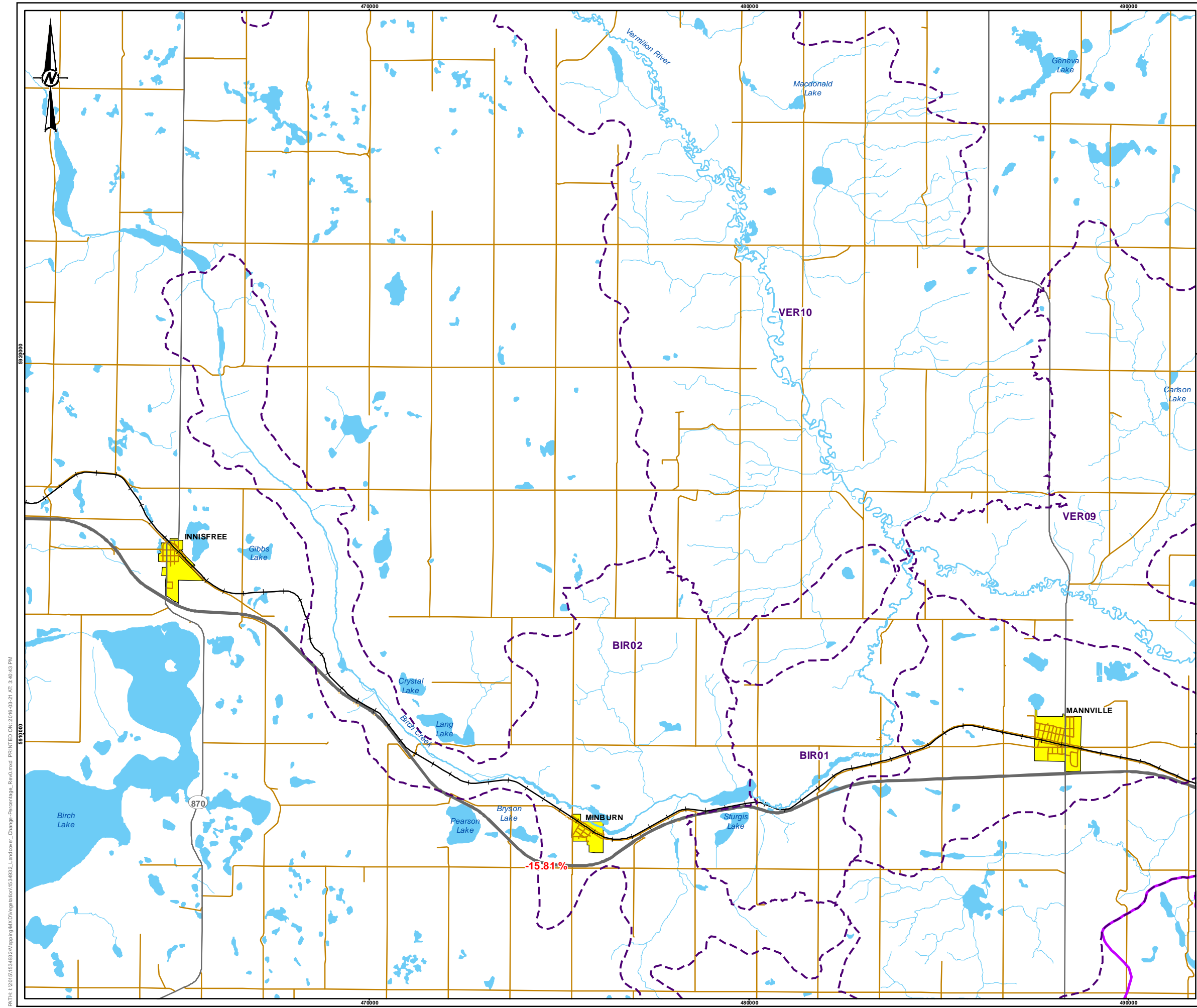
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:40:22 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6



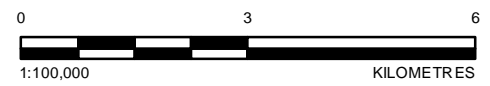
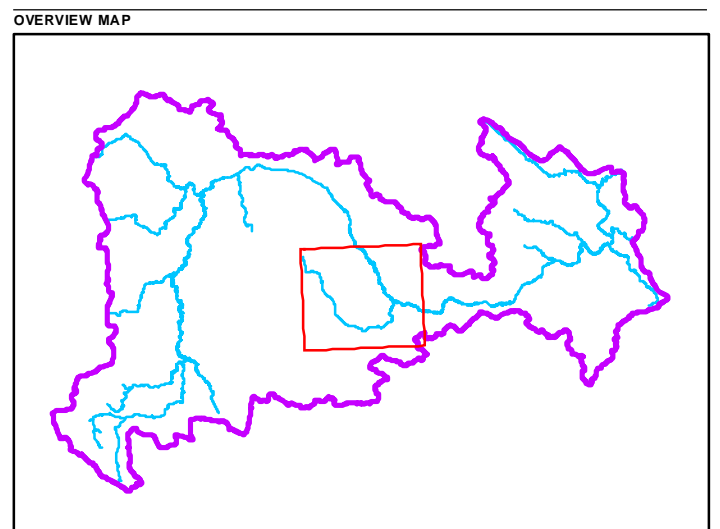
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

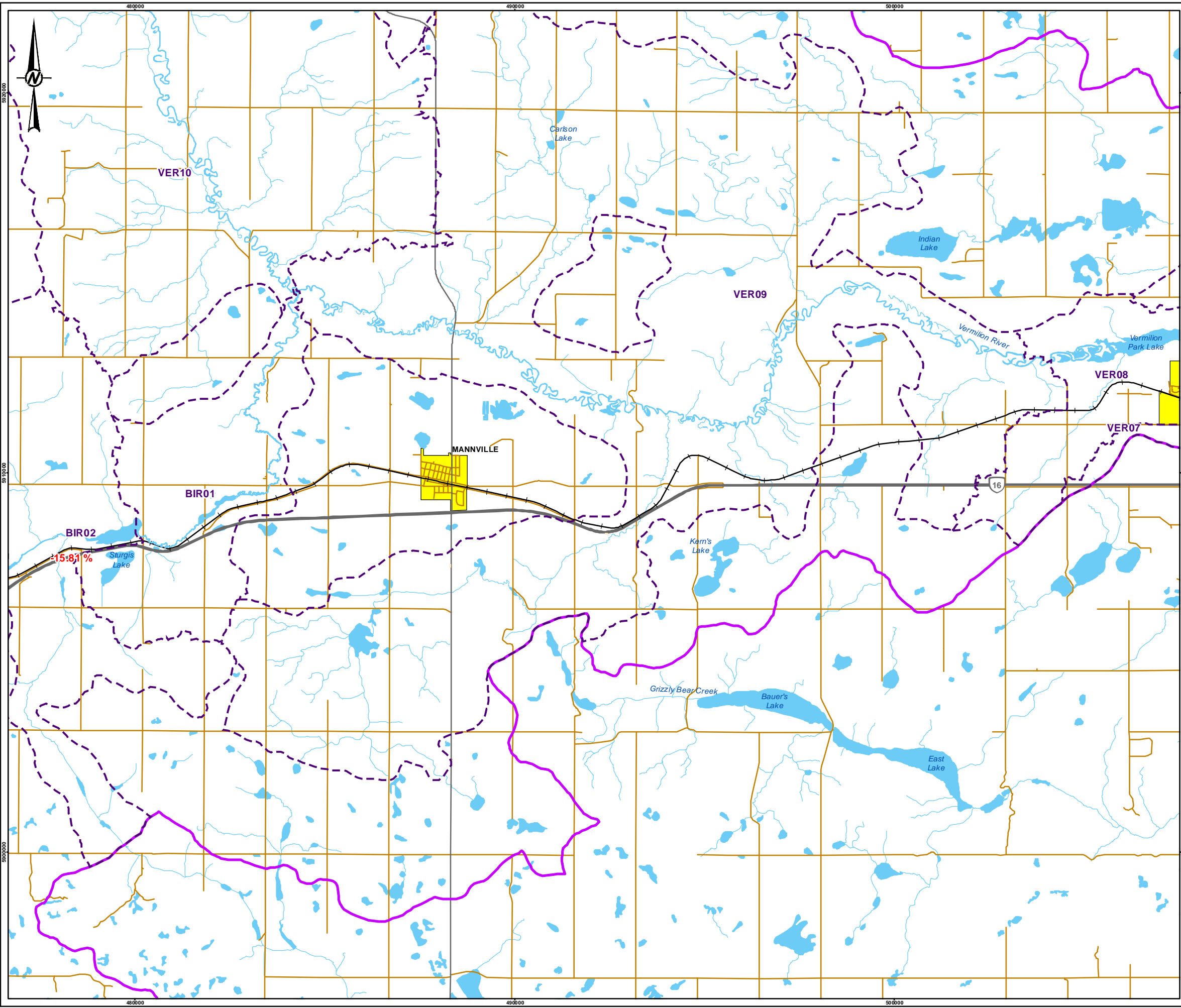
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\TM\131015\1524922\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:40:43 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





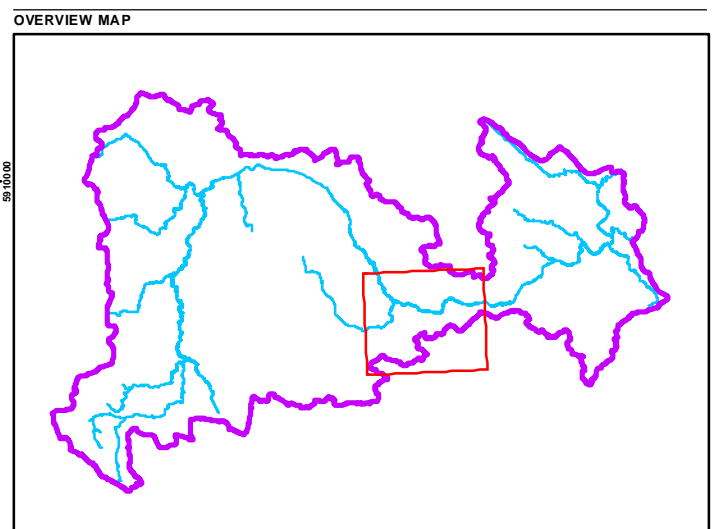
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

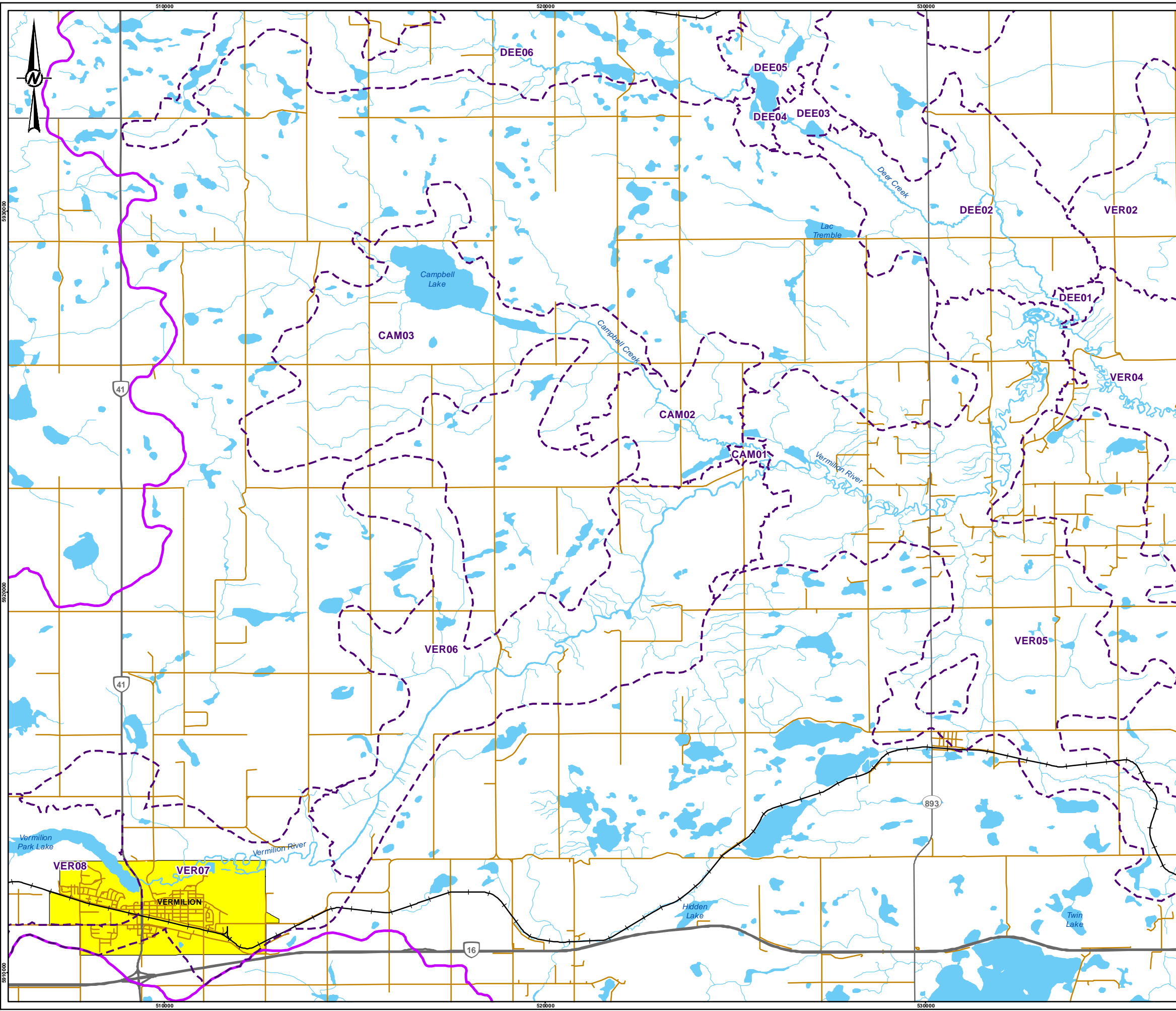
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-i

PATH: I:\2016\1534932\Maping\MXD\fig\B5-i\B5-i\_2016-03-21\_Aerial\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:41:03 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4 (8)



**LEGEND**

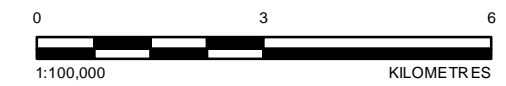
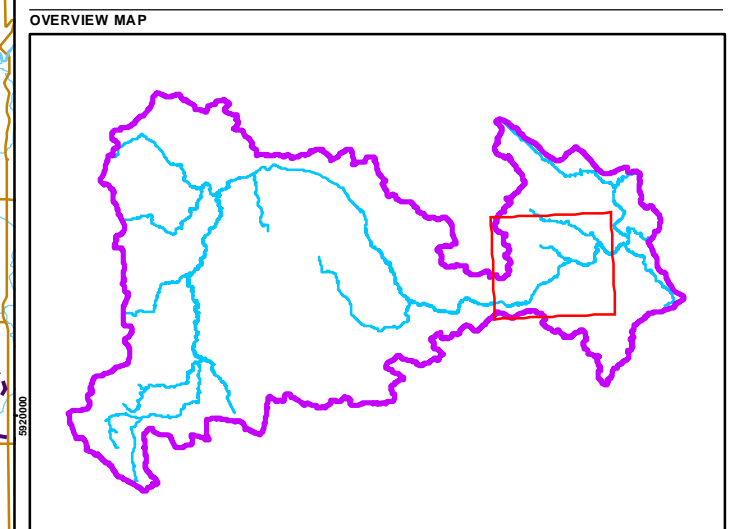
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

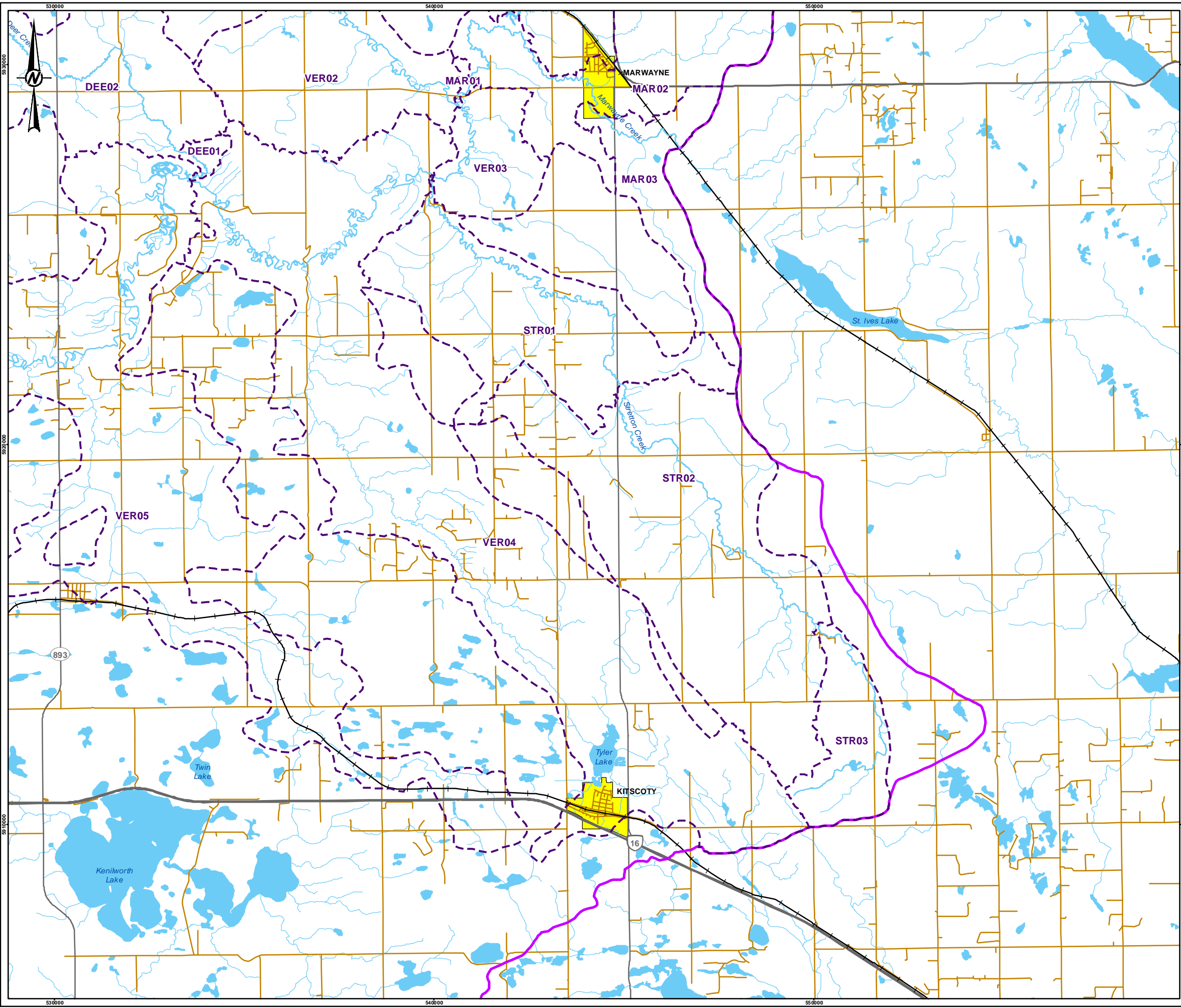
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-j

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Presentation\_Rev0.mxd PRINTED ON: 2016-03-21 AM 3:41:24 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

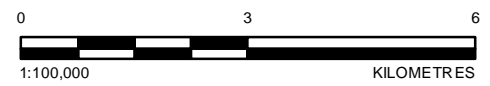
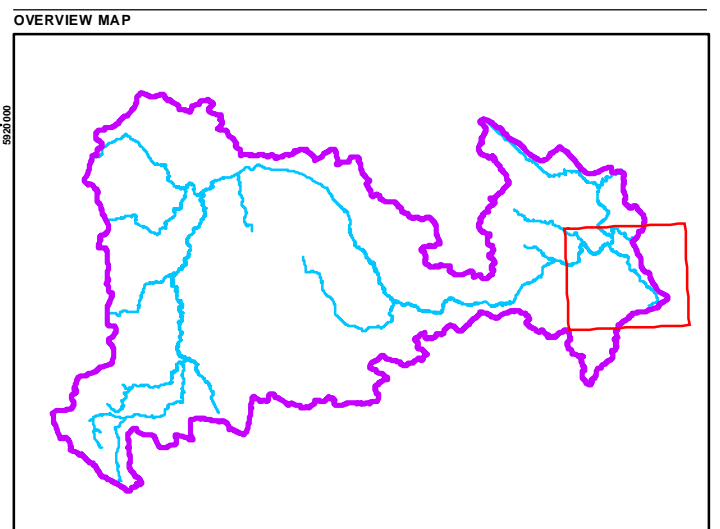


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

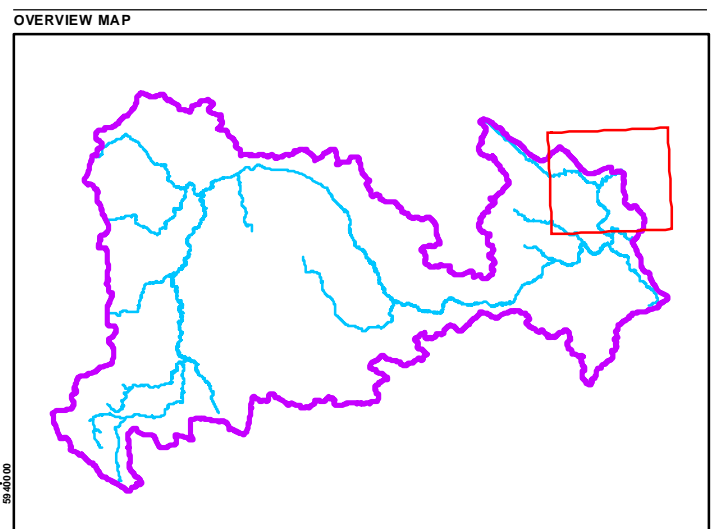
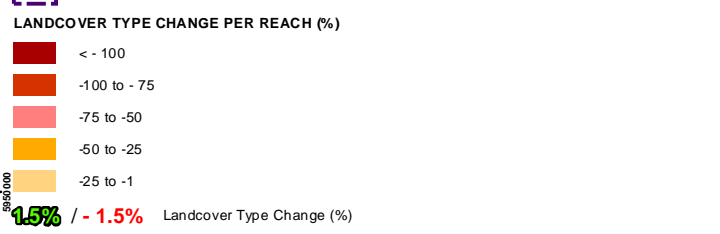
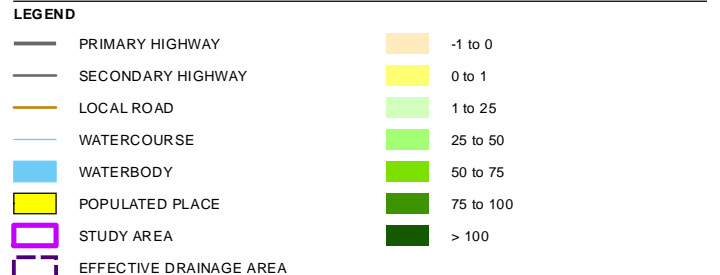
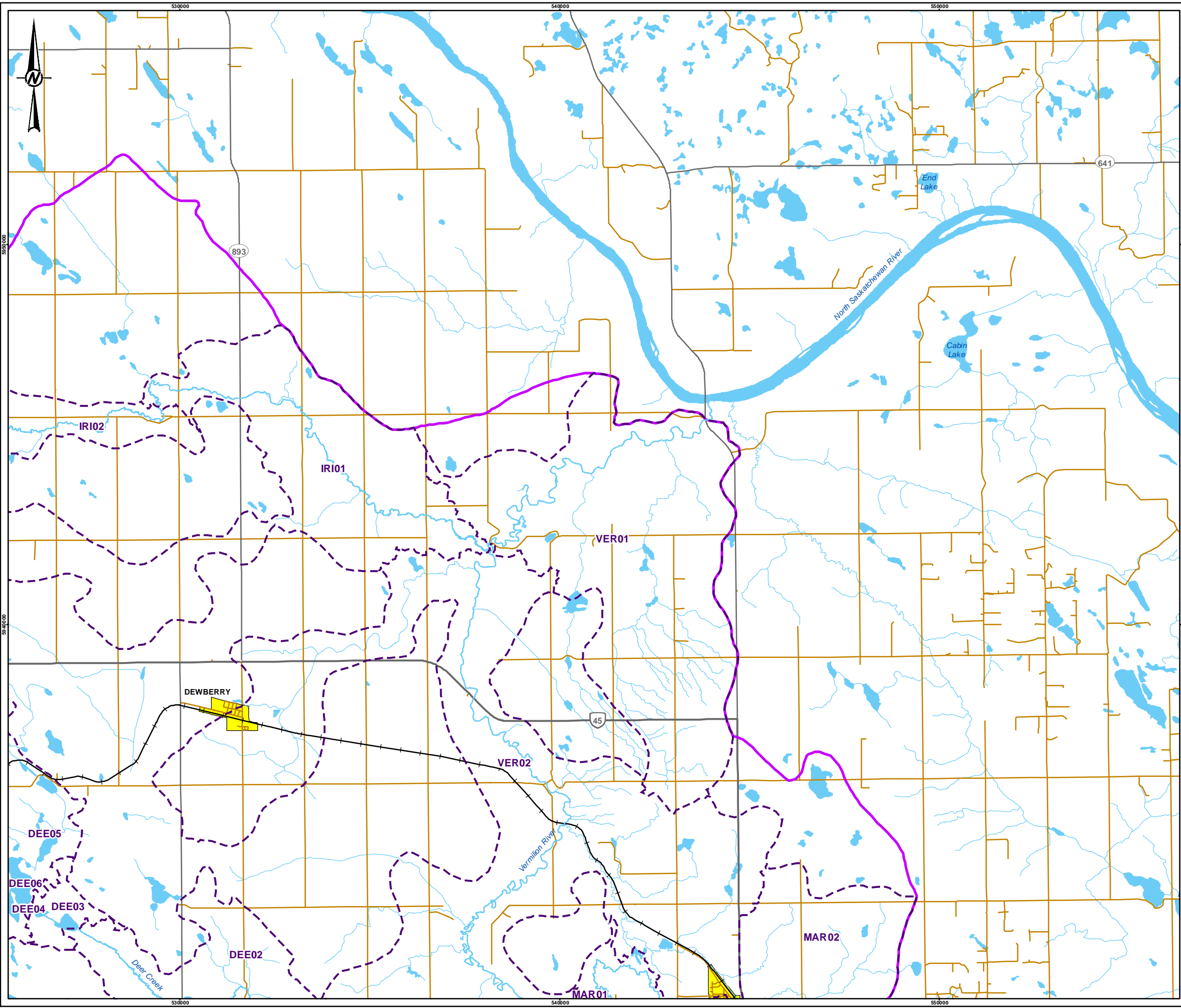
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

P:\TM\131015\1524932\Maping\Map\1524932\_Landcover\_Change\_Review.mxd PRINTED ON: 2016-03-21 AT: 3:41:42 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

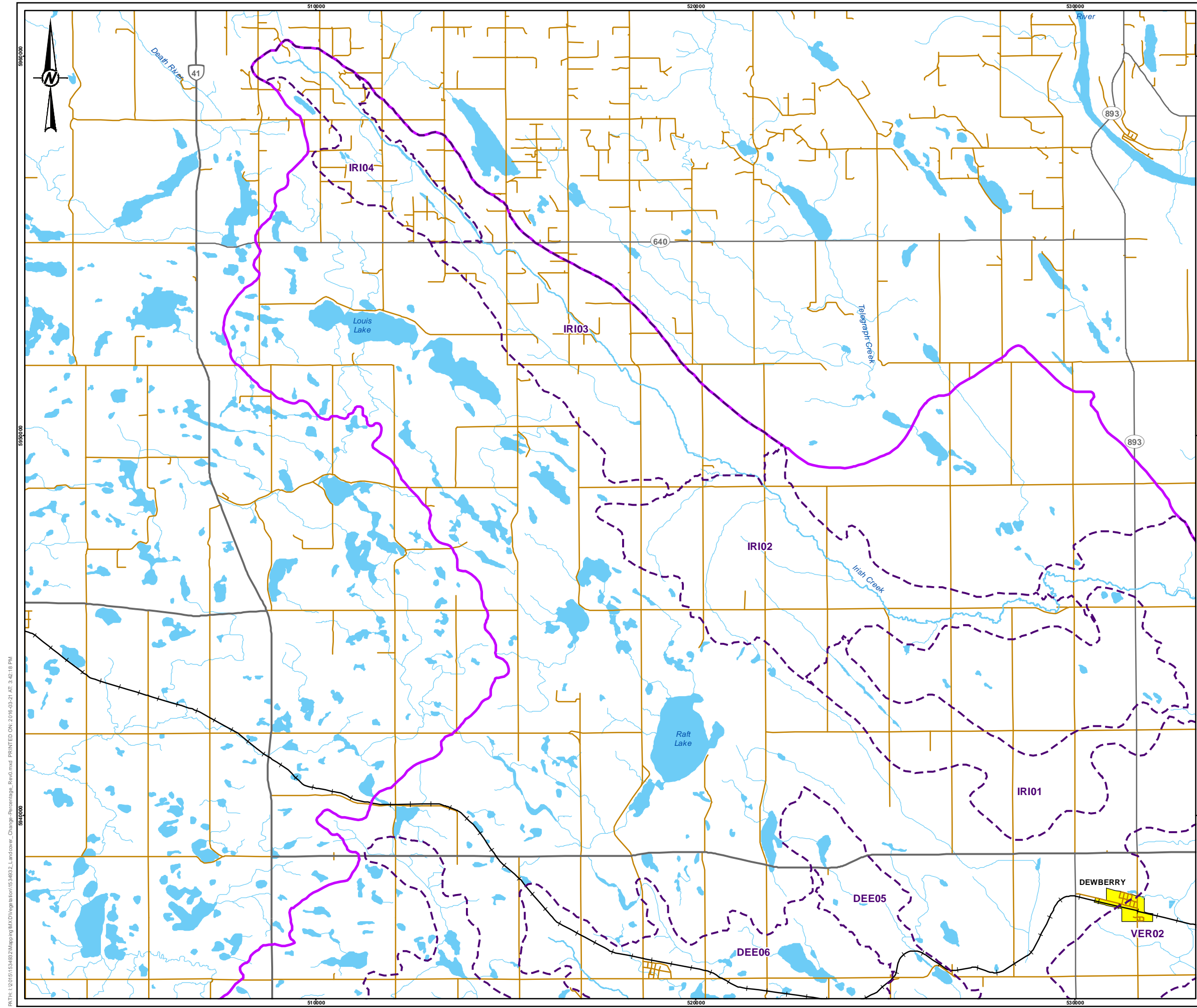
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B5-1

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:42:01 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**LEGEND**

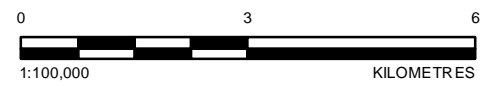
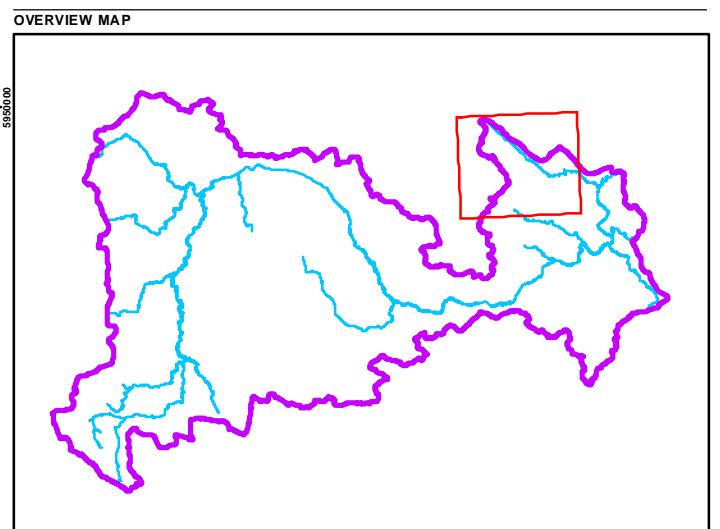
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

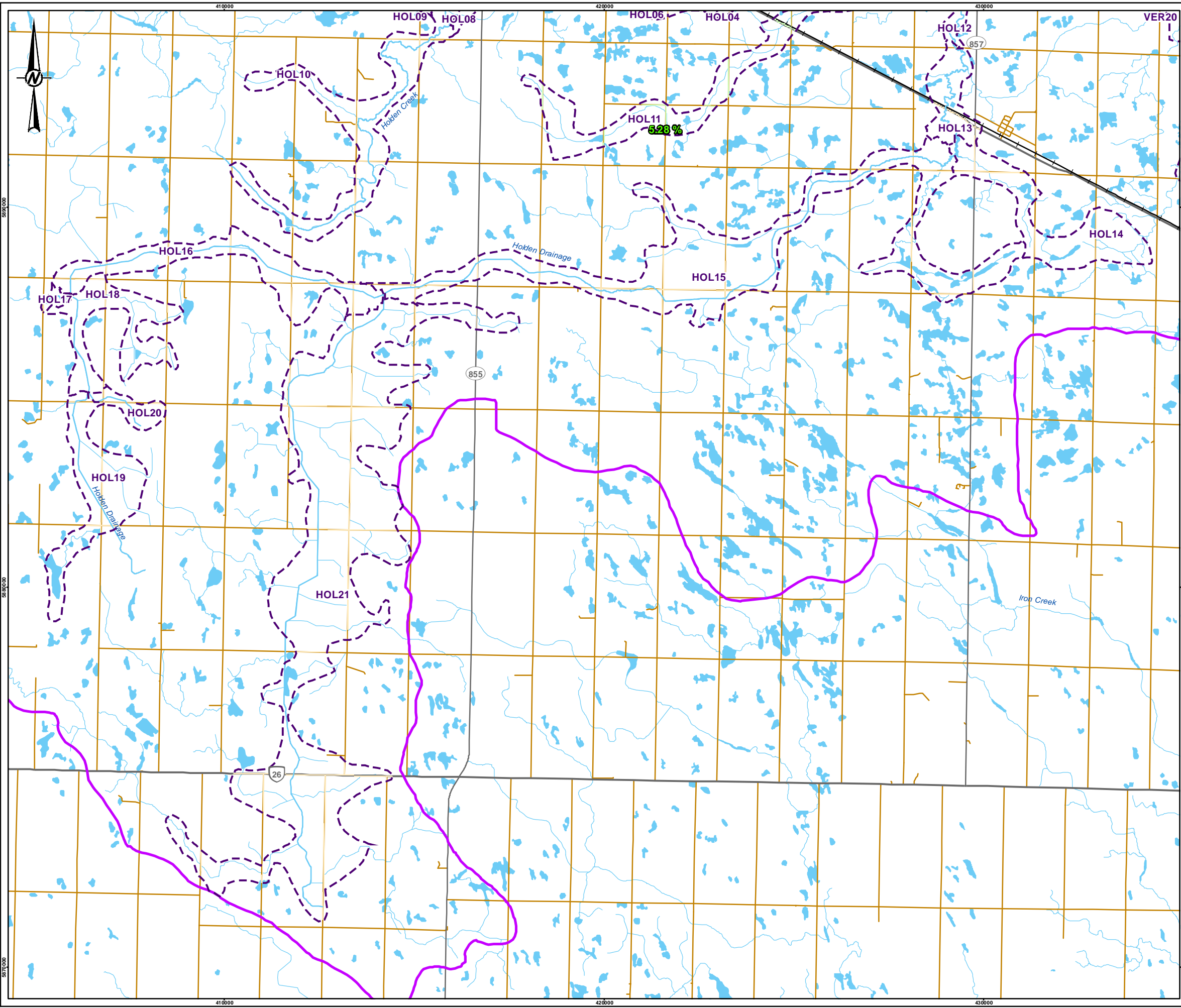
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - OTHER LAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B5-m**

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Overview.aprx PRINTED ON: 2016-03-21 AT: 3:42:18 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6



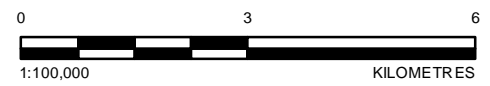
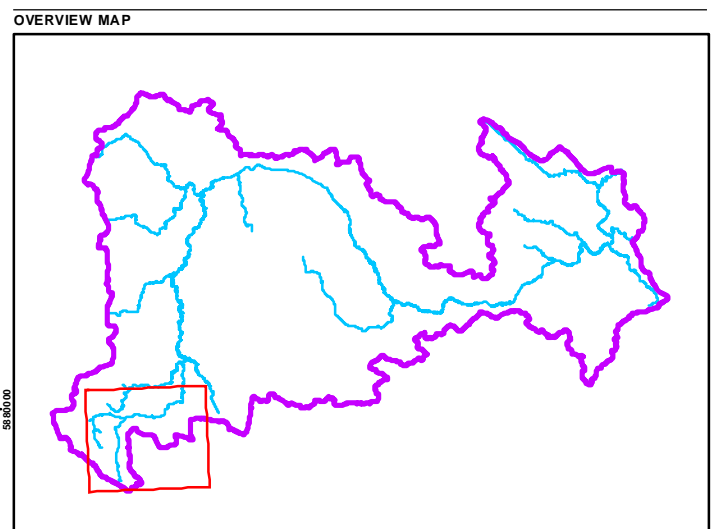
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

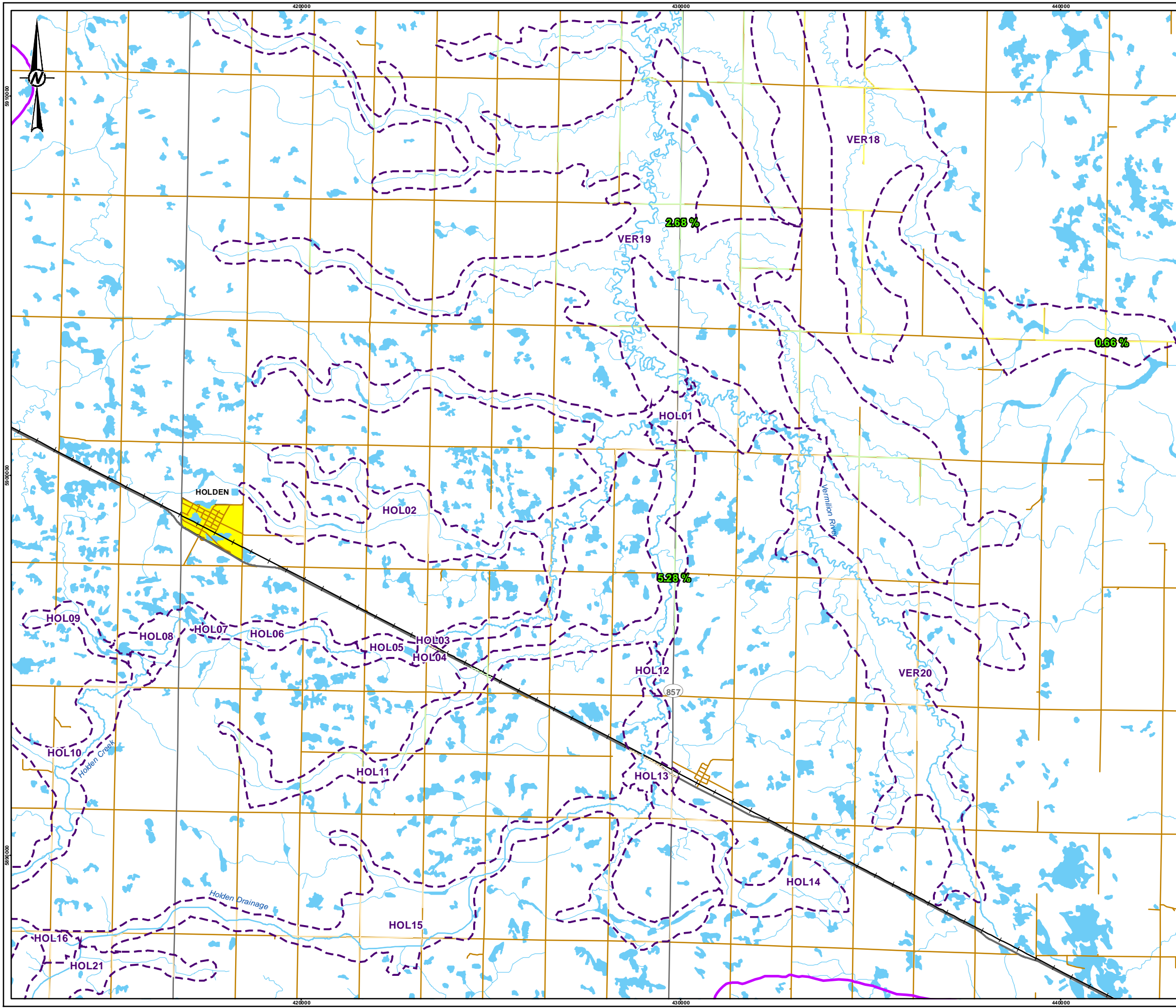
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B6-a**

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:42:39 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





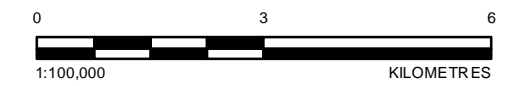
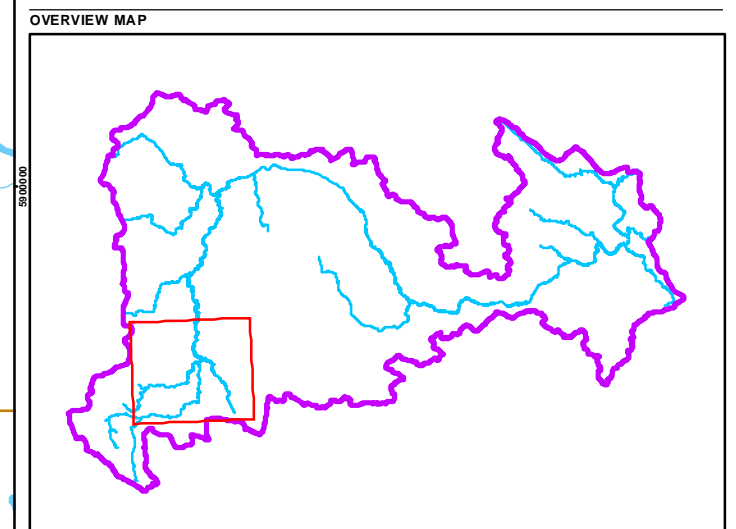
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

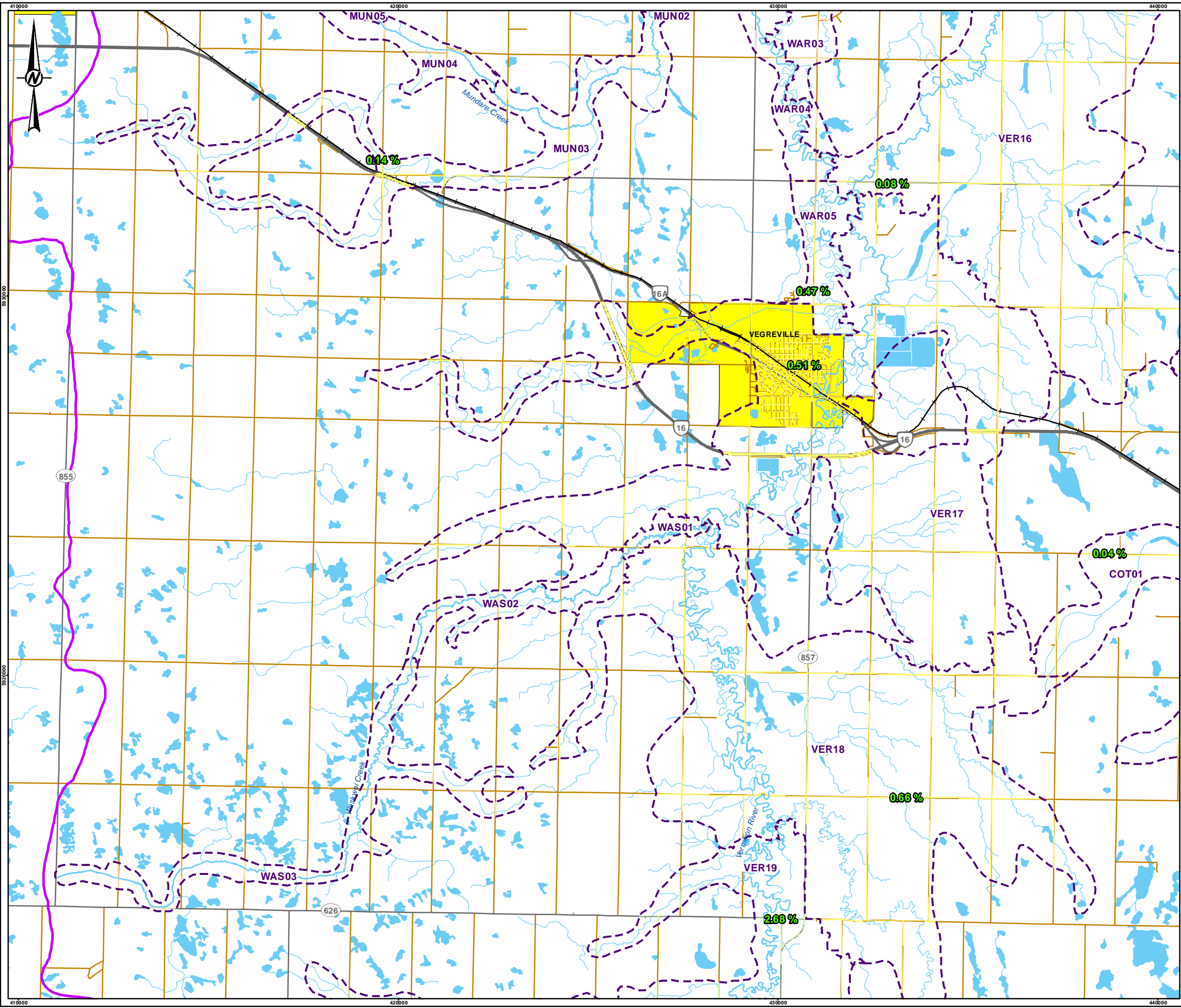
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B6-b

PATH: I:\0105\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian\Revised.mxd PRINTED ON: 2016-03-21 AT: 3:42:58 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6



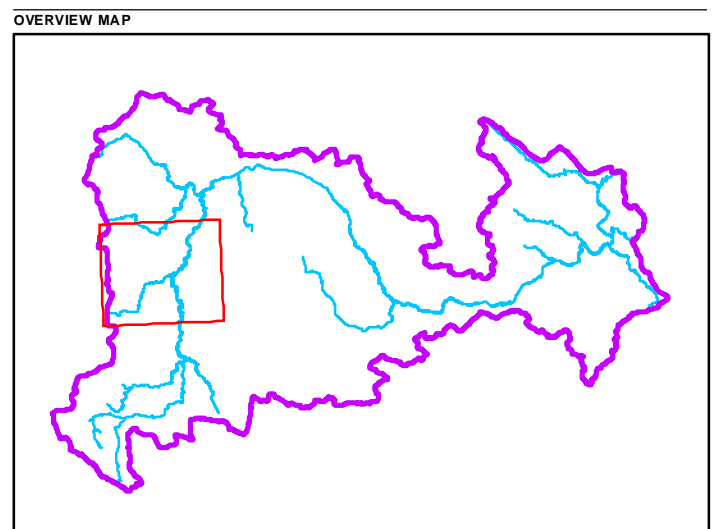
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

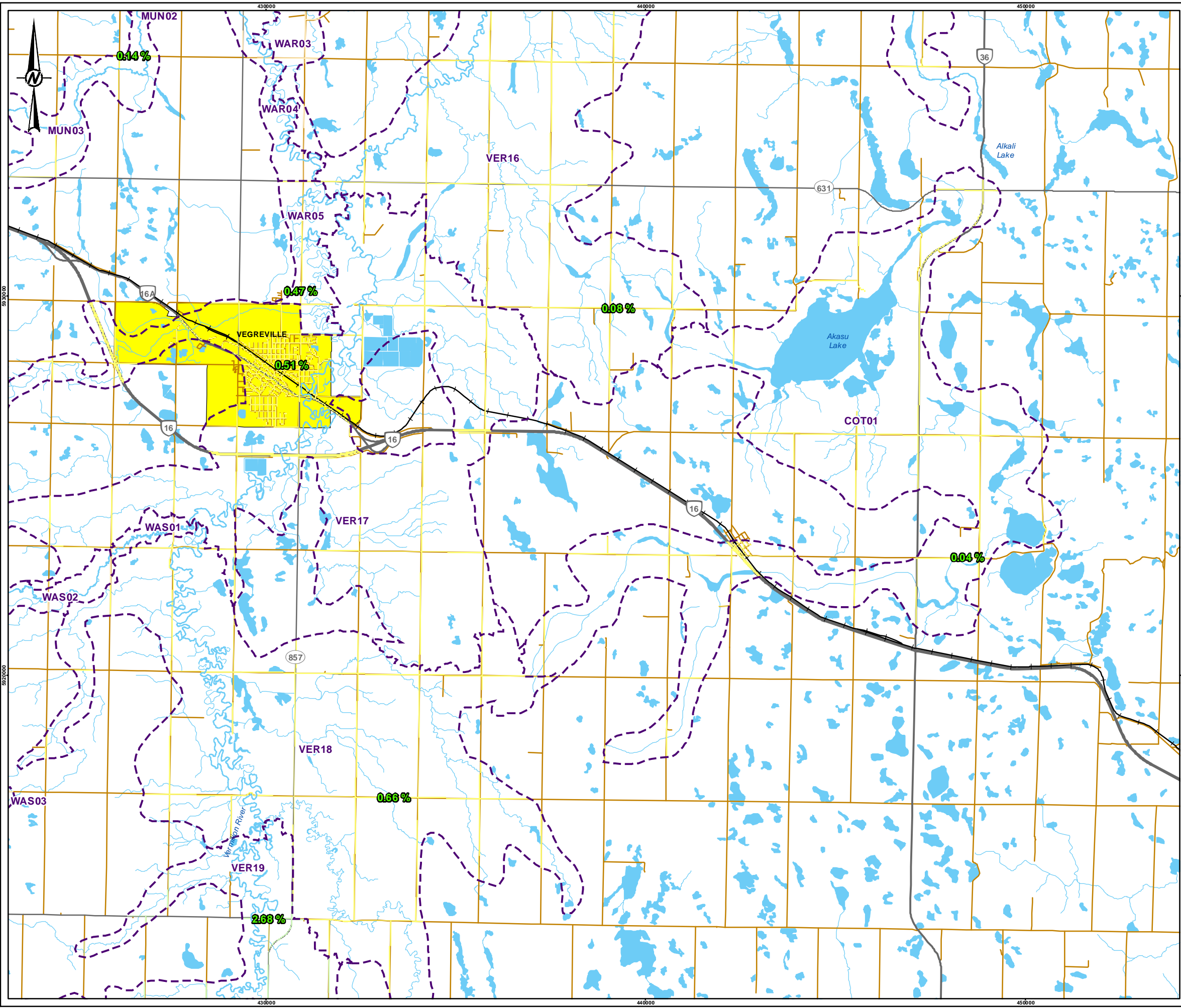
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B6-c

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian\Revised.mxd PRINTED ON: 2016-03-21 AT: 3:42:20 PM  
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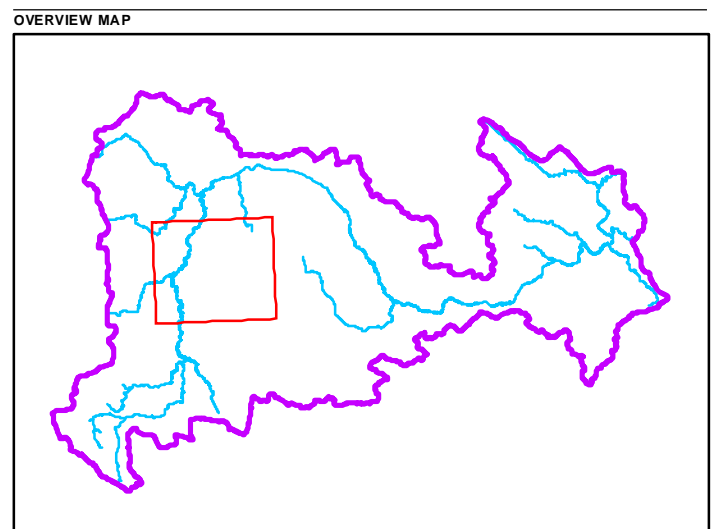
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

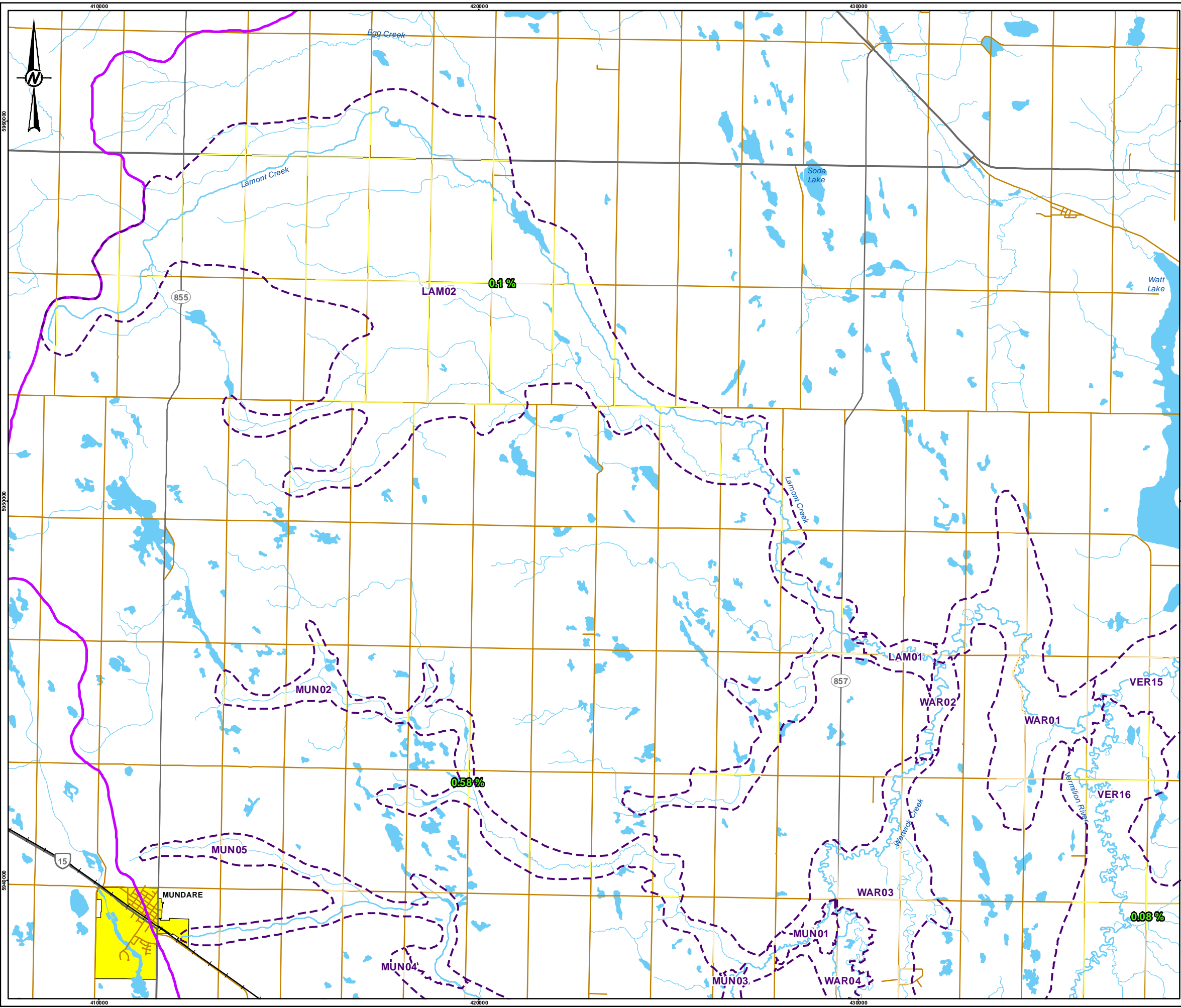
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B6-d

P:\TM\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:42:39 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

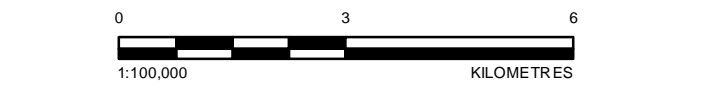
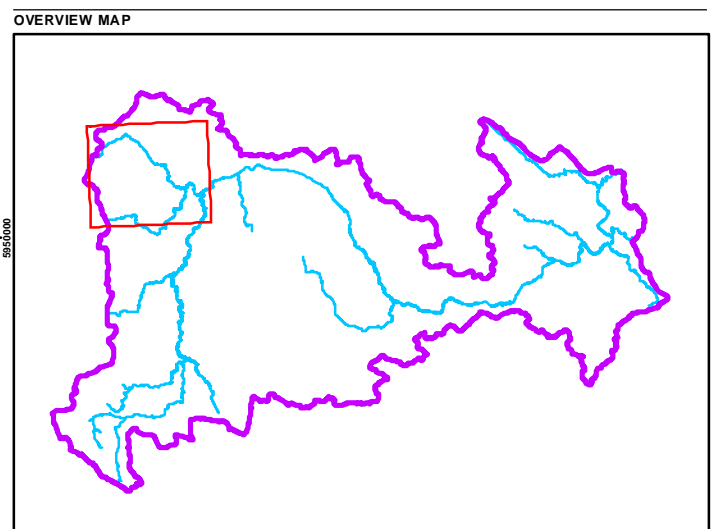
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1
	1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

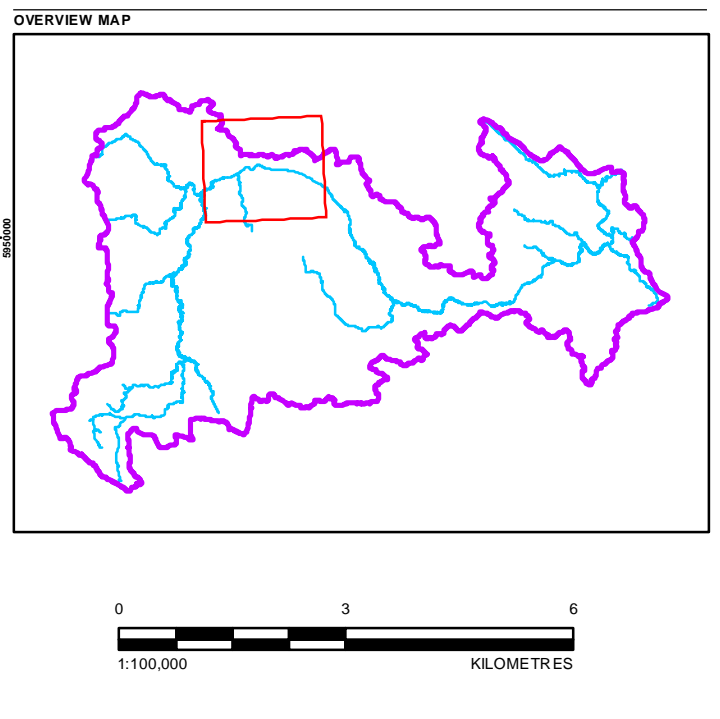
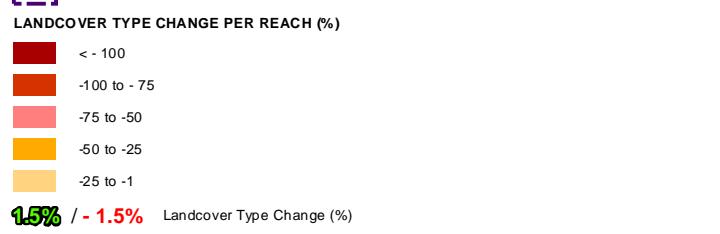
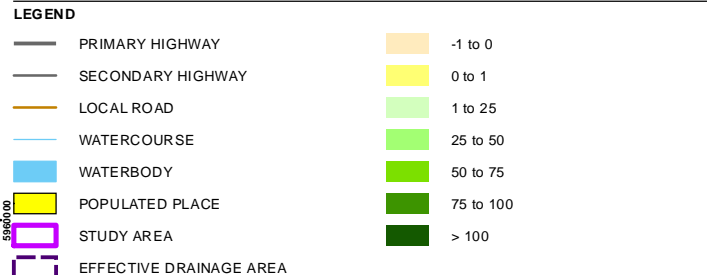
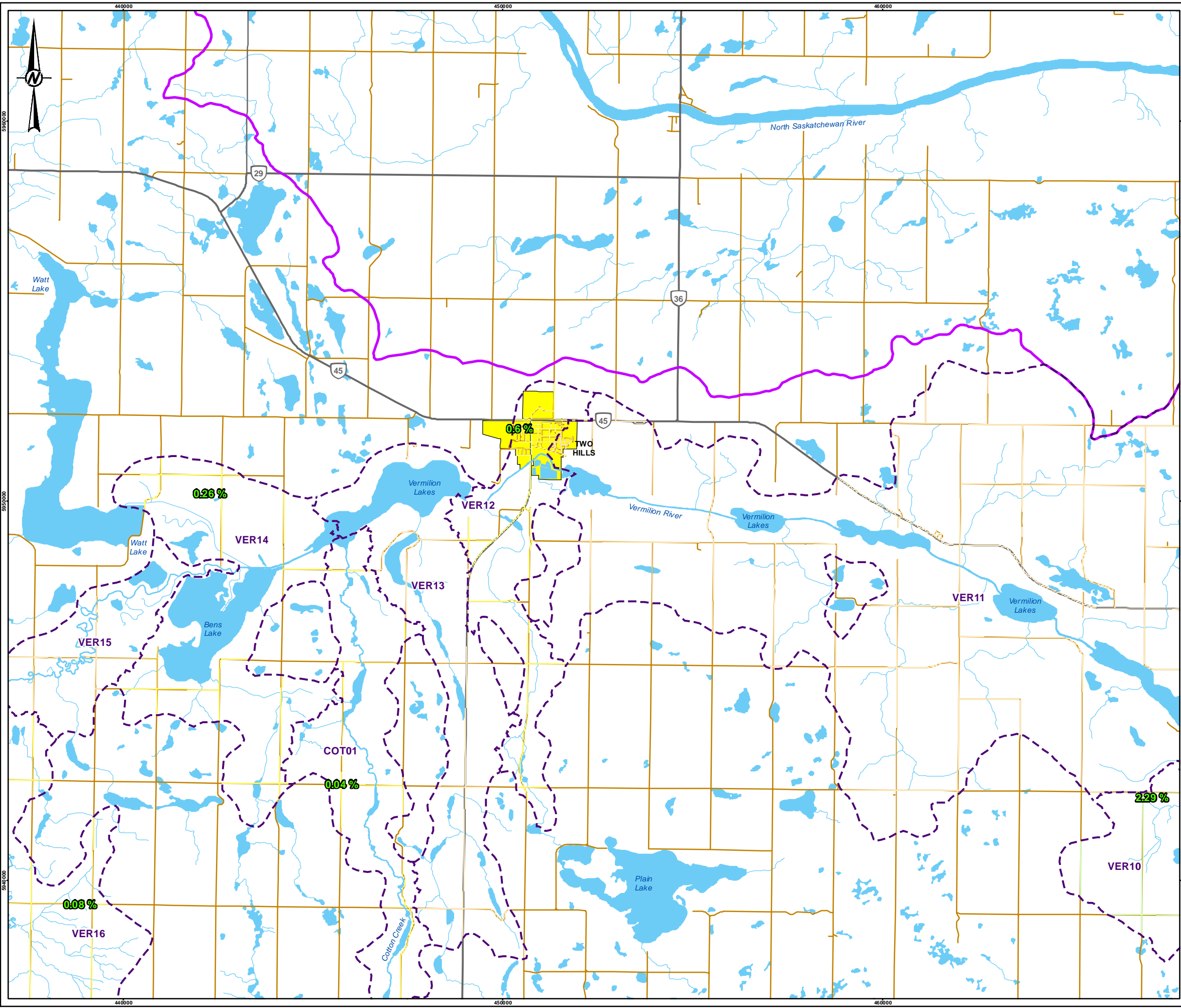
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

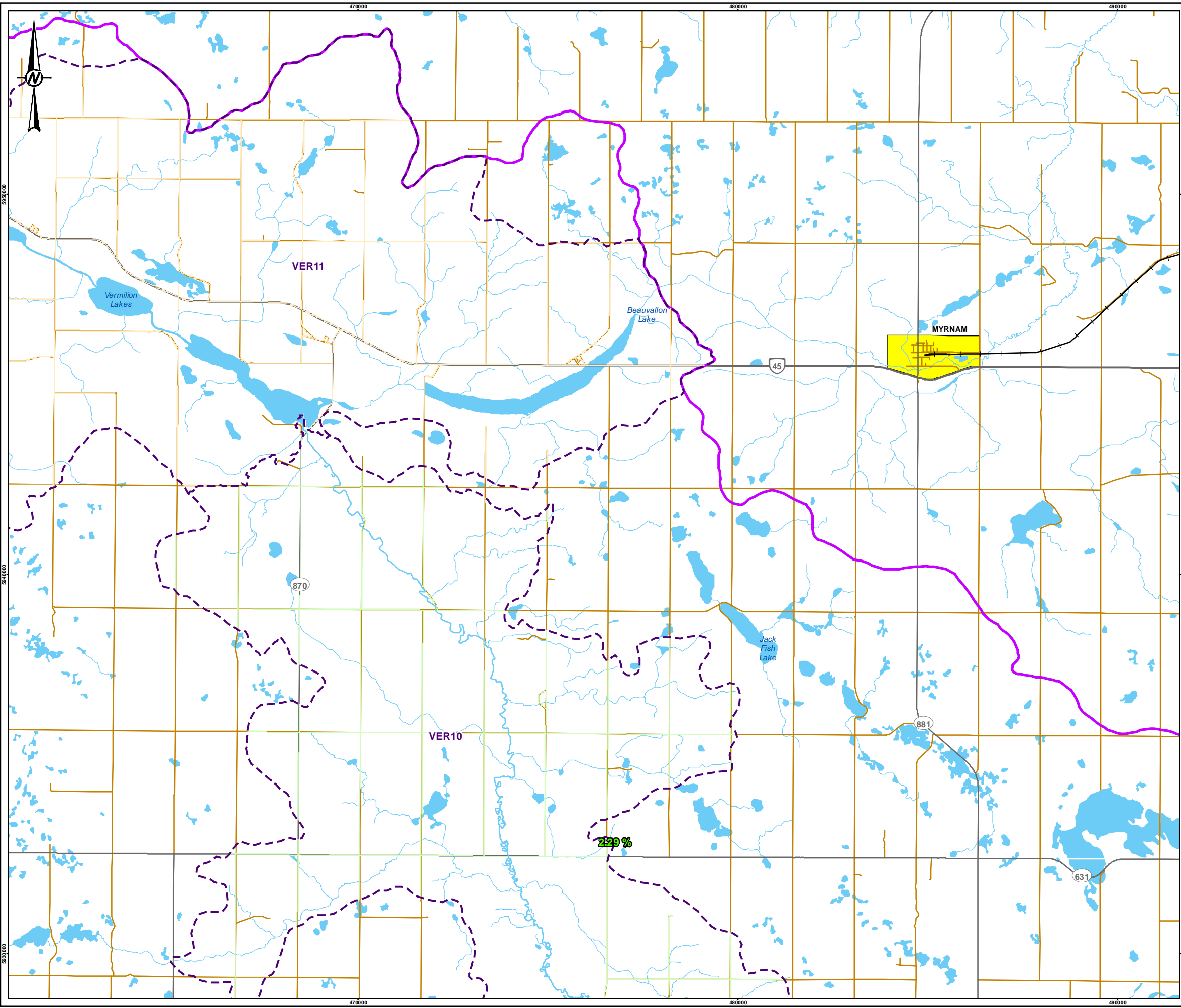
PROJECT NO. 1534932	CONTROL	REV. A	FIGURE <b>B6-e</b>
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 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



CLIENT	NORTH SASKATCHEWAN WATERSHED ALLIANCE
PROJECT	AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER
TITLE	LANDCOVER CHANGE 1990 TO 2010 - ROADS
CONSULTANT	YYYY-MM-DD 2016-03-21
DESIGNED	V.COENEN
PREPARED	P.THIEDE
REVIEWED	P.THIEDE
APPROVED	V.COENEN
PROJECT NO.	CONTROL
1534932	REV. A
	FIGURE B6-f

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:44:18 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6



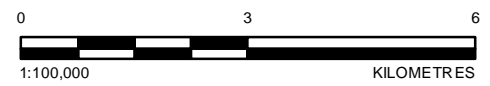
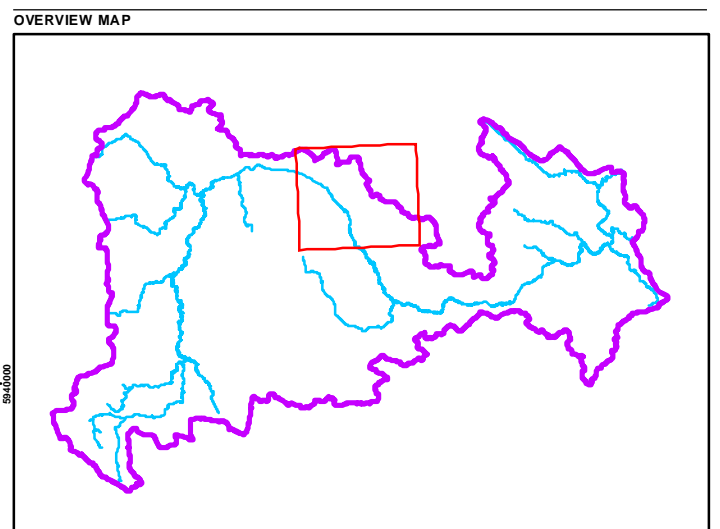
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

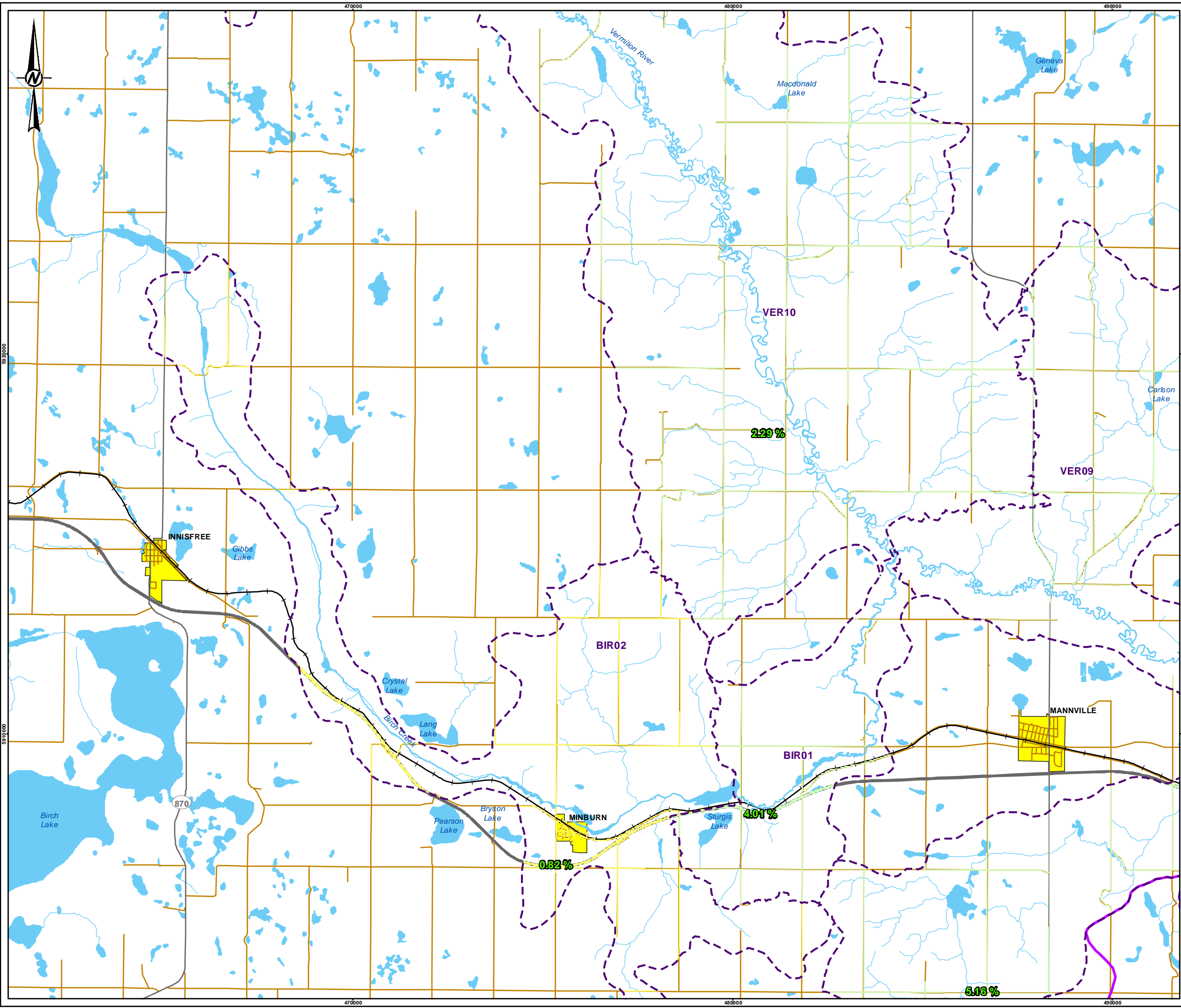
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:44:38 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6





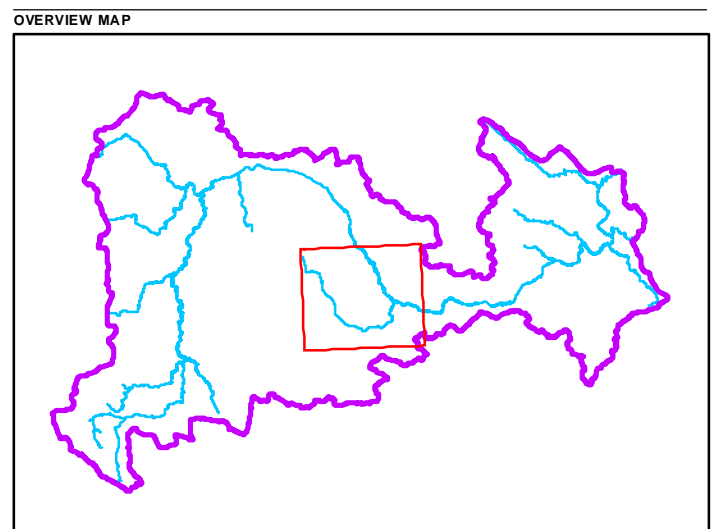
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

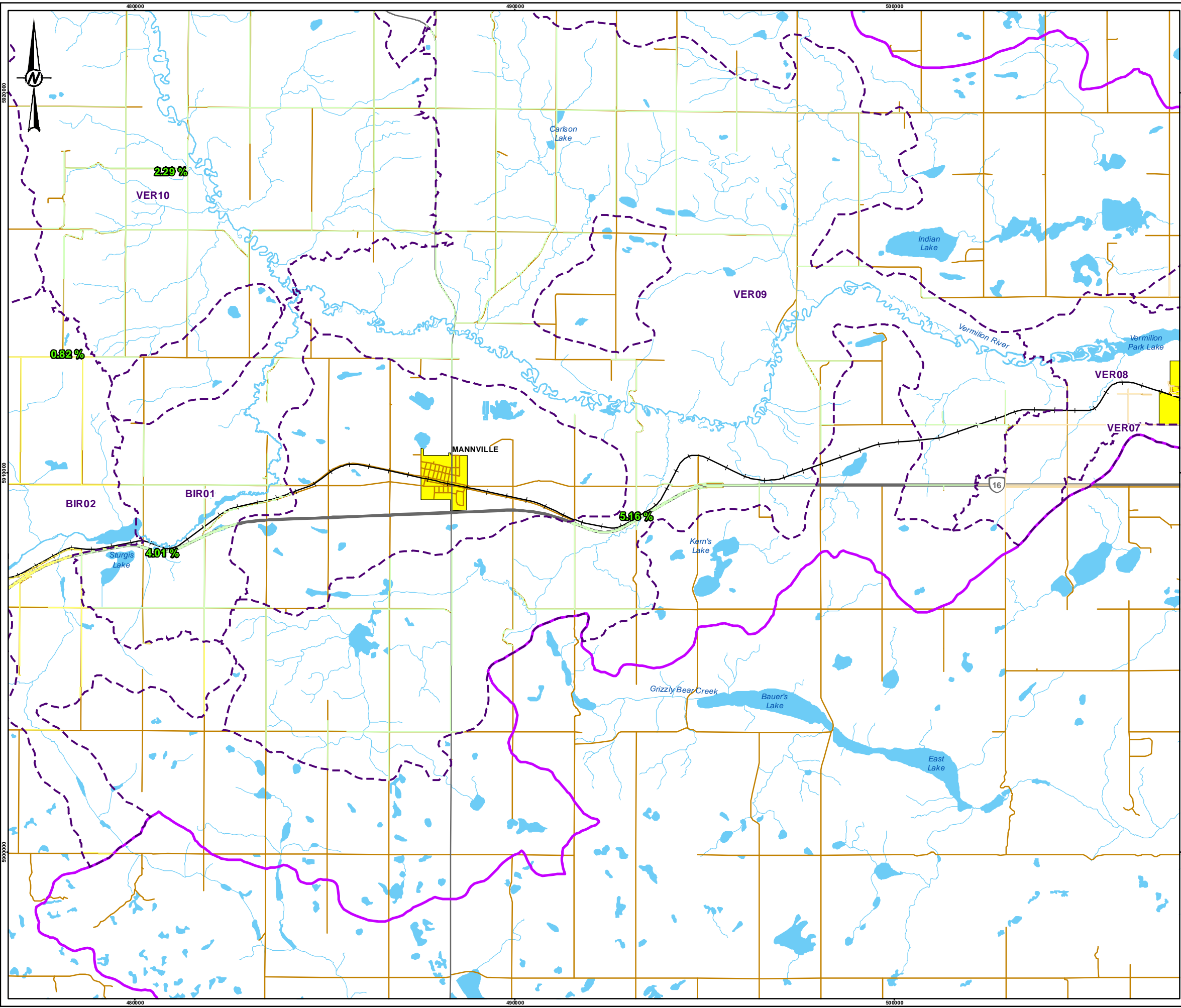
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B6-h

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:44:57 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6



**LEGEND**

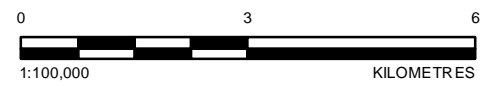
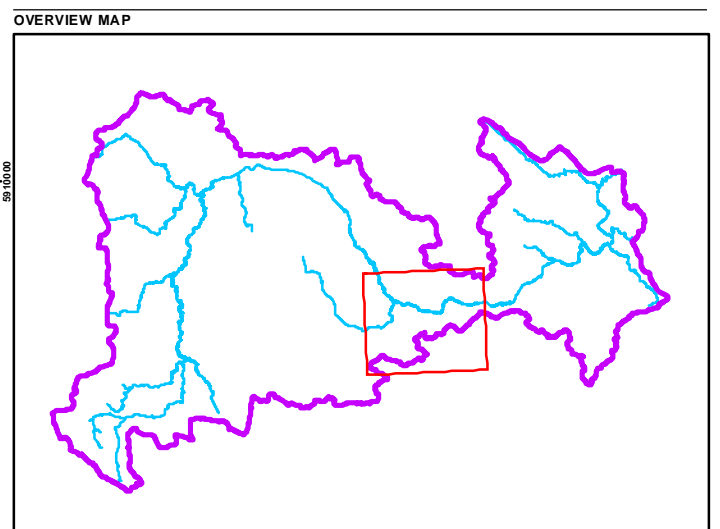
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

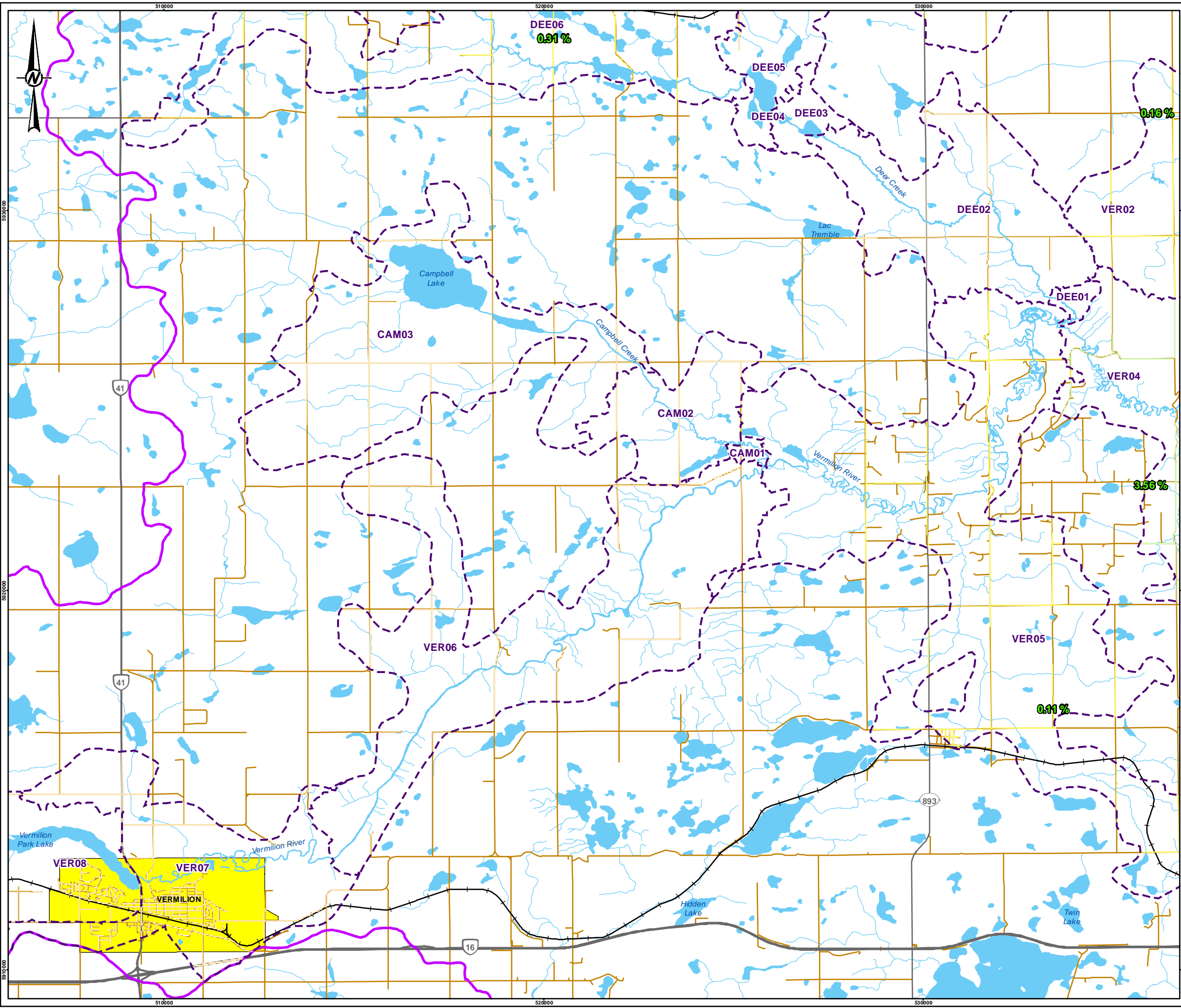
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B6-i

PATH: I:\2016\1534932\Maping\MXD\fig\B6-i\1534932\_Landcover\_Change\_Percentage\_Road.mxd PRINTED ON: 2016-03-21 AT: 3:45:18 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6



**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)

**OVERVIEW MAP**



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

**CONSULTANT**

YYYY-MM-DD	2016-03-21
DESIGNED	V.COENEN
PREPARED	P.THIEDE
REVIEWED	P.THIEDE
APPROVED	V.COENEN

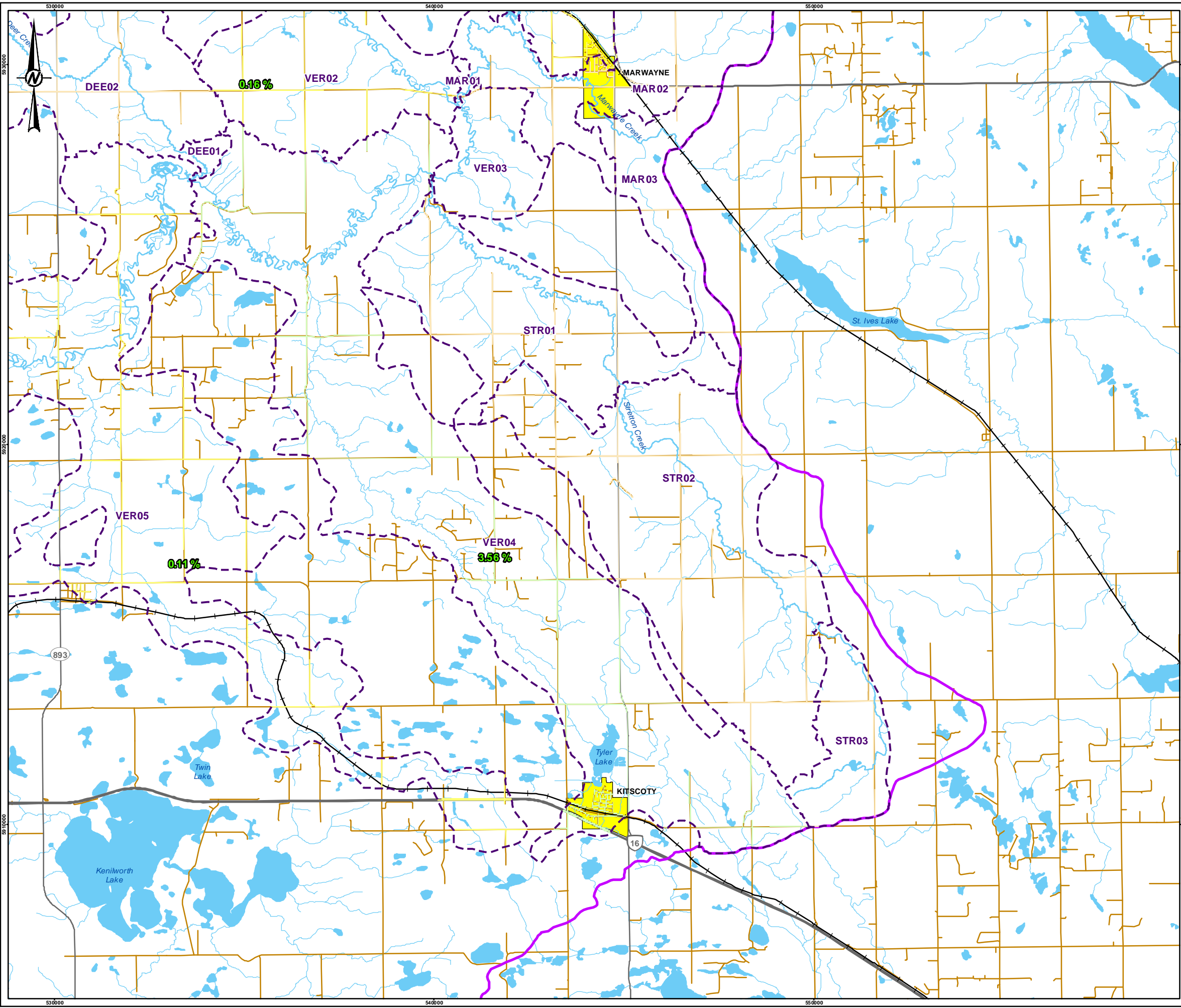
**PROJECT NO.** 1534932      **CONTROL**

**REV.** A

**FIGURE** B6-j

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:45:38 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

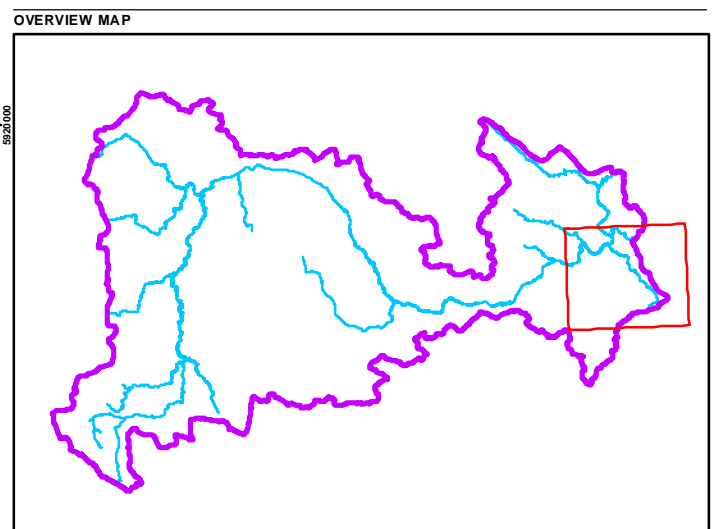
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

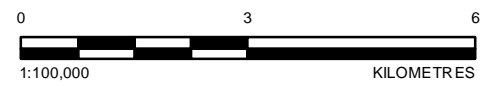
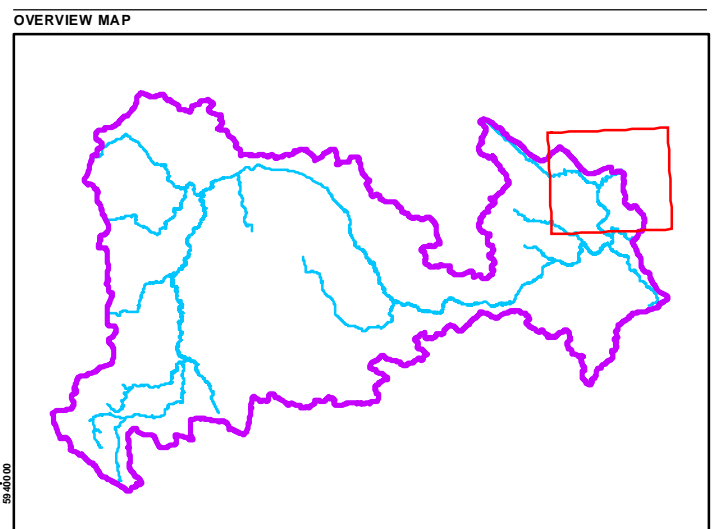
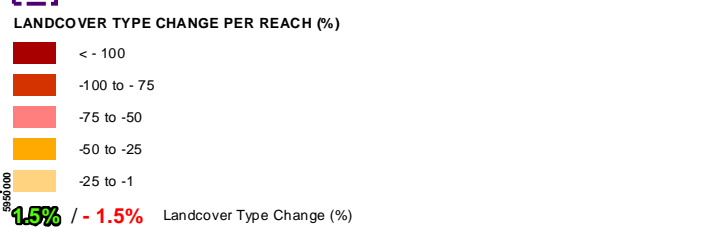
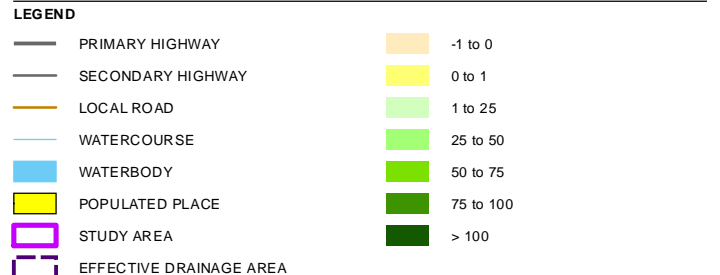
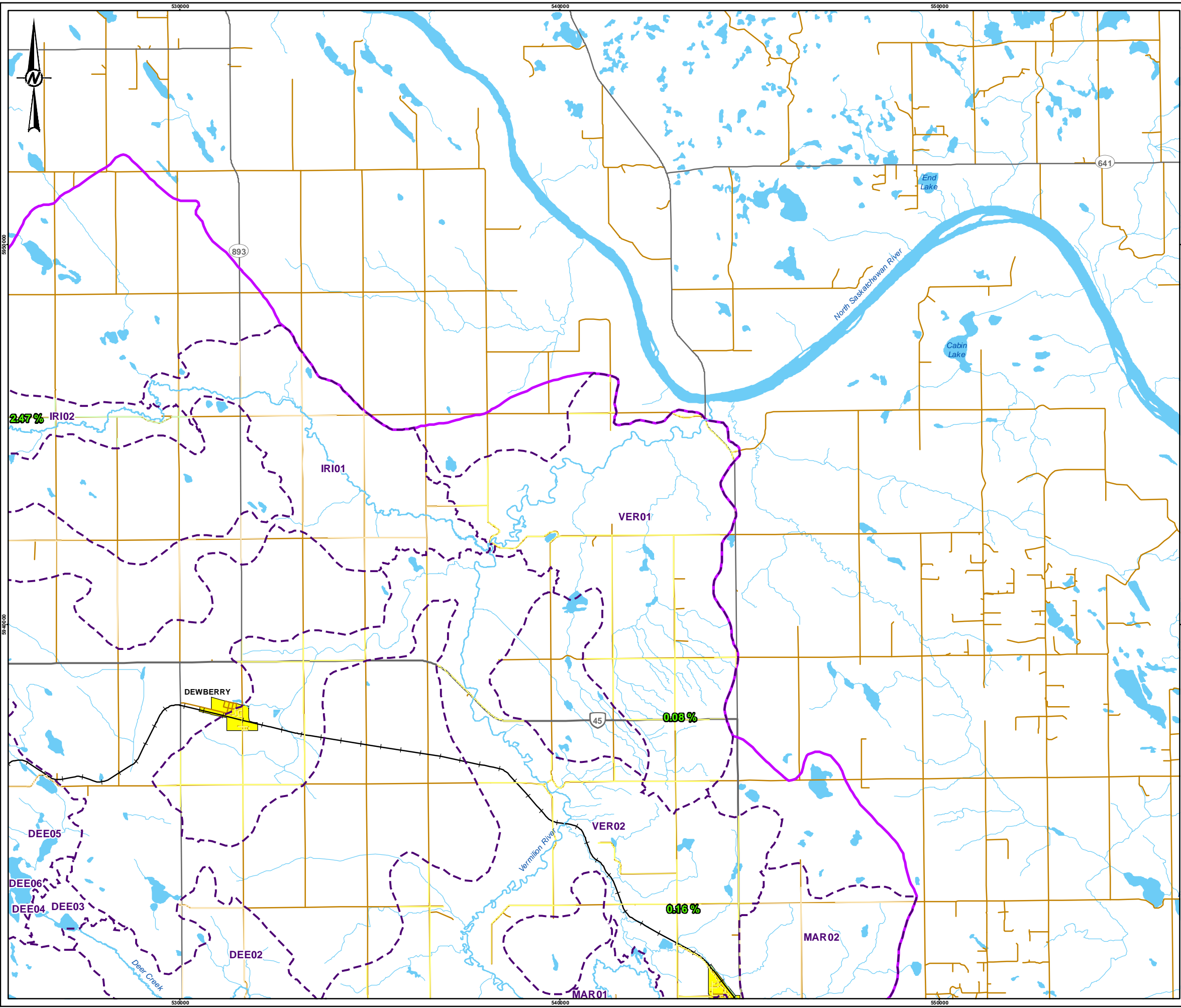
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

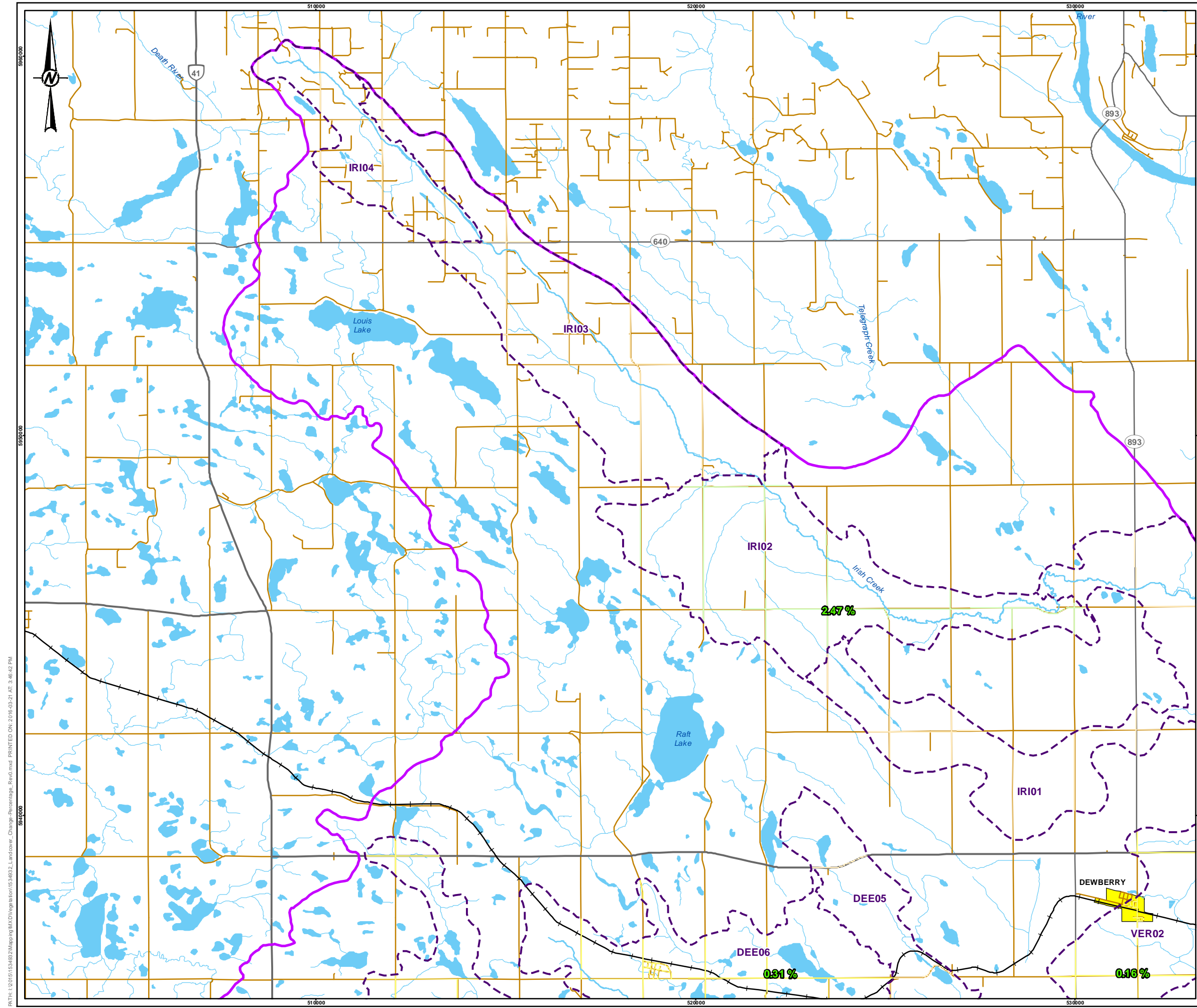
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:46:17 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

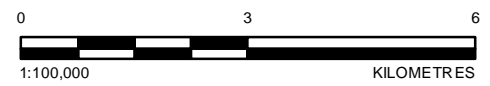
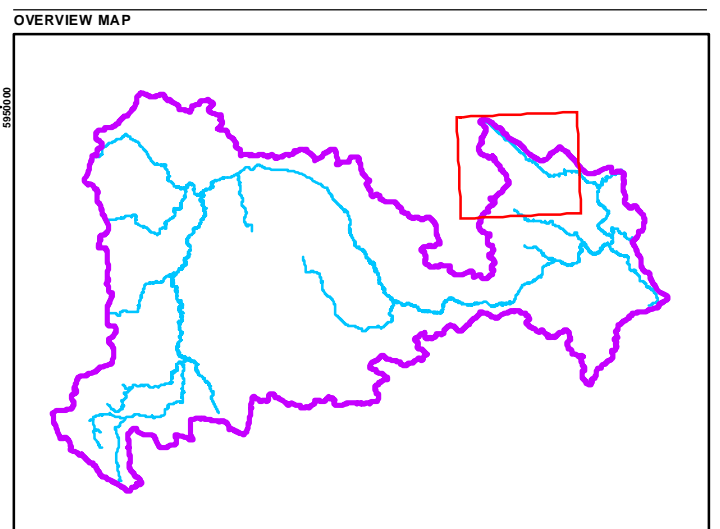
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< -100
	-100 to -75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - ROADS

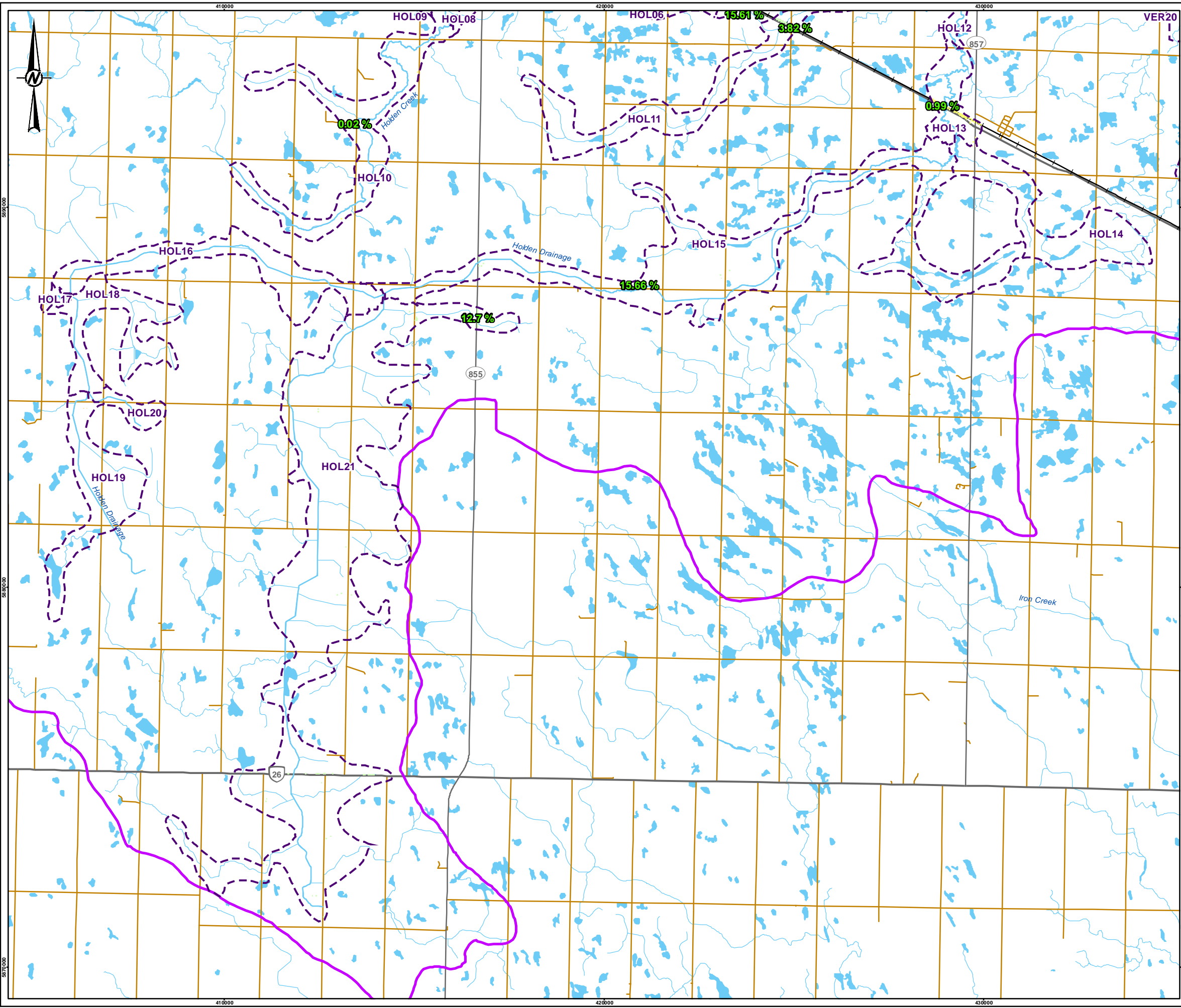
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B6-m**

PATH: I:\2016\1534932\Maping\MXD\fig\atlas\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:46:42 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





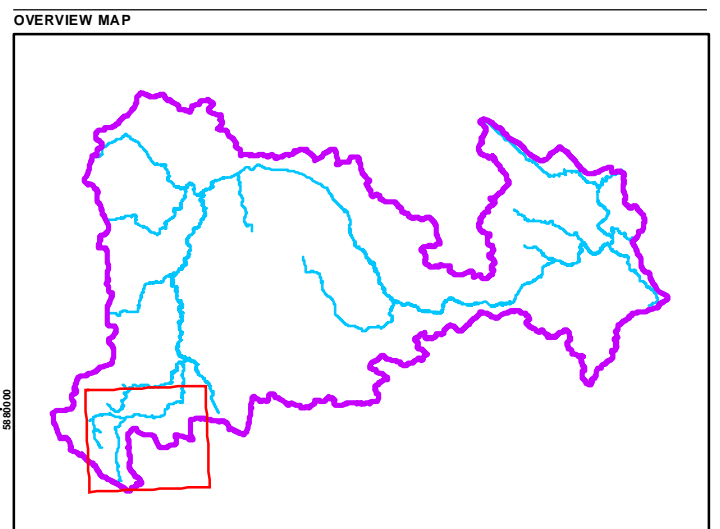
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

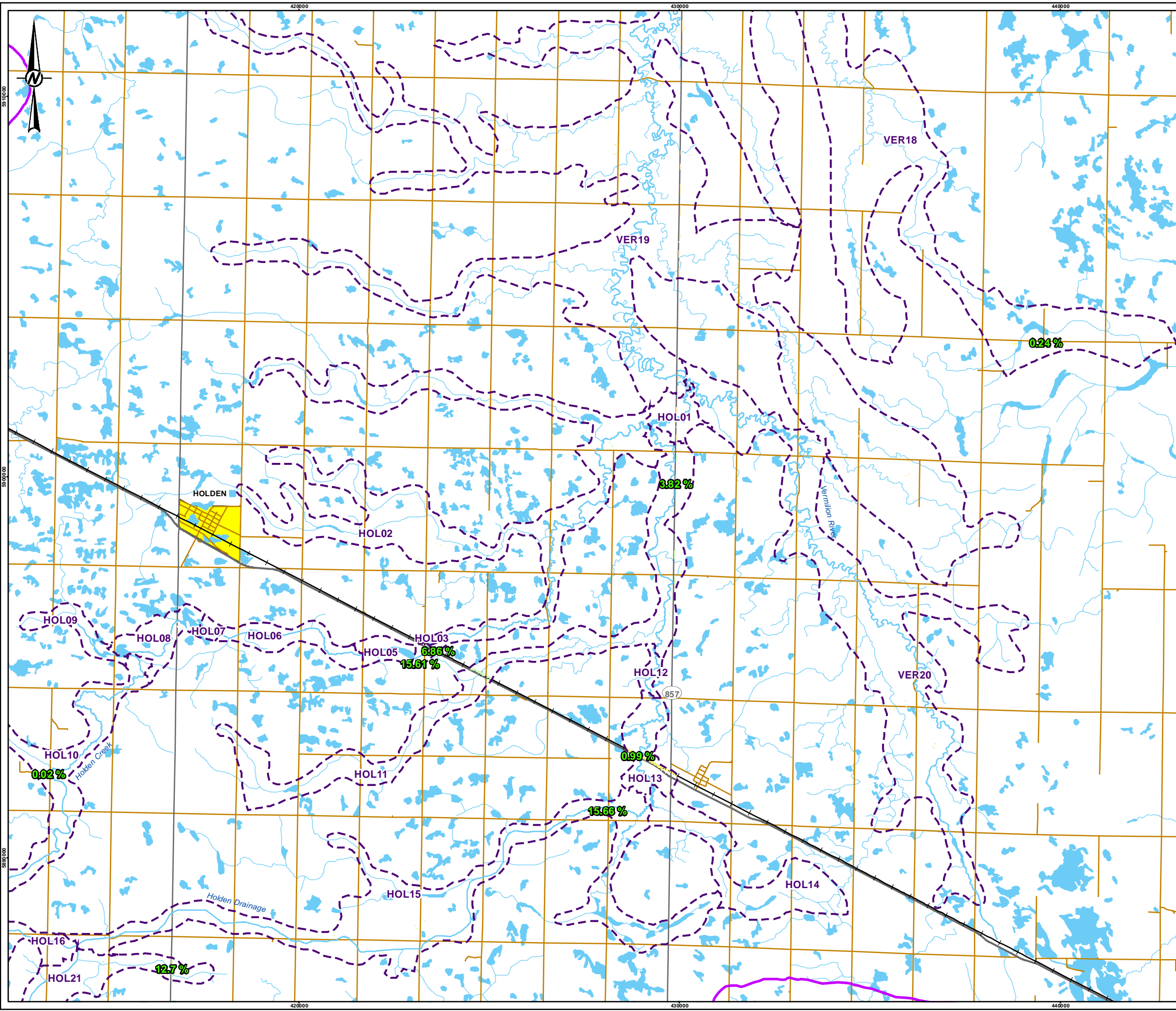
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\1534932\Maping\MXD\fig\basin\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:47:05 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



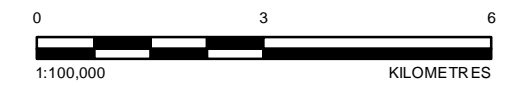
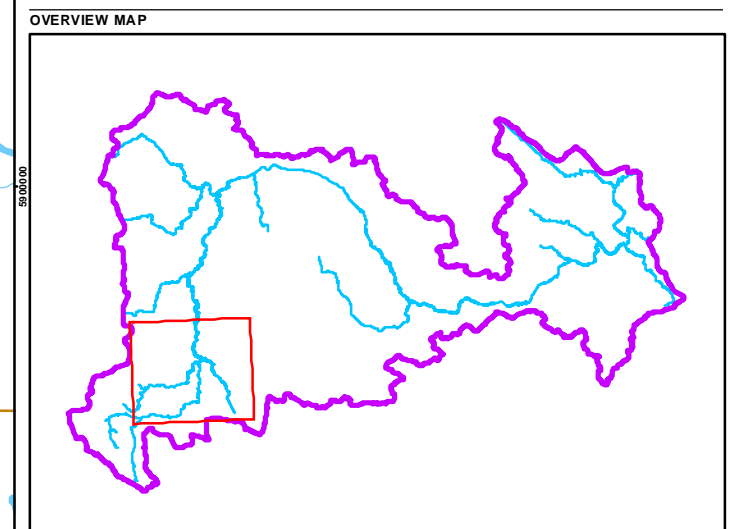
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

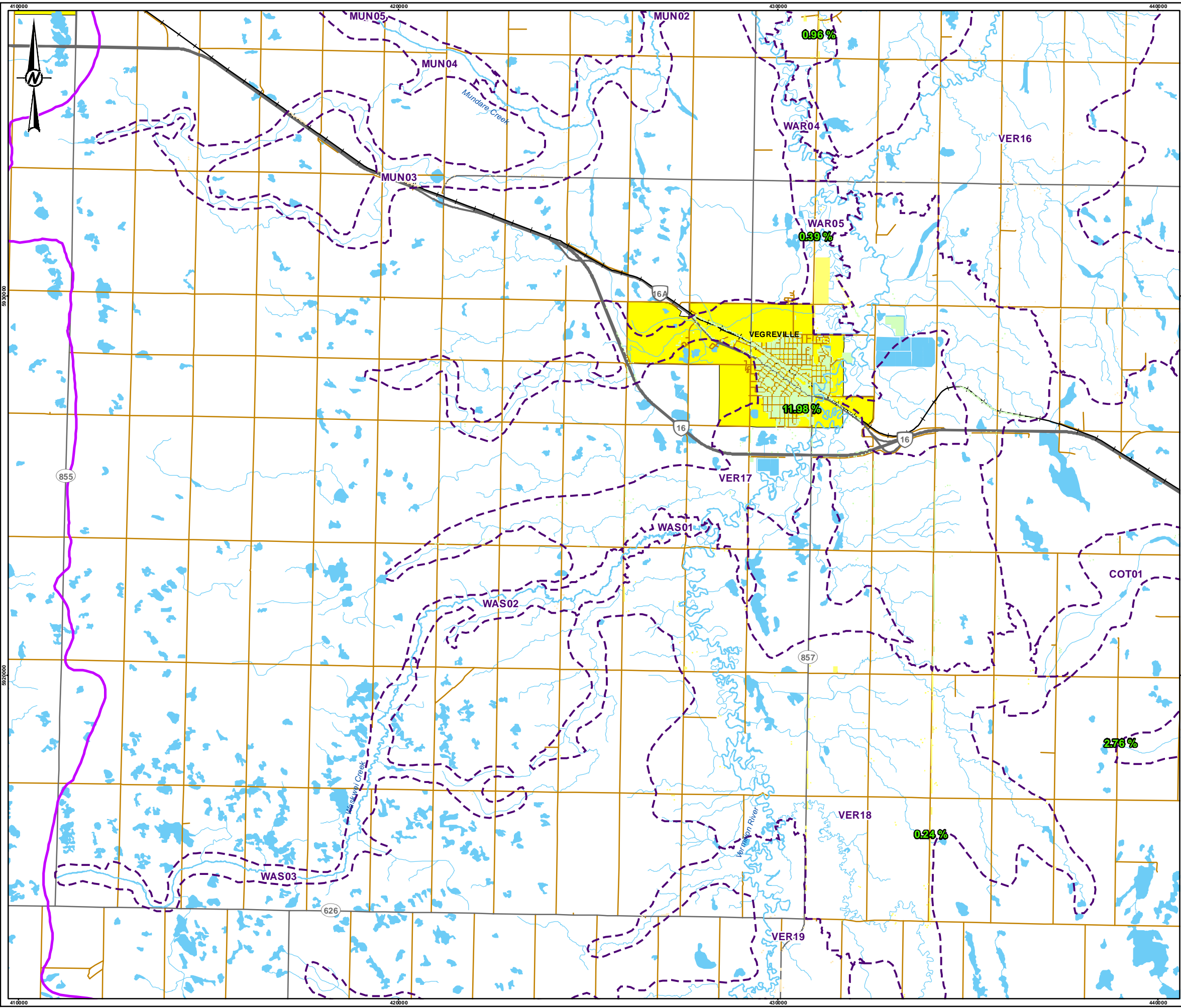
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B7-b

PATH: I:\2015\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:47:28 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



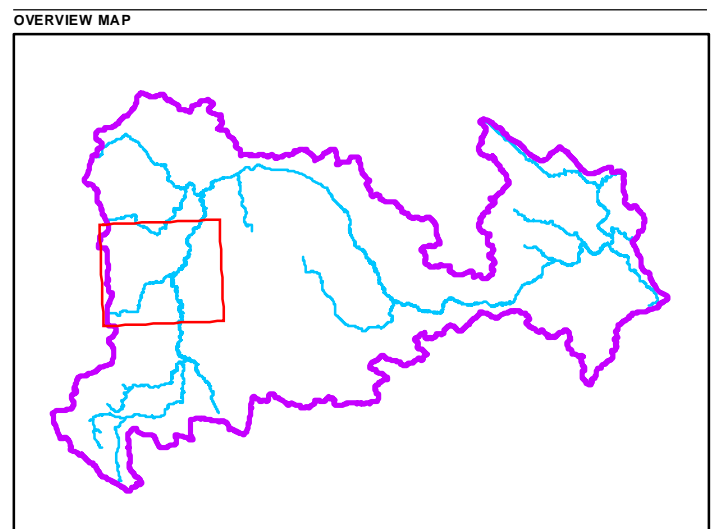


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

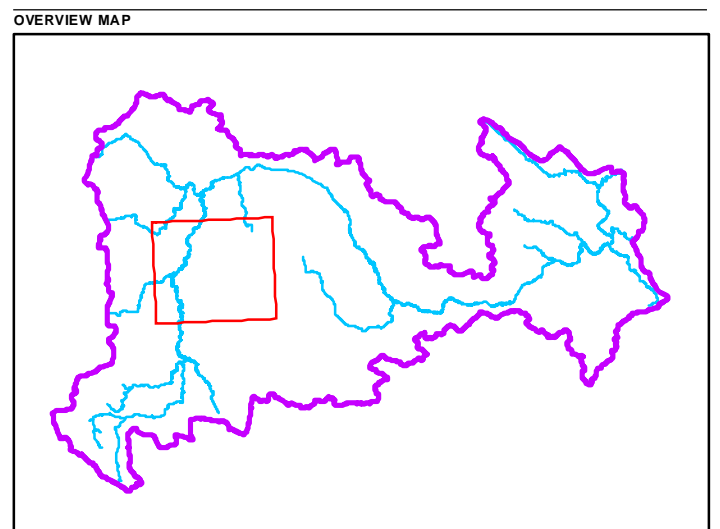
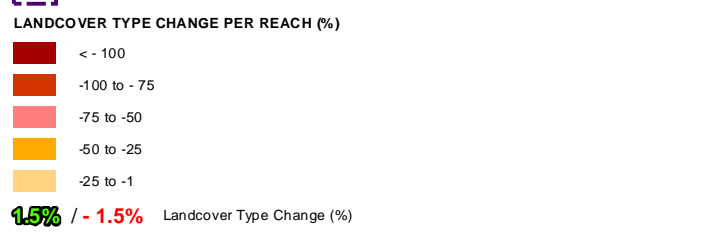
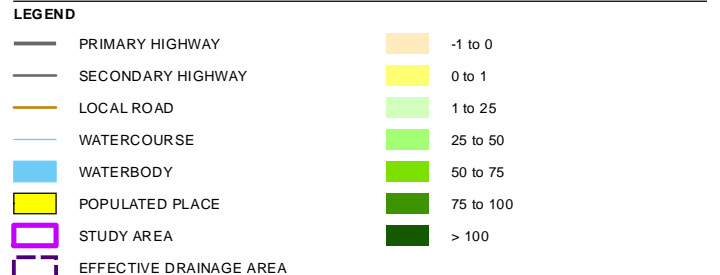
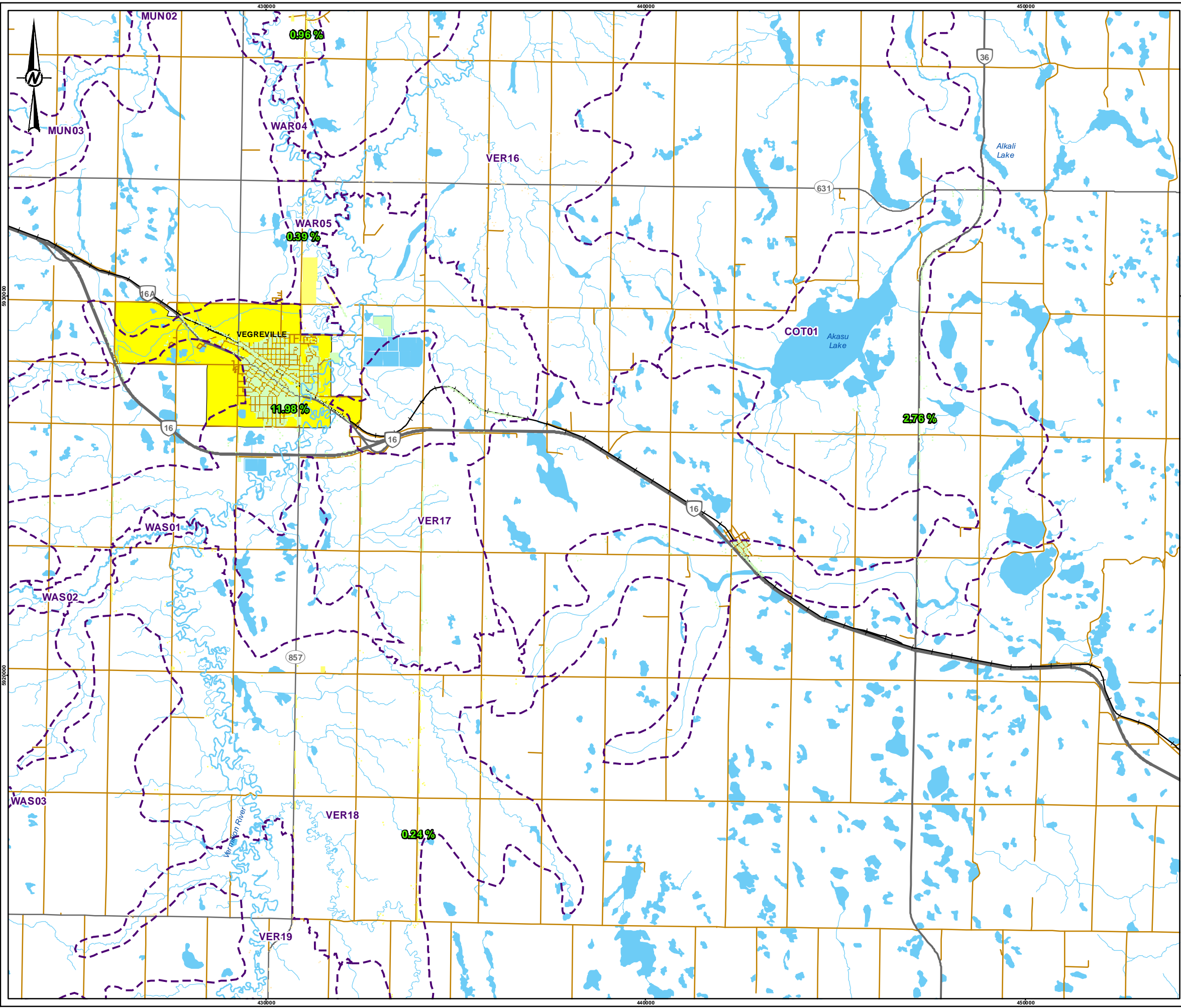
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\31015154922\Maping\Maping\1534932\_Landcover\_Change\_Riparian\Revised.mxd PRINTED ON: 2016-03-21 AT: 3:47:54 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B






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 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

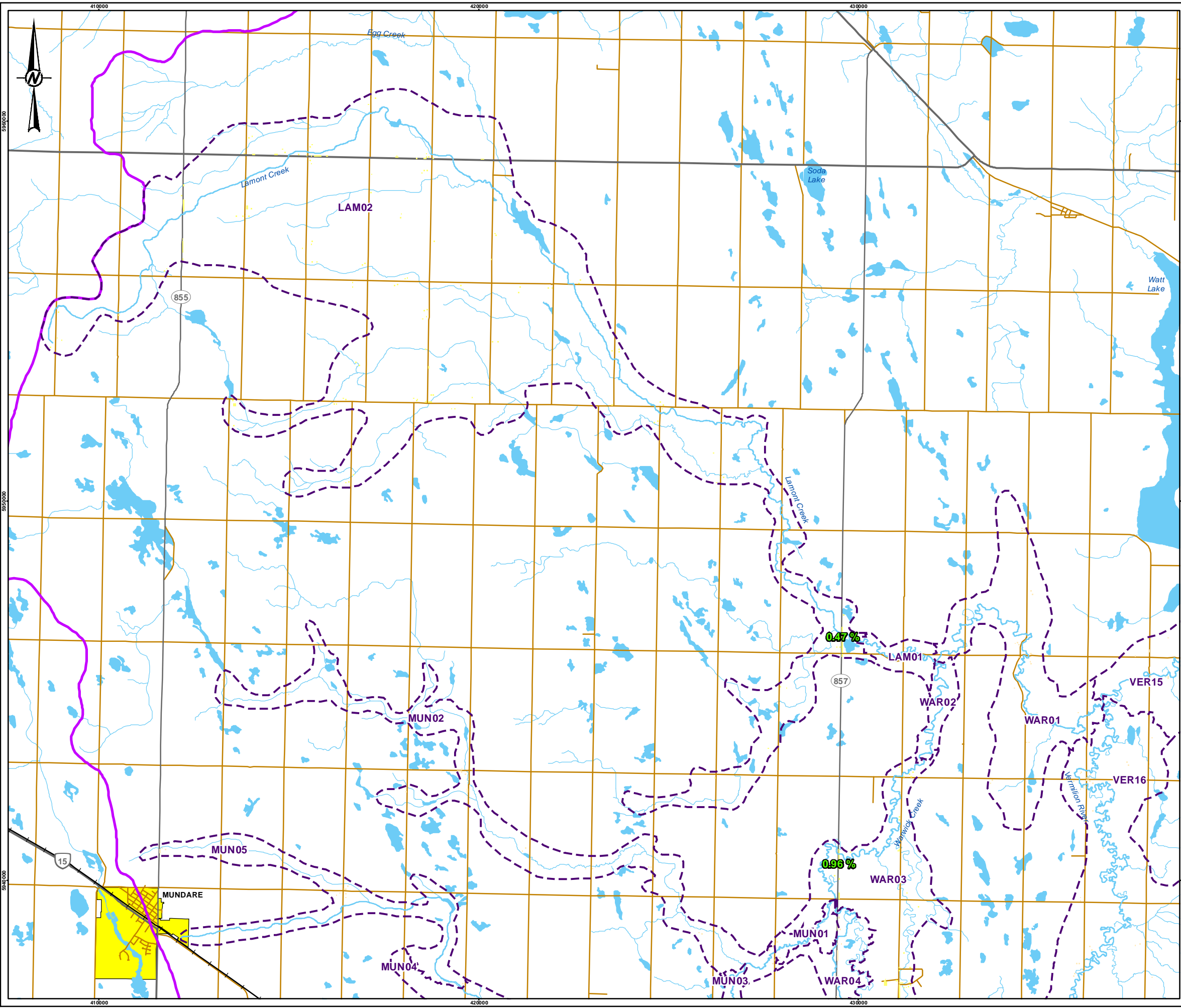
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B7-d

P:\TH\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:48:19 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



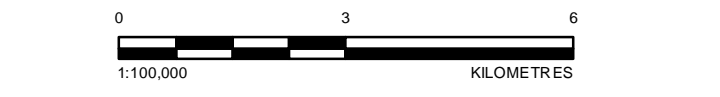
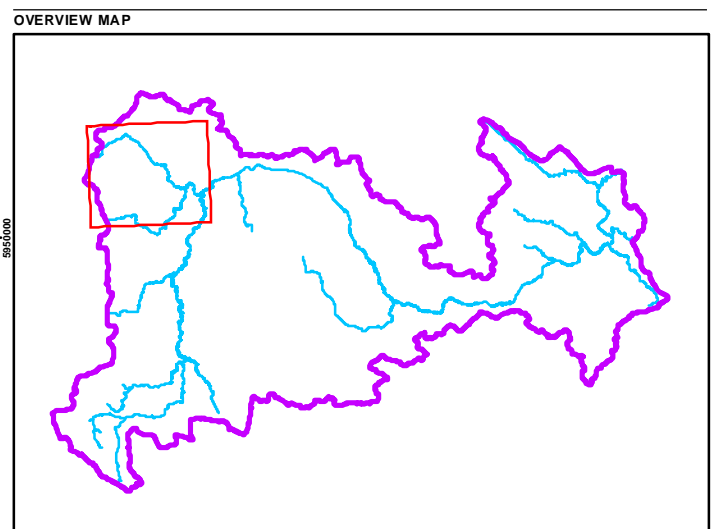
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

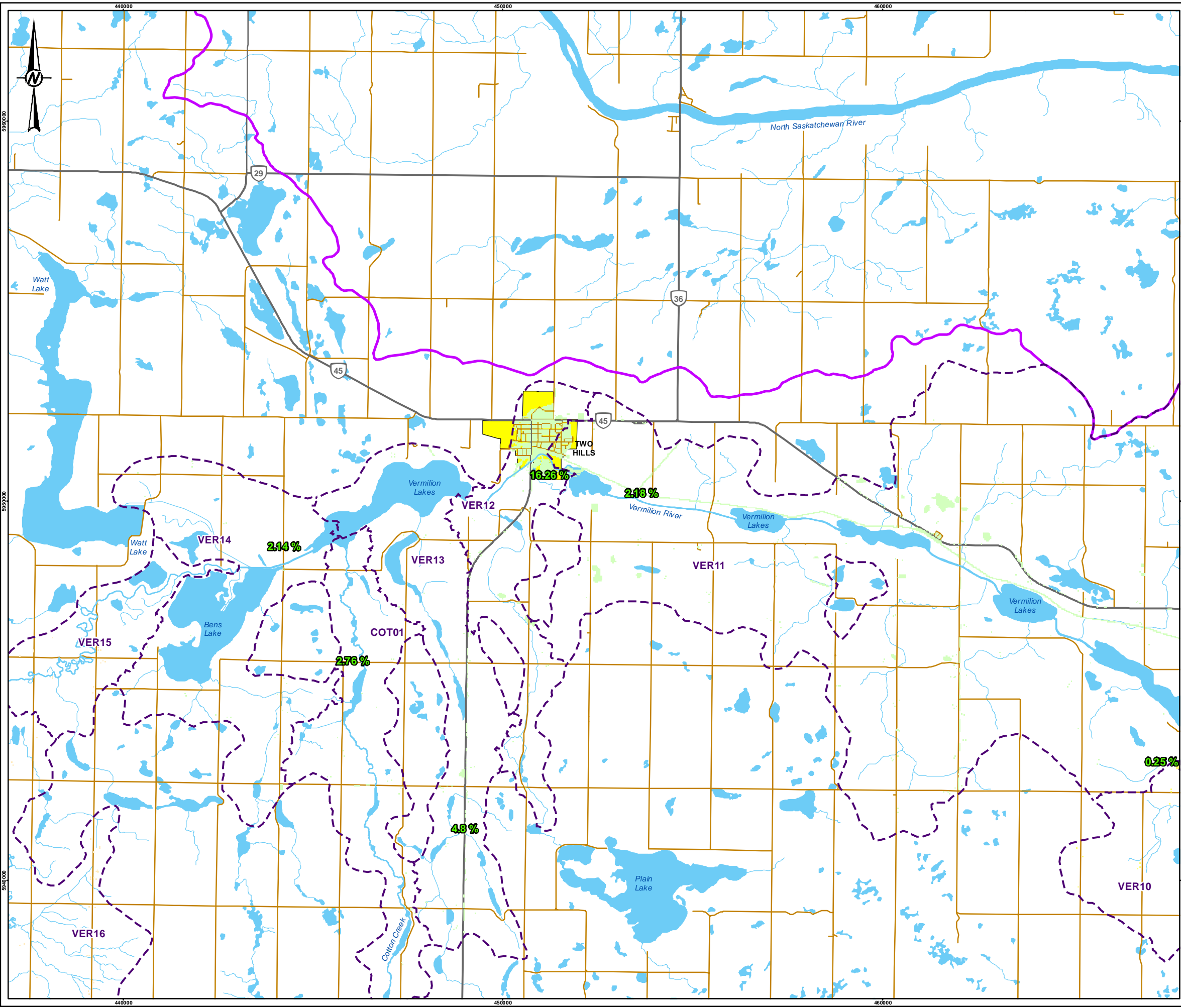
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B7-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:48:40 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





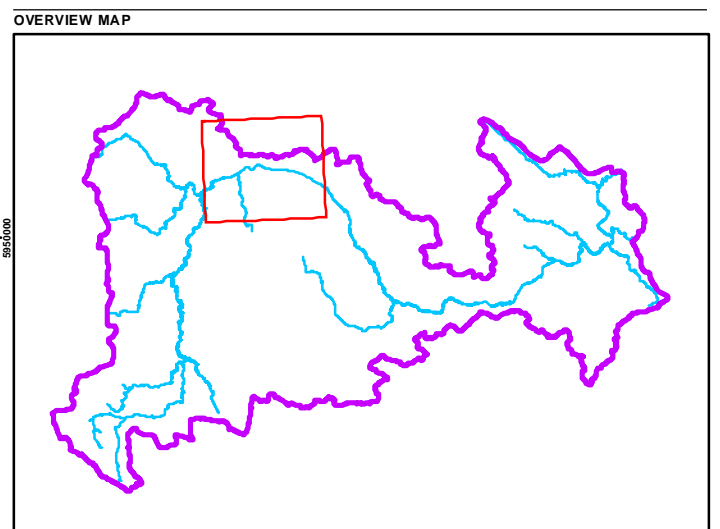
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

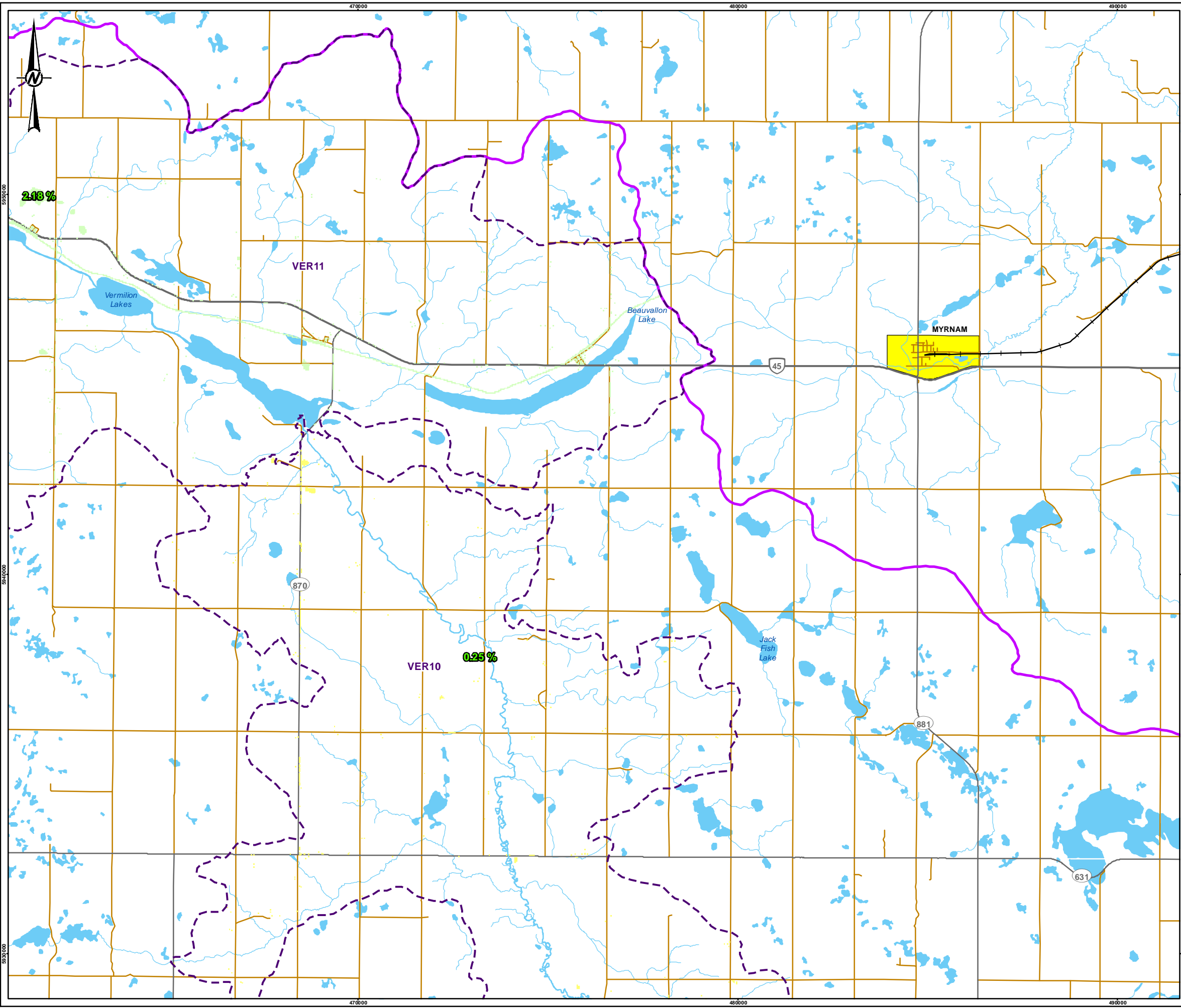
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B7-f

P:\TM\131015\1524922\Maping\Map\Output\1524932\_Landcover\_Change\_Riparian\Reach.mxd PRINTED ON: 2016-03-21 AT: 3:40:00 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





**LEGEND**

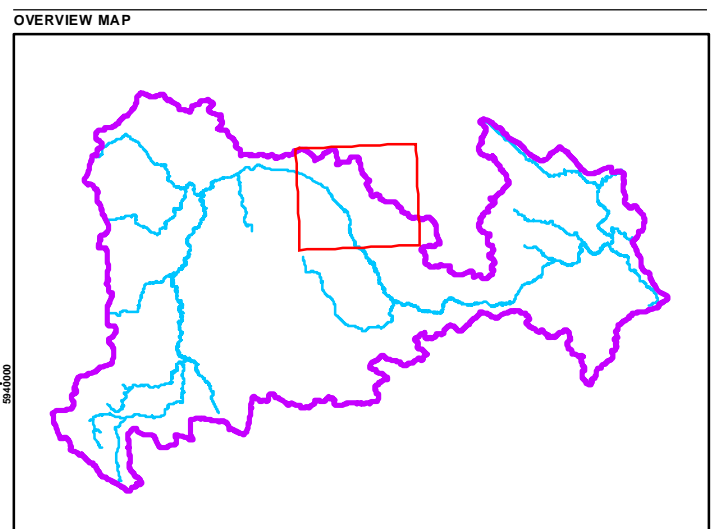
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< -100
	-100 to -75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

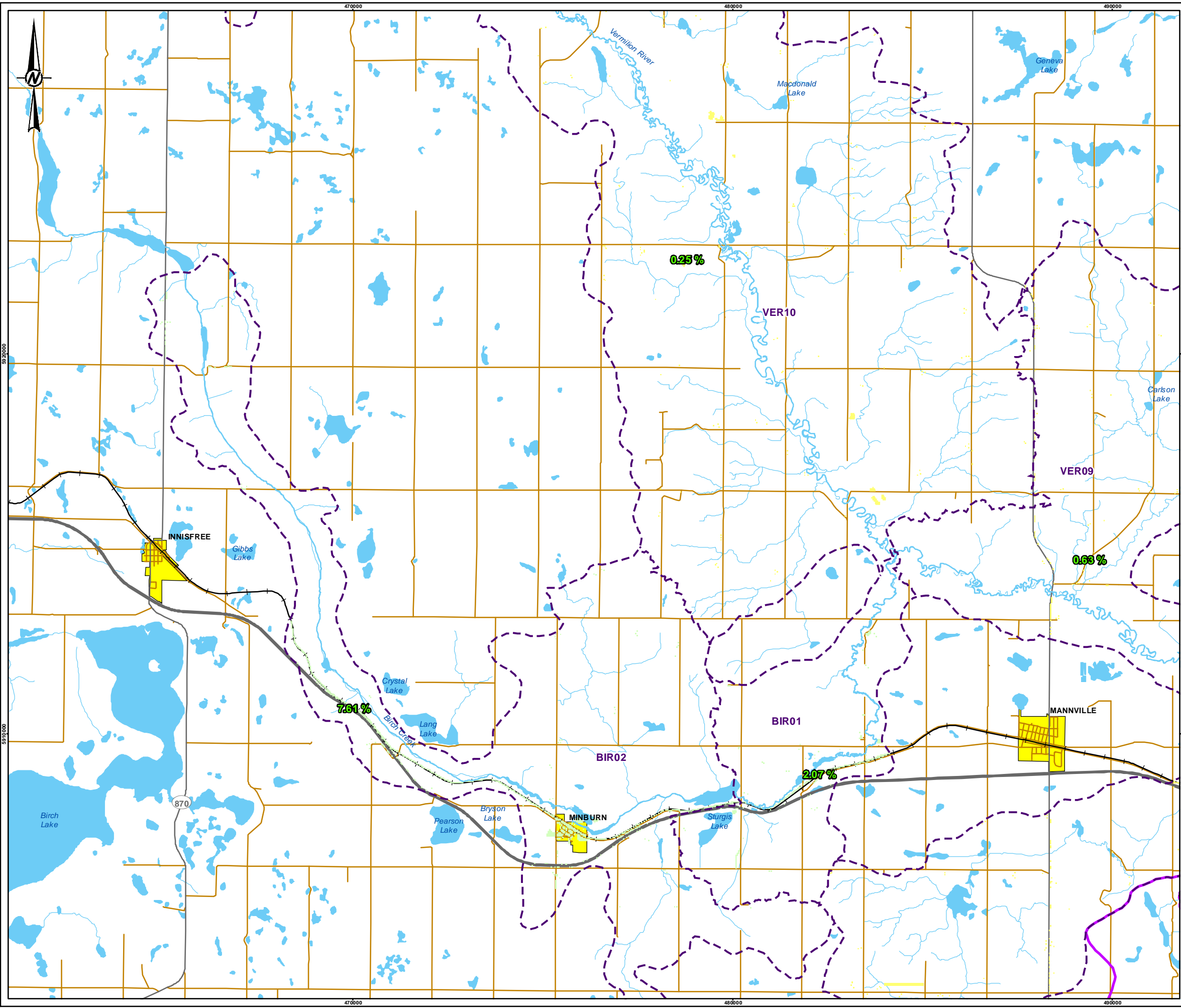
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
<b>Golder Associates</b>	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B7-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:49:21 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



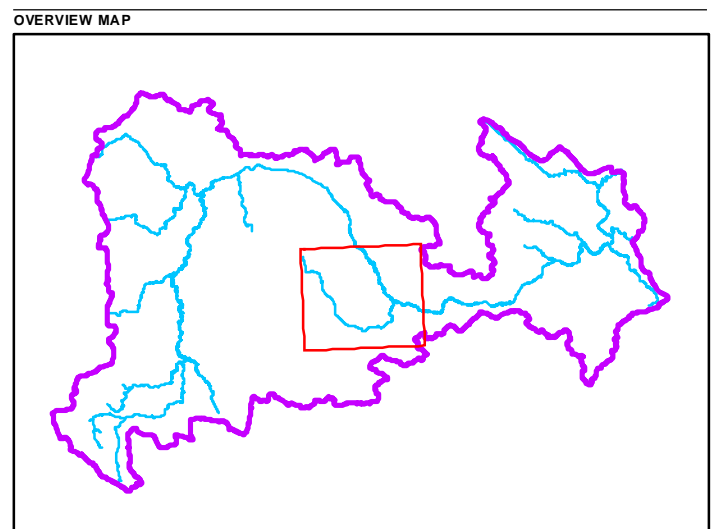
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

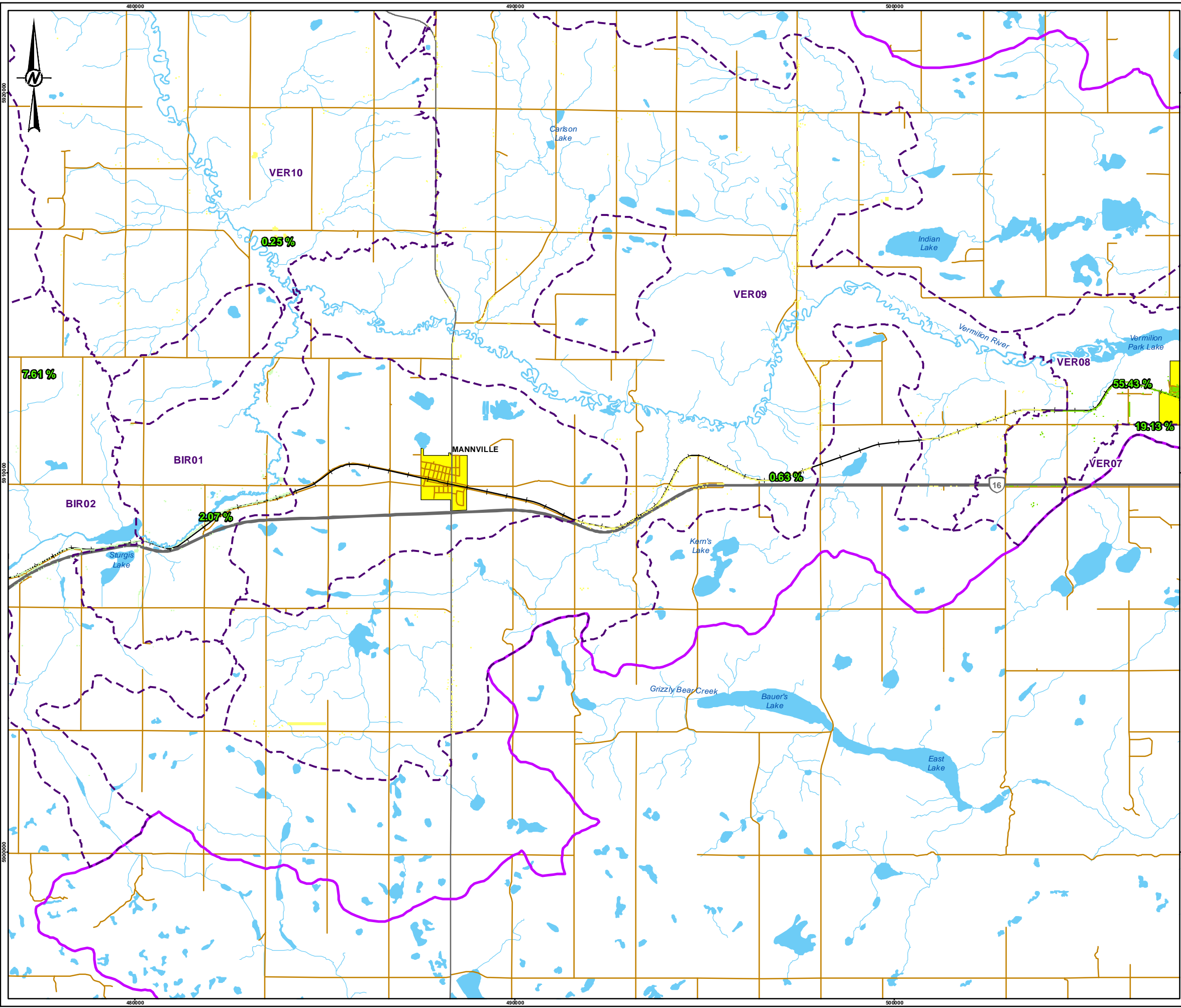
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B7-h

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:49:42 PM  
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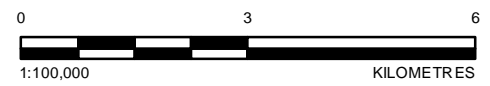
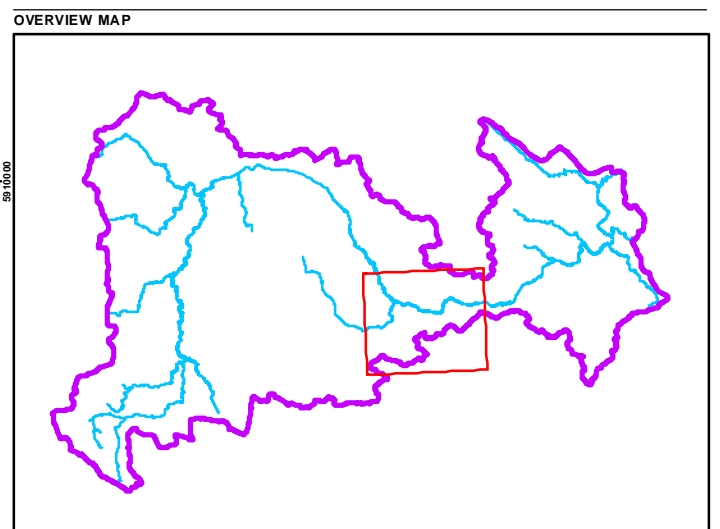


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

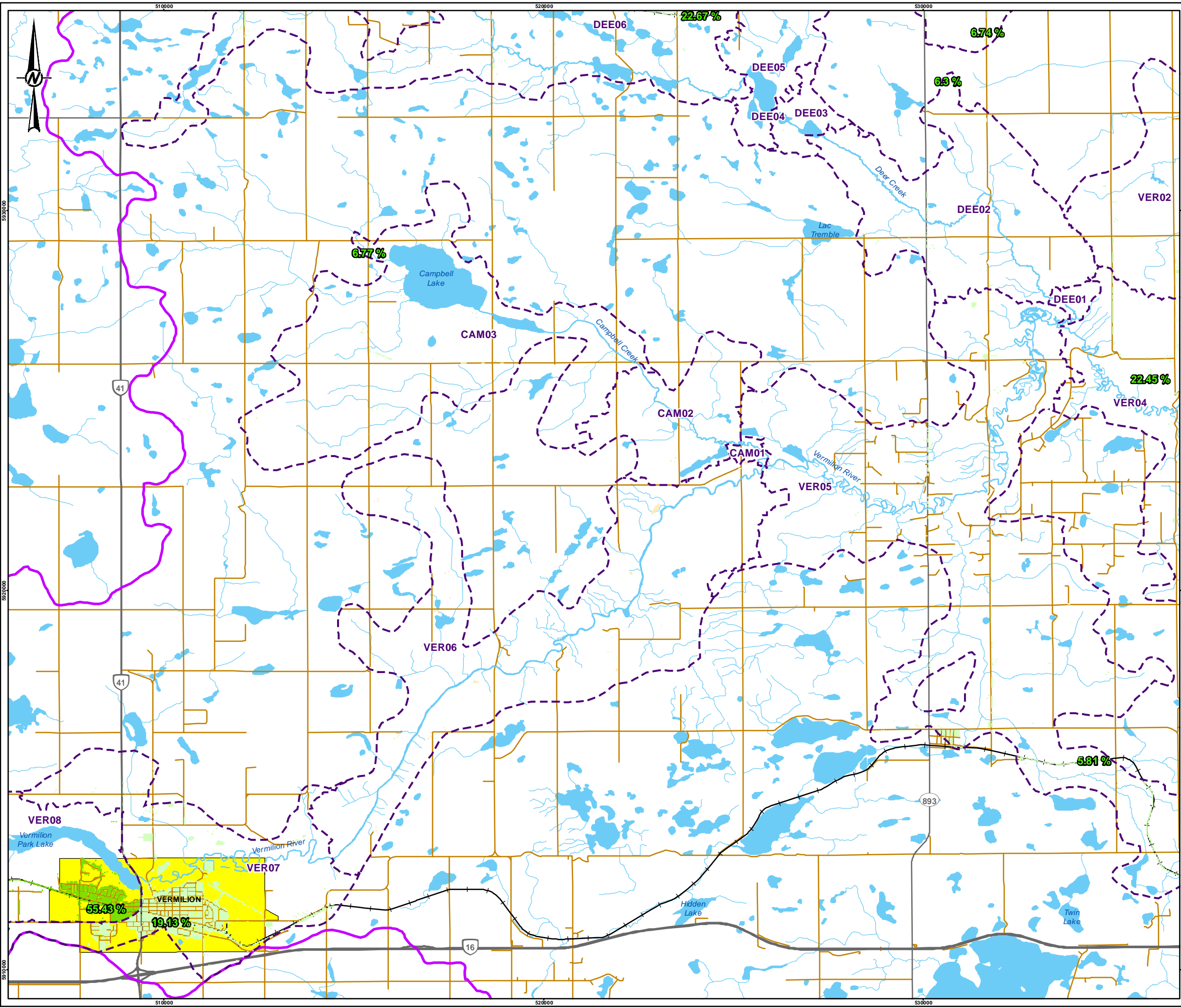
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PATH: I:\2016\1534932\Maping\MXD\fig\B7-i\B7-i\_1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:50:03 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**LEGEND**

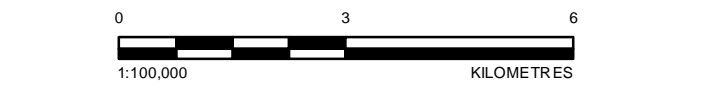
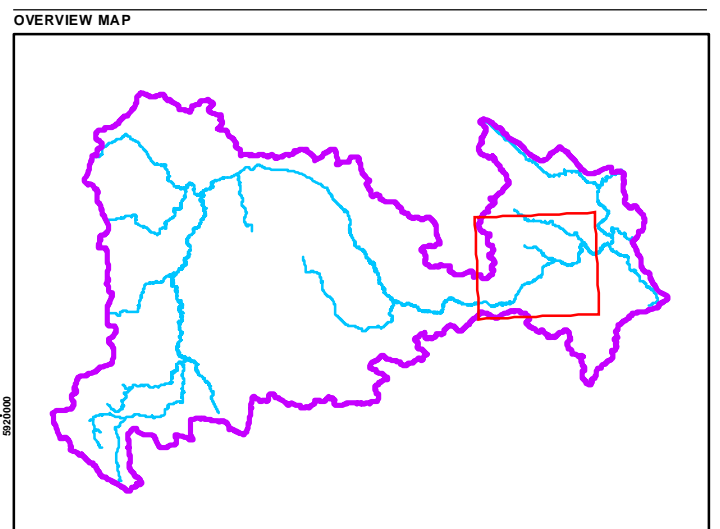
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

1.5% / -1.5% Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

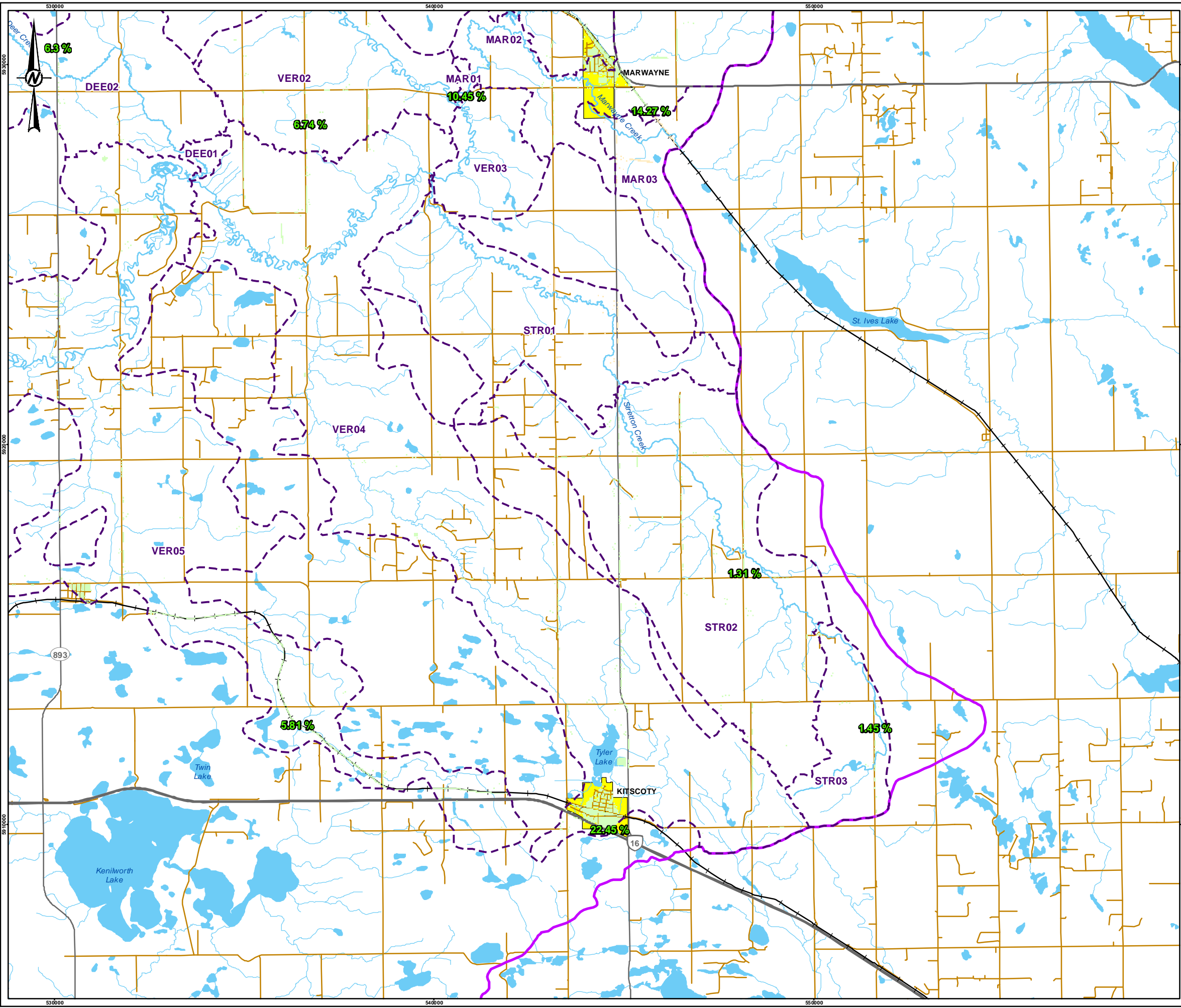
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:50:24 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8

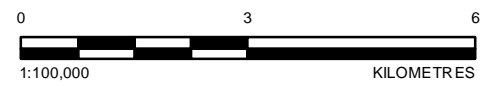
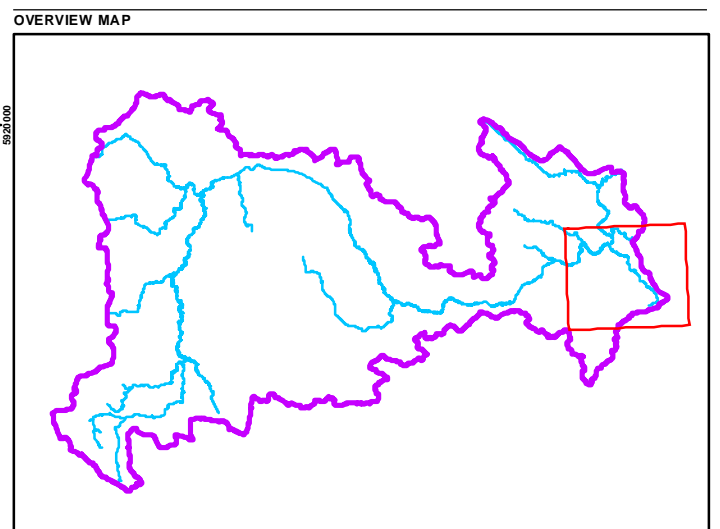


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

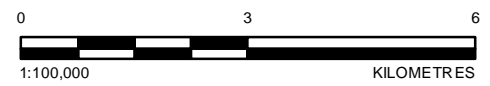
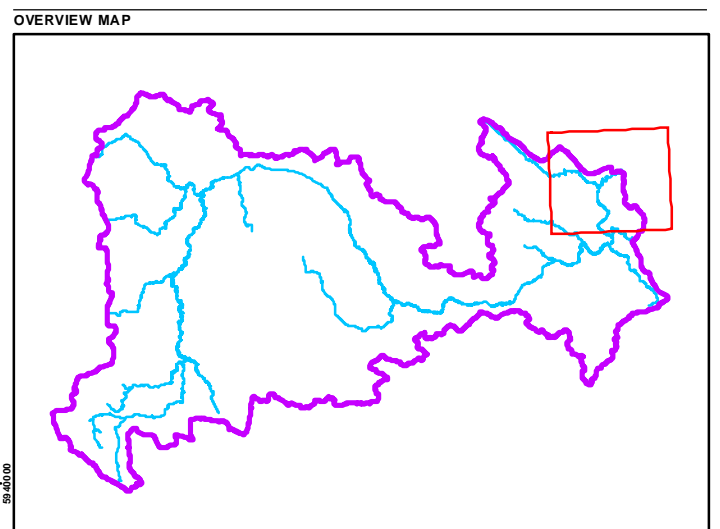
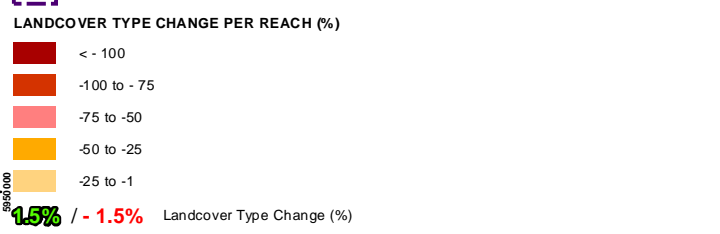
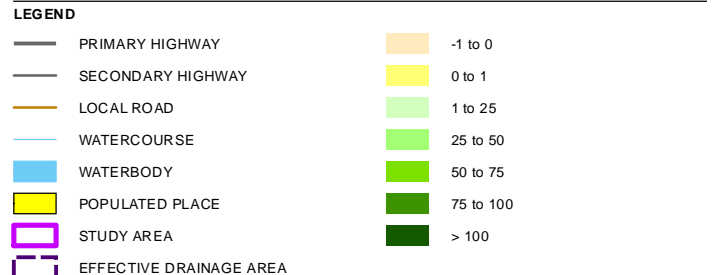
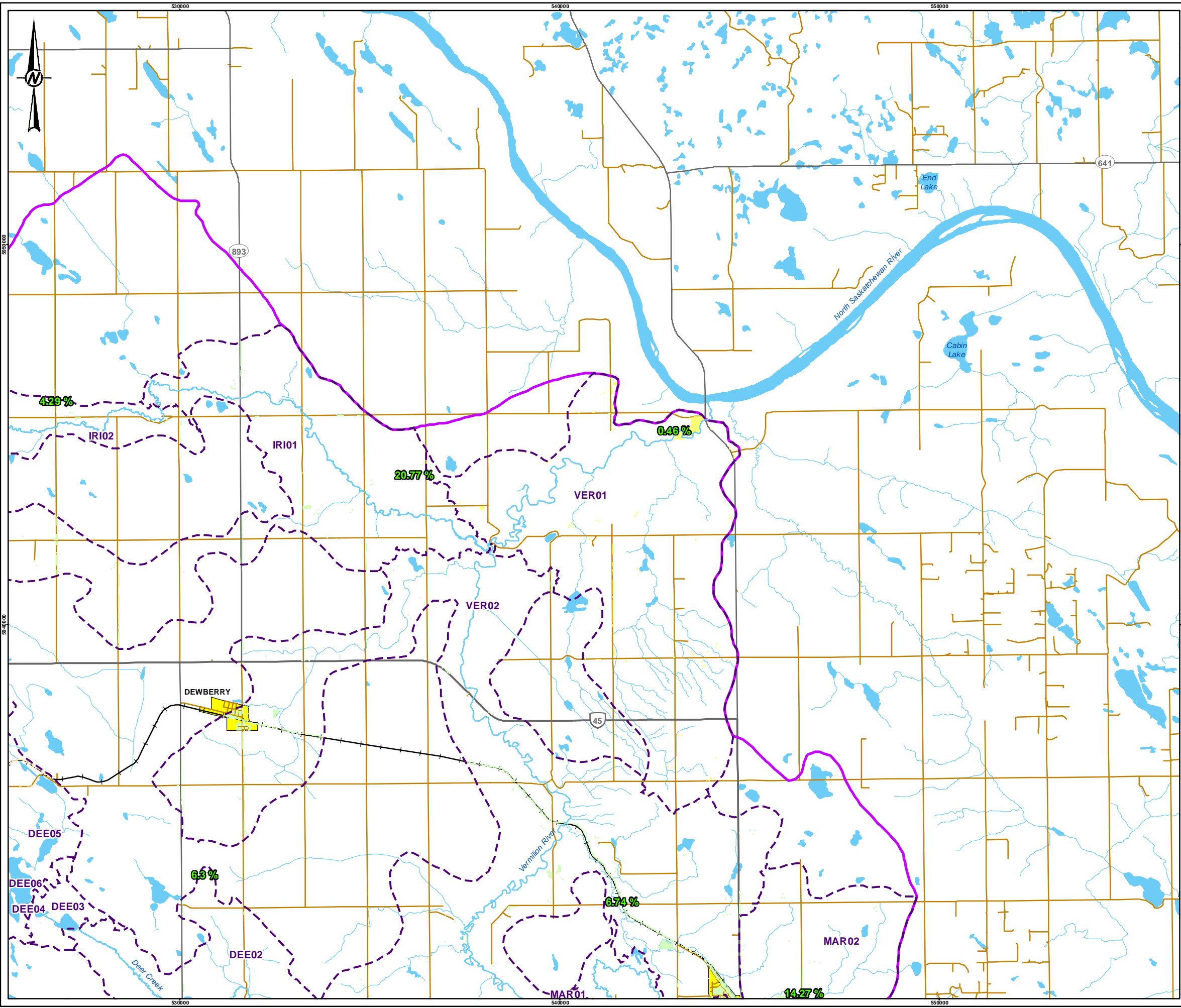
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_1990to2010\_Settlement.mxd PRINTED ON: 2016-03-21 AT: 3:50:44 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

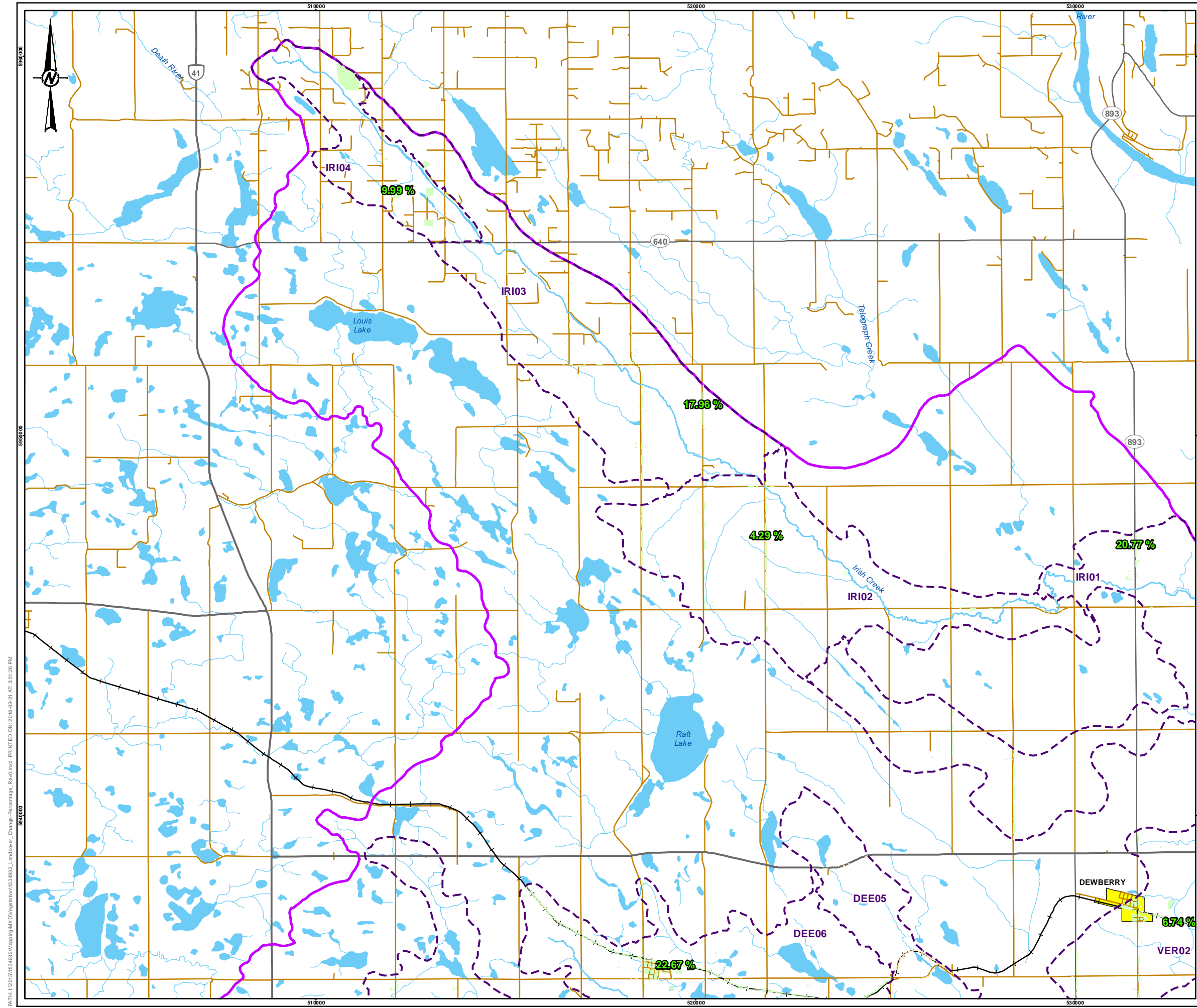
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:51:05 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

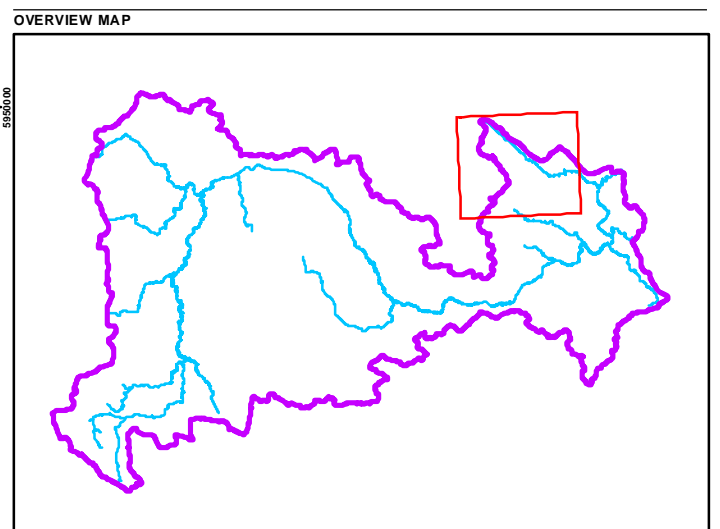
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
 ALL RIGHTS RESERVED, CANVEC, GEOBASE IHS ENERGY INC.  
 PROJECTION: UTM ZONE 12 DATUM: NAD 83

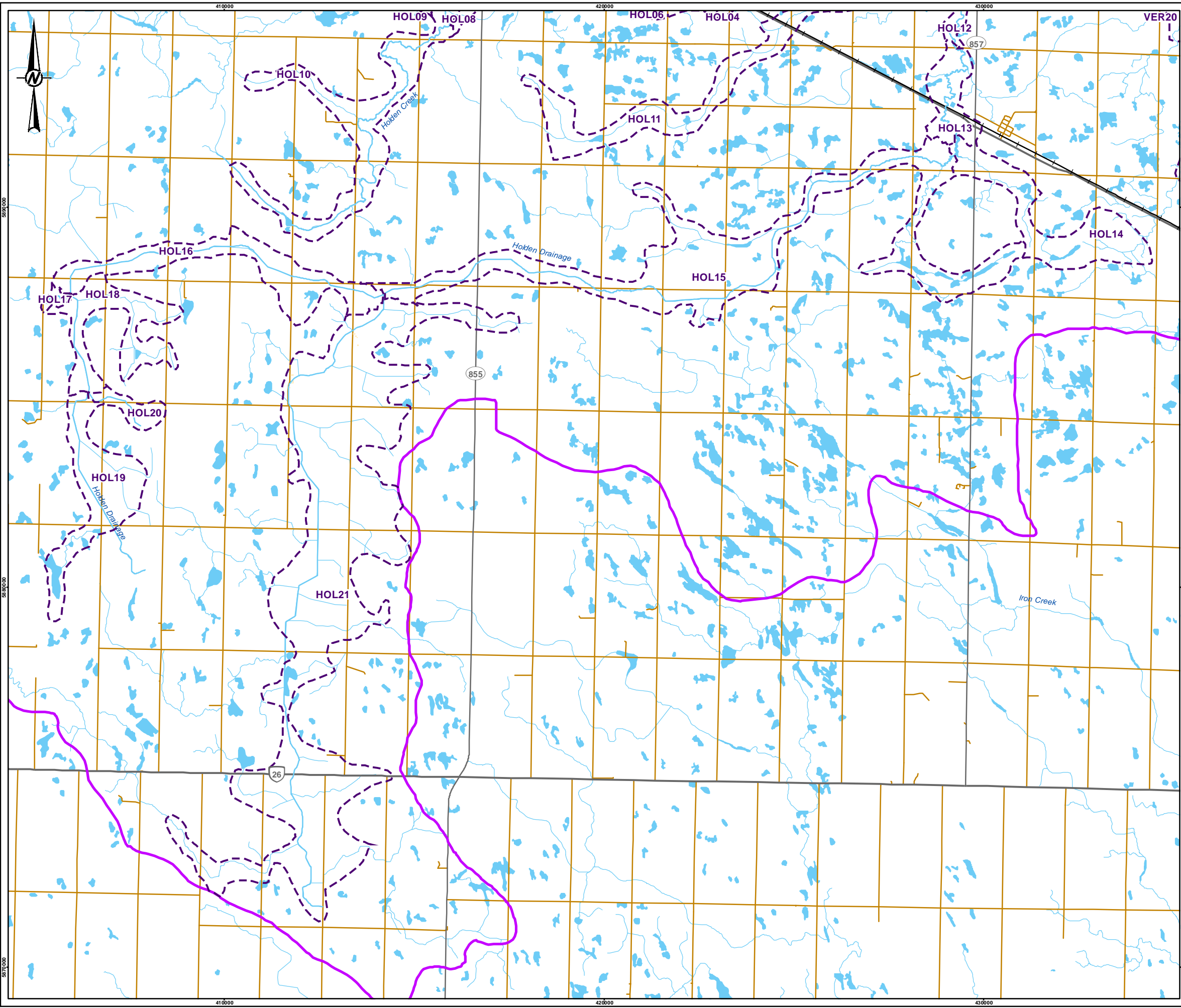
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - SETTLEMENT

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\MapProj\MapProj\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:51:26 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



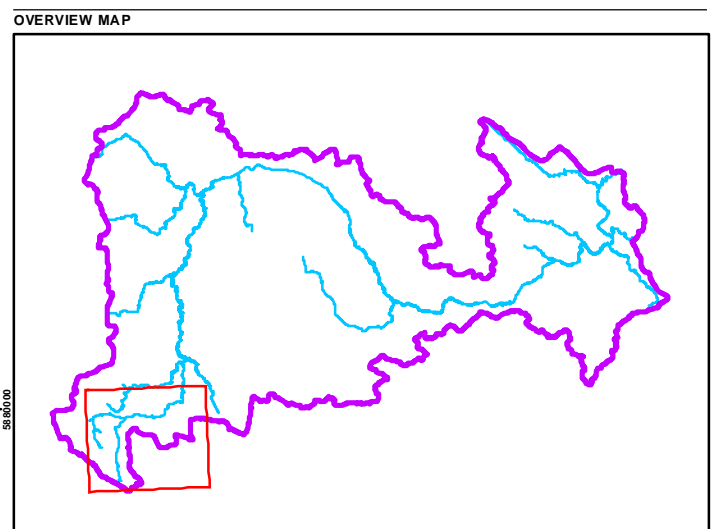
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

Red	< -100
Dark Red	-100 to -75
Red-Orange	-75 to -50
Orange	-50 to -25
Light Orange	-25 to -1
Yellow	-1 to 0
Light Green	0 to 1
Green	1 to 25
Light Green	25 to 50
Green	50 to 75
Dark Green	75 to 100
Dark Green	> 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

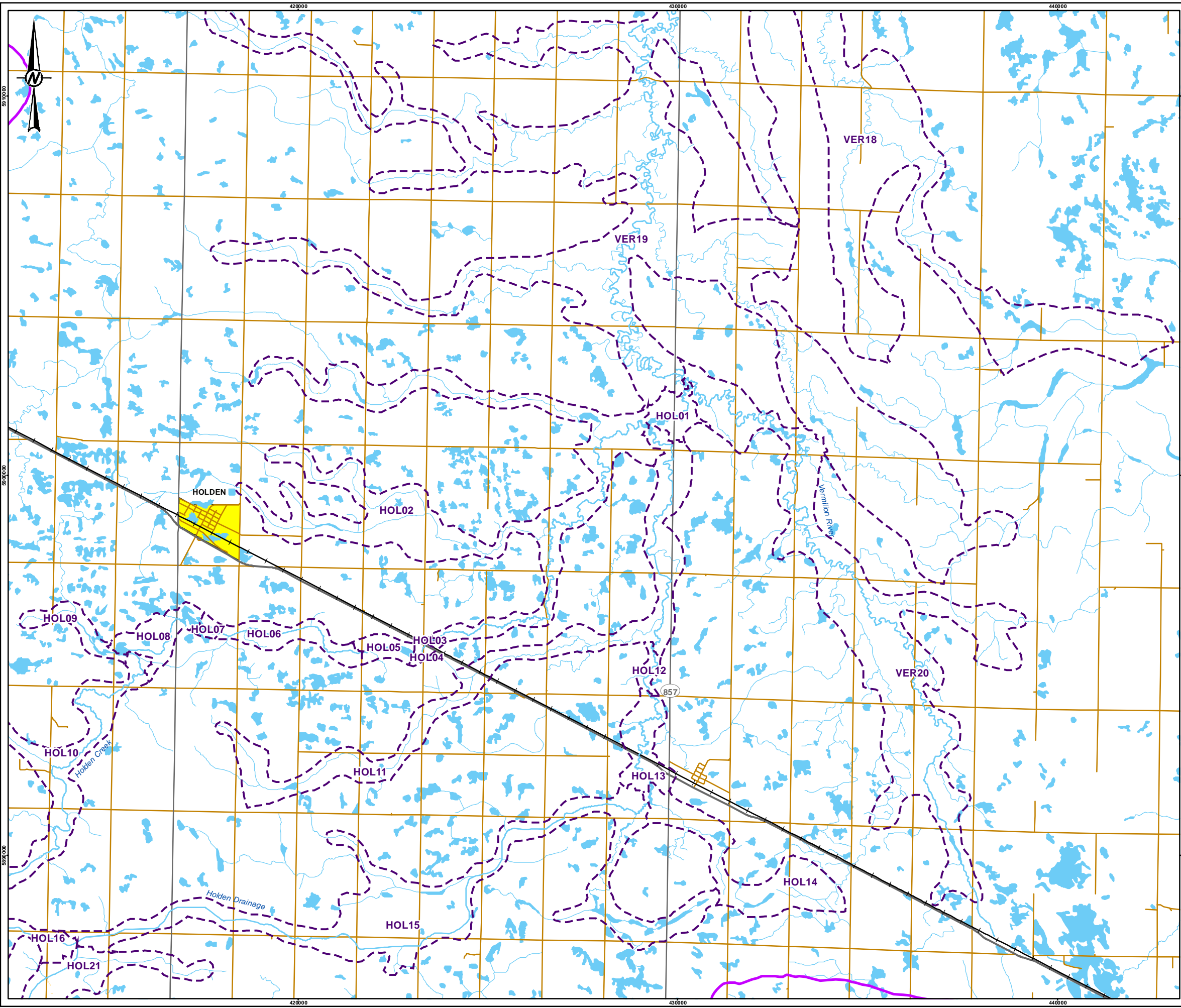
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\01015154932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:51:46 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





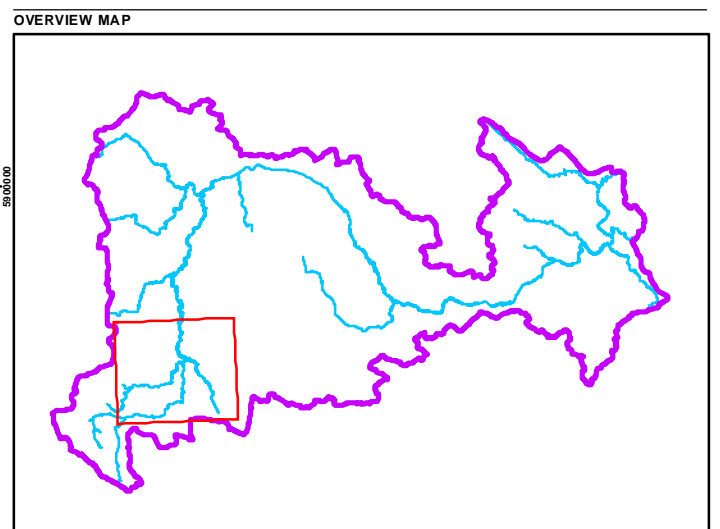
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

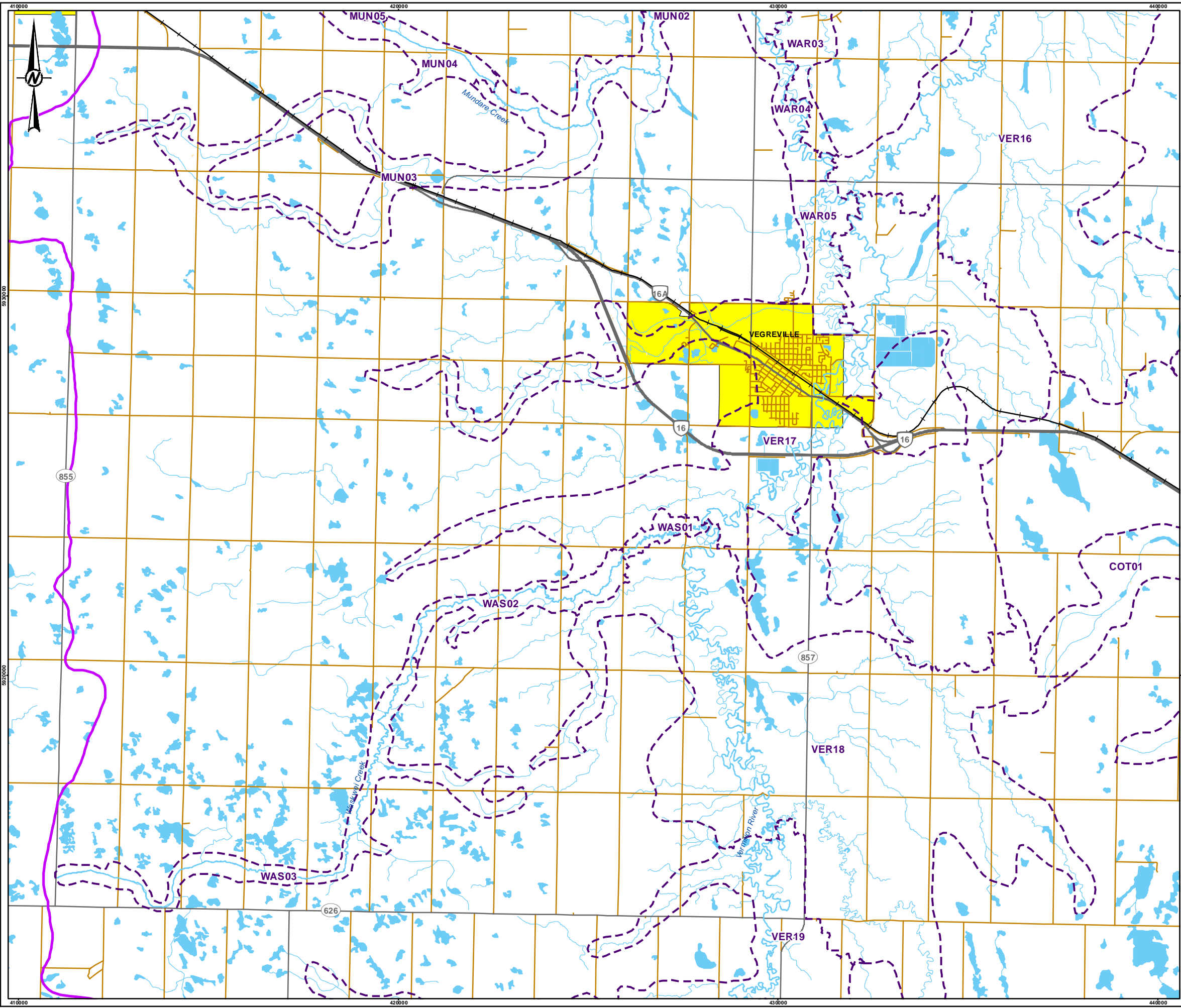
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:52:06 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B-B





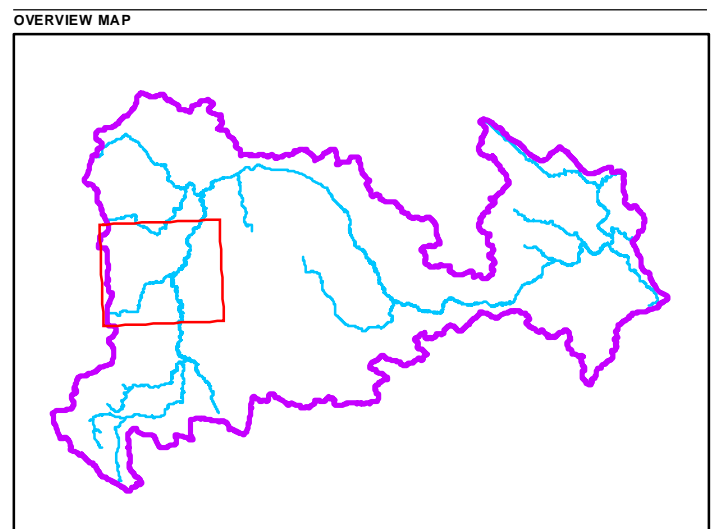
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

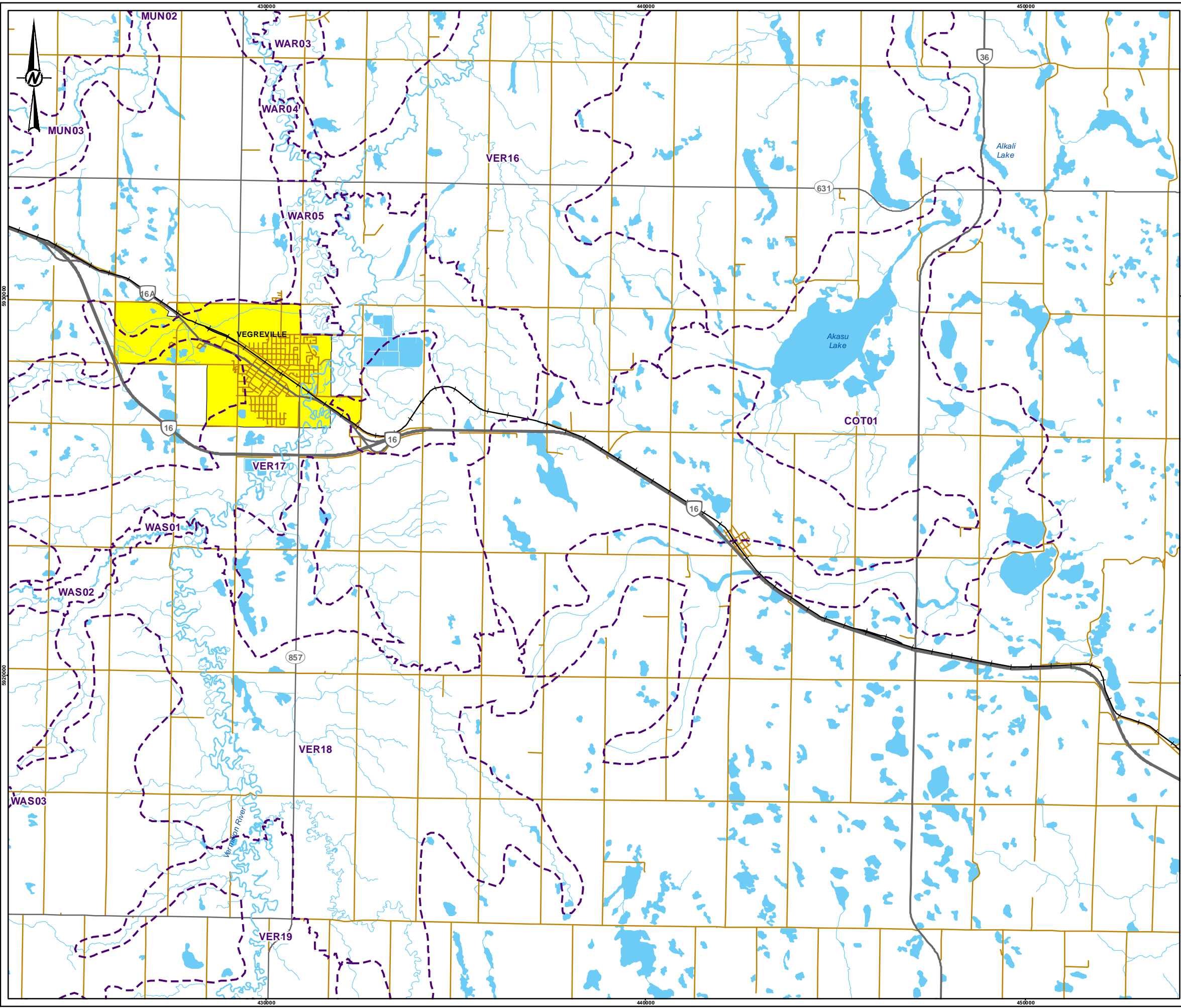
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:52:25 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**LEGEND**

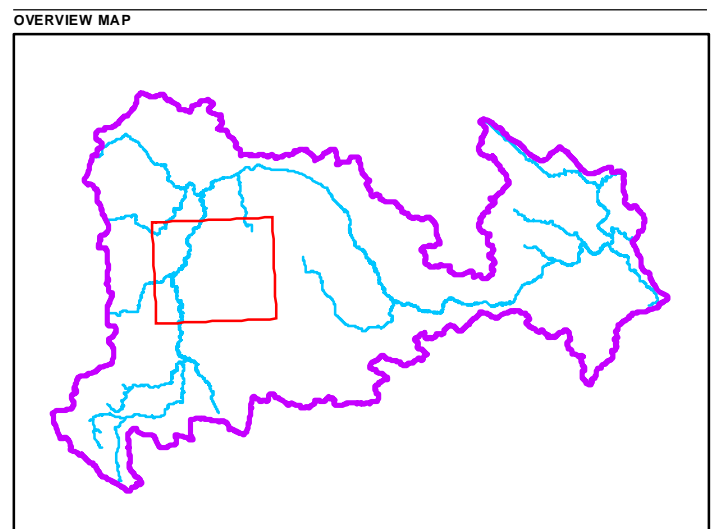
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- - - EFFECTIVE DRAINAGE AREA

Color	Landcover Type Change (%)
Lightest Yellow	-1 to 0
Yellow	0 to 1
Light Green	1 to 25
Light Green	25 to 50
Medium Green	50 to 75
Dark Green	75 to 100
Darkest Green	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

Dark Red	< -100
Red	-100 to -75
Light Red	-75 to -50
Orange	-50 to -25
Light Orange	-25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

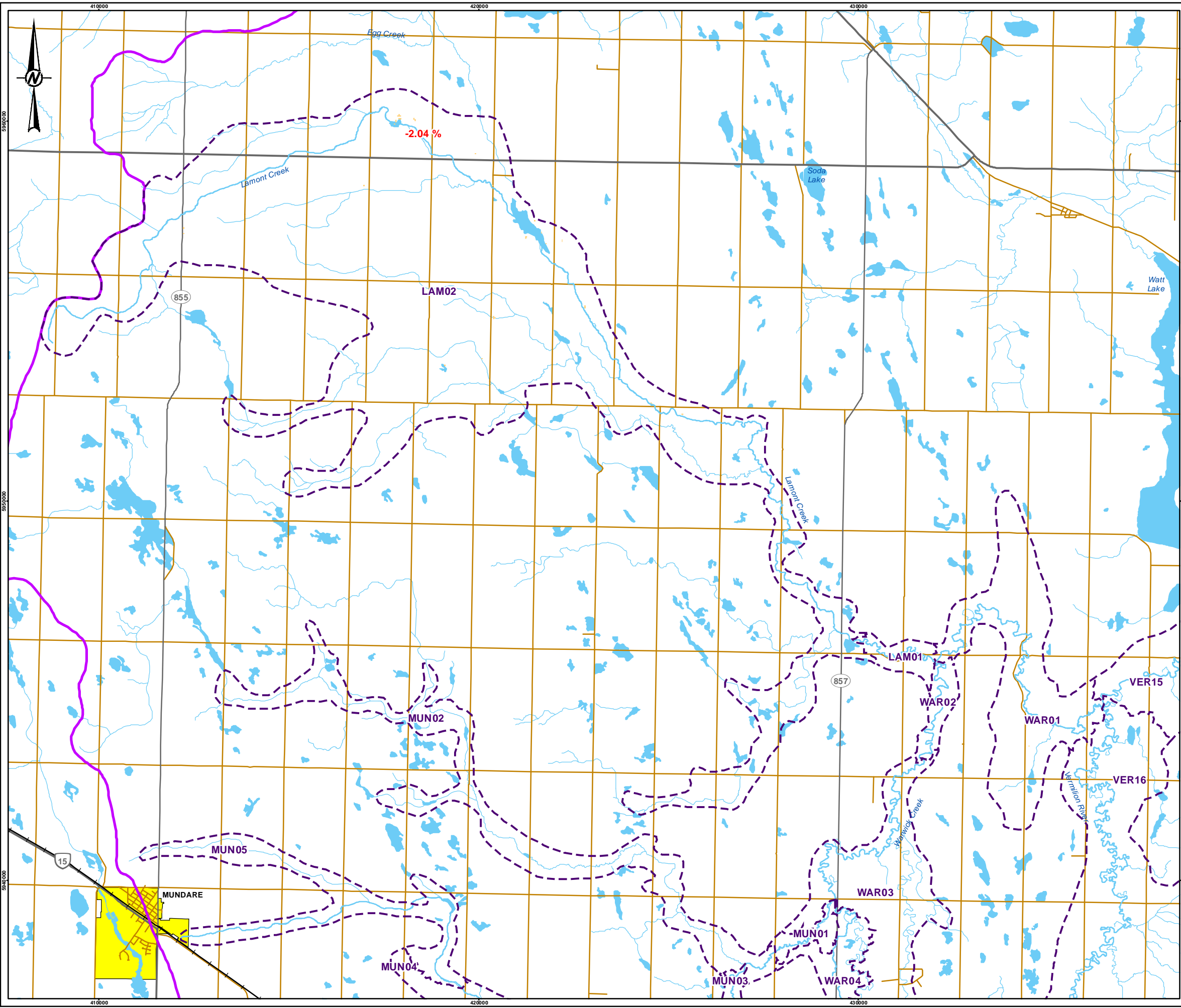
CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-d

PATH: I:\2016\1534932\Maping\MXD\vegribas\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:52:44 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

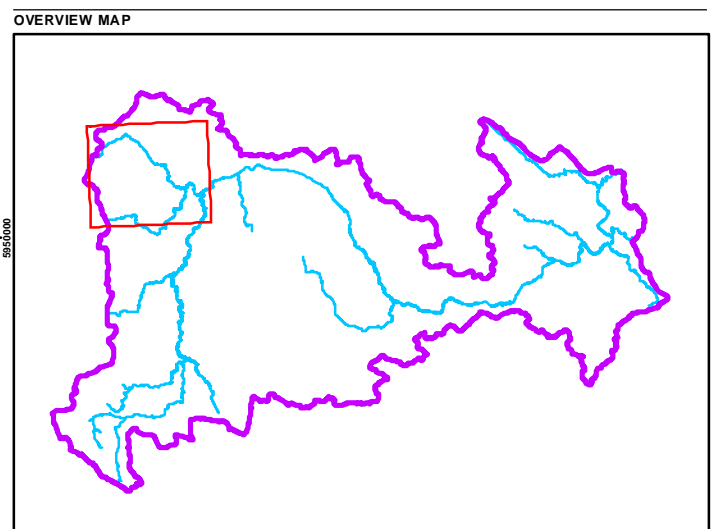
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100
-100 to - 75
-75 to -50
-50 to -25
-25 to -1
1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

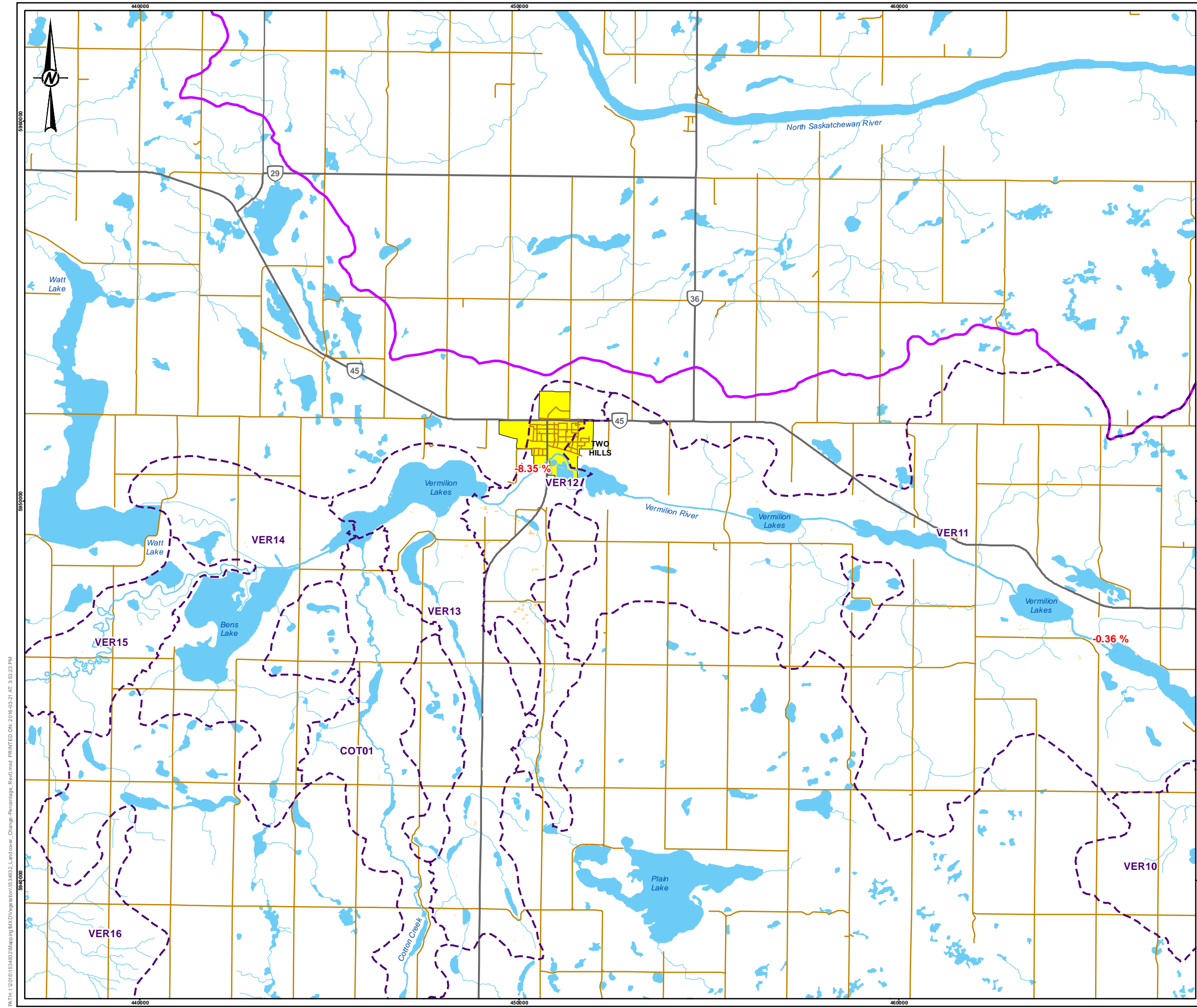
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:52:04 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8





**LEGEND**

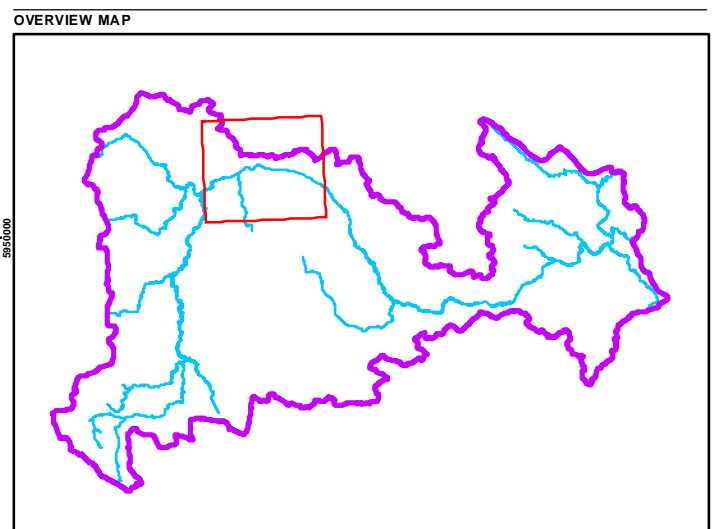
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%

Landcover Type Change (%)

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

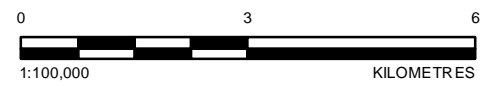
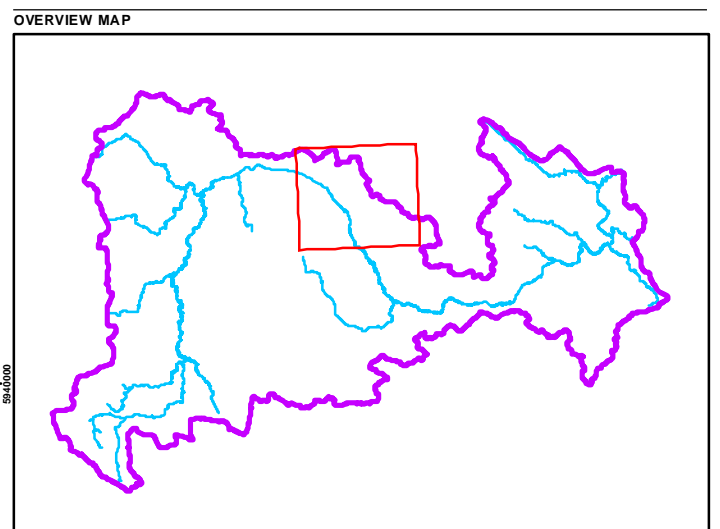
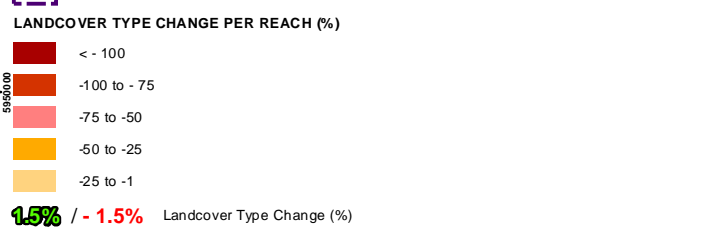
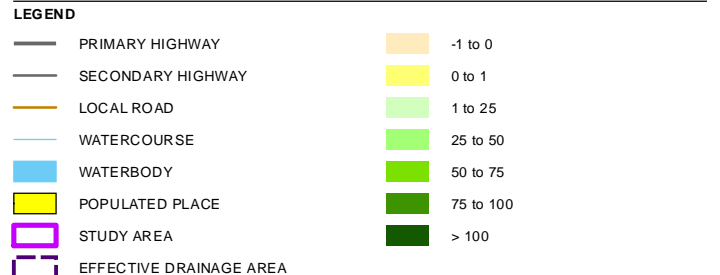
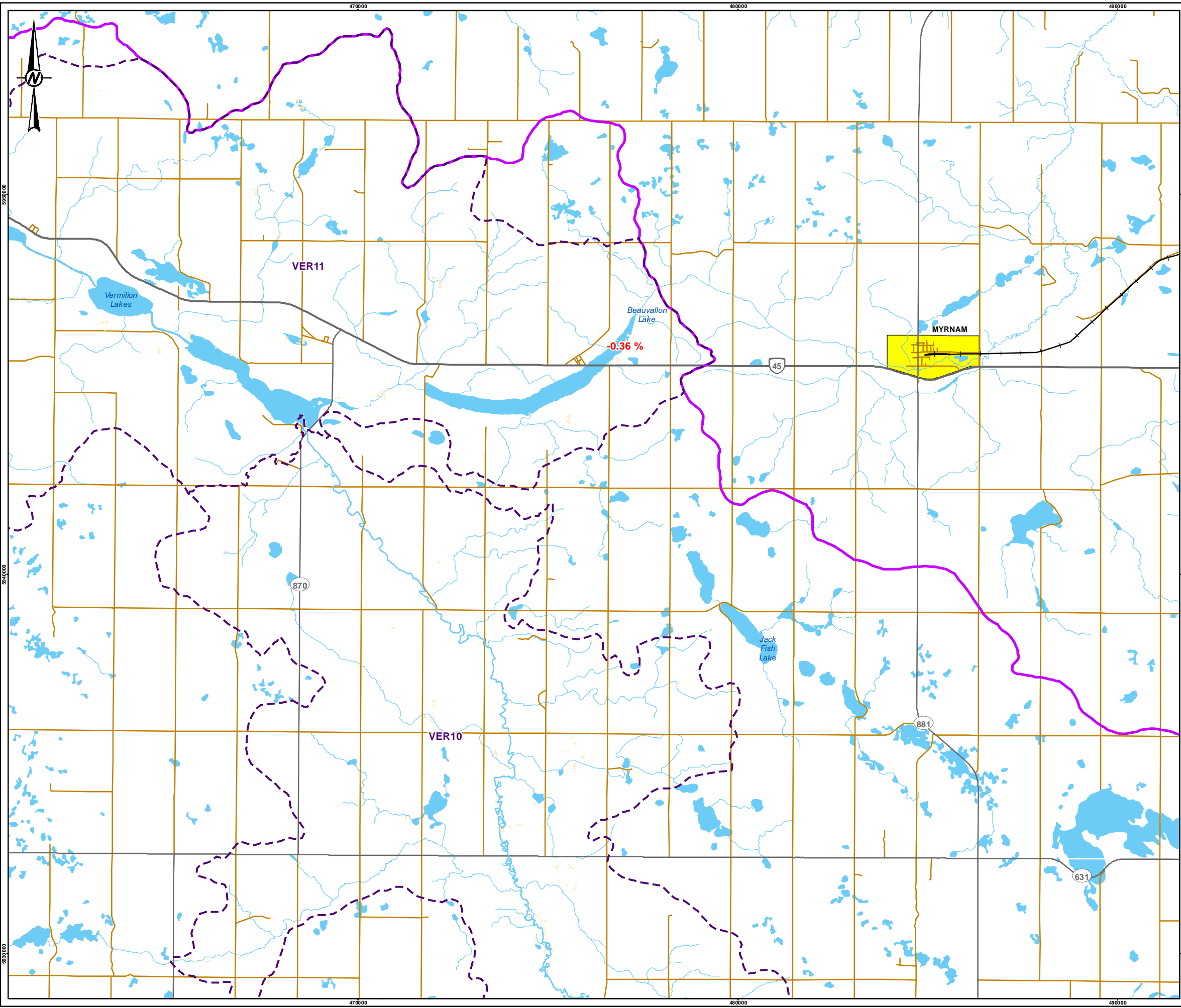
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-f

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:52:23 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

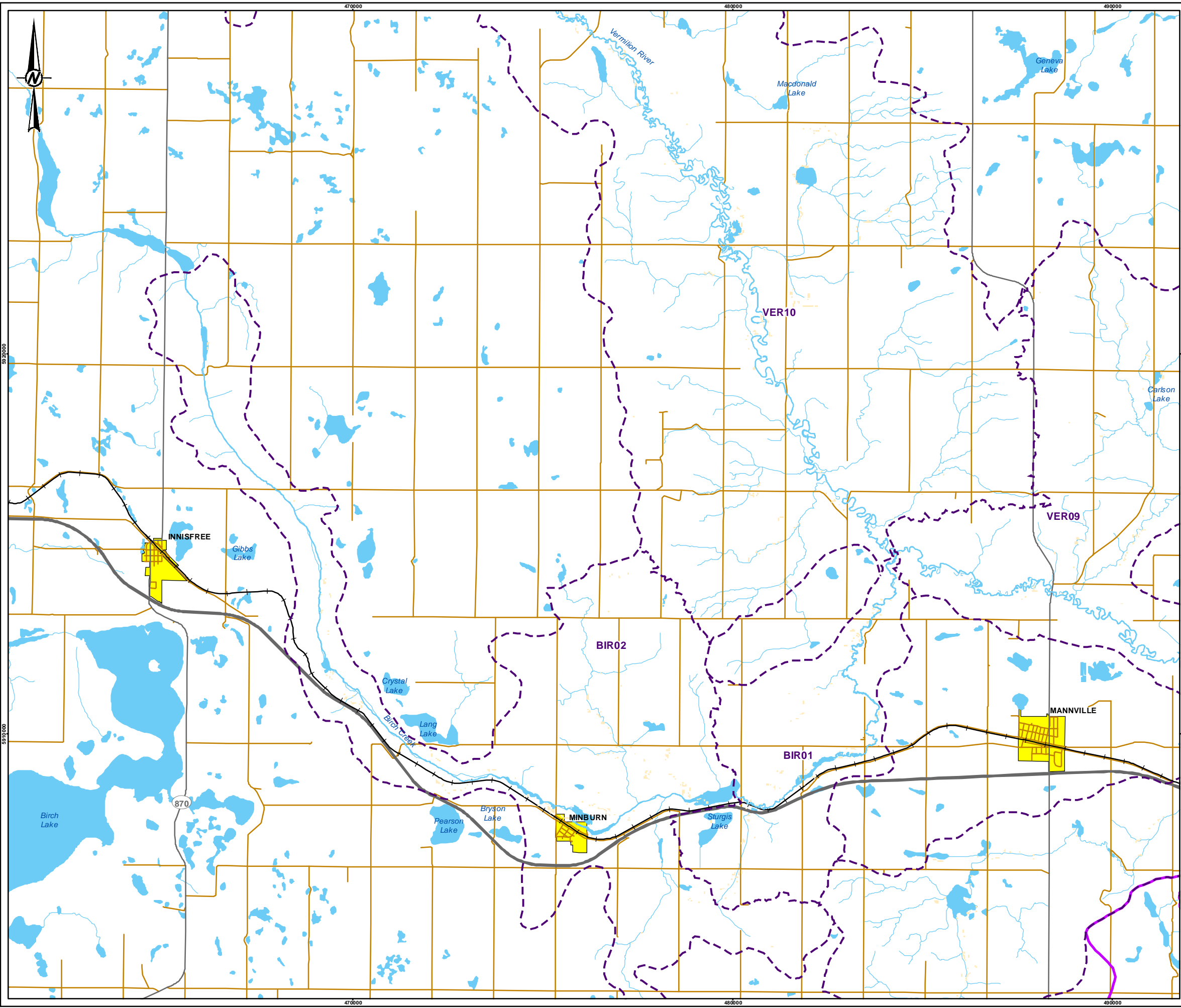
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:52:43 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



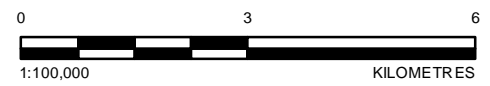
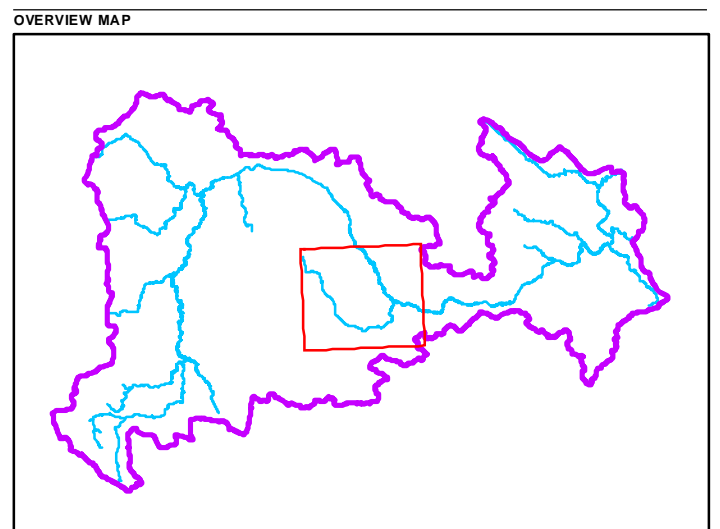
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

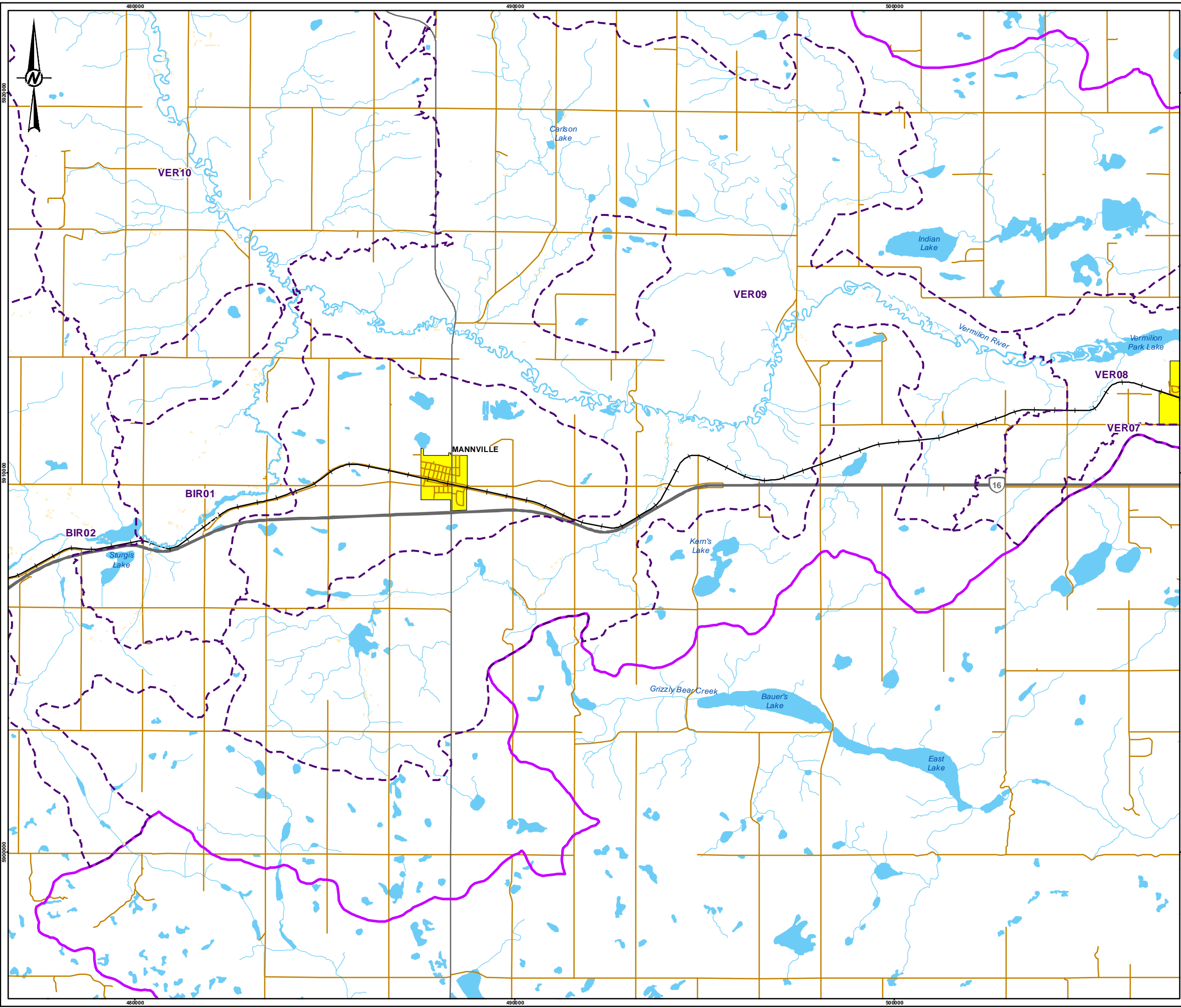
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-h

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:54:02 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



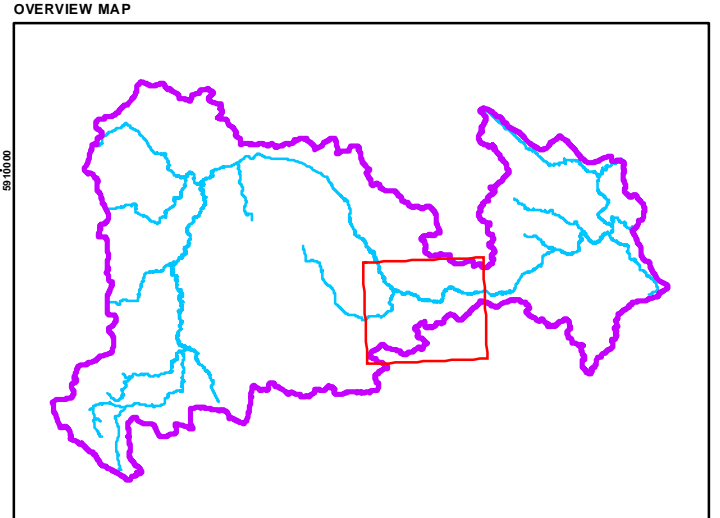


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

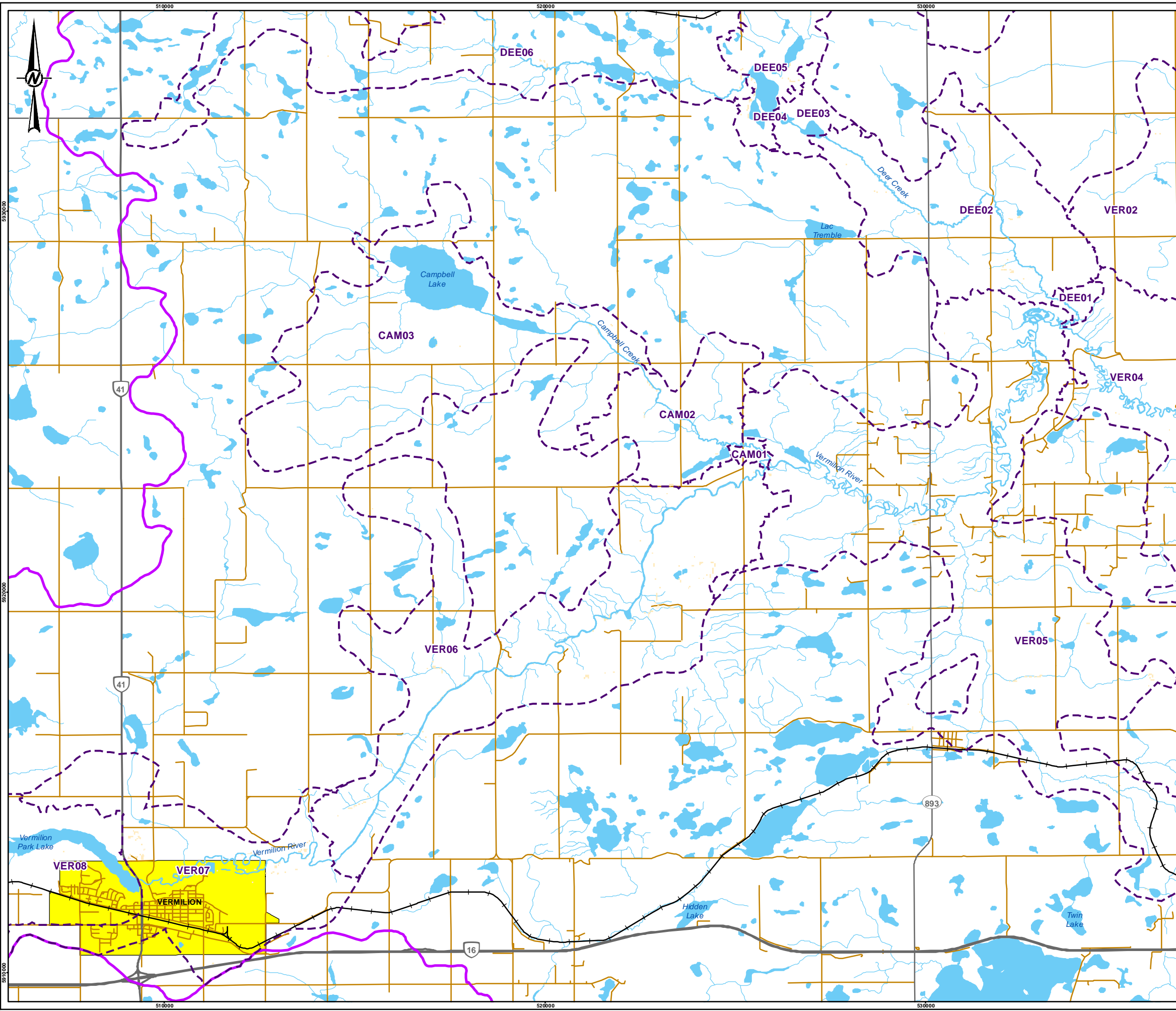
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-i

PATH: I:\2016\1534932\Maping\MXD\fig\B8-i\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 At: 3:54:22 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8-B



**LEGEND**

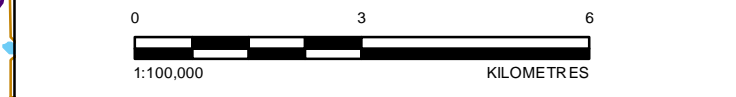
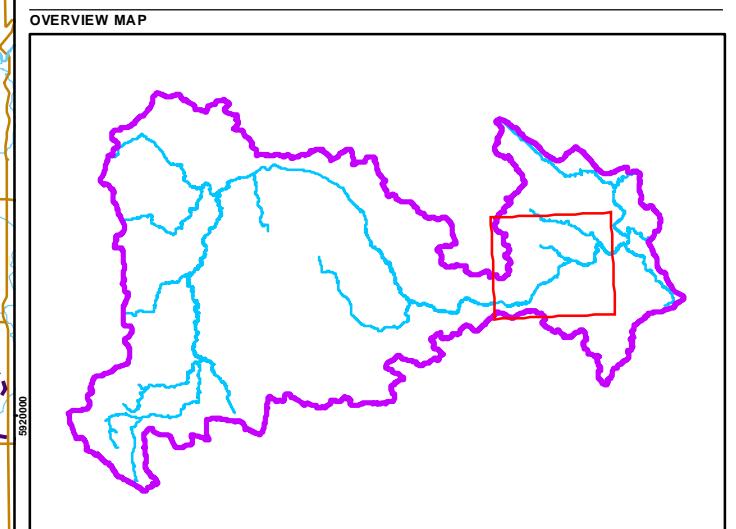
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

1.5% / -1.5% Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

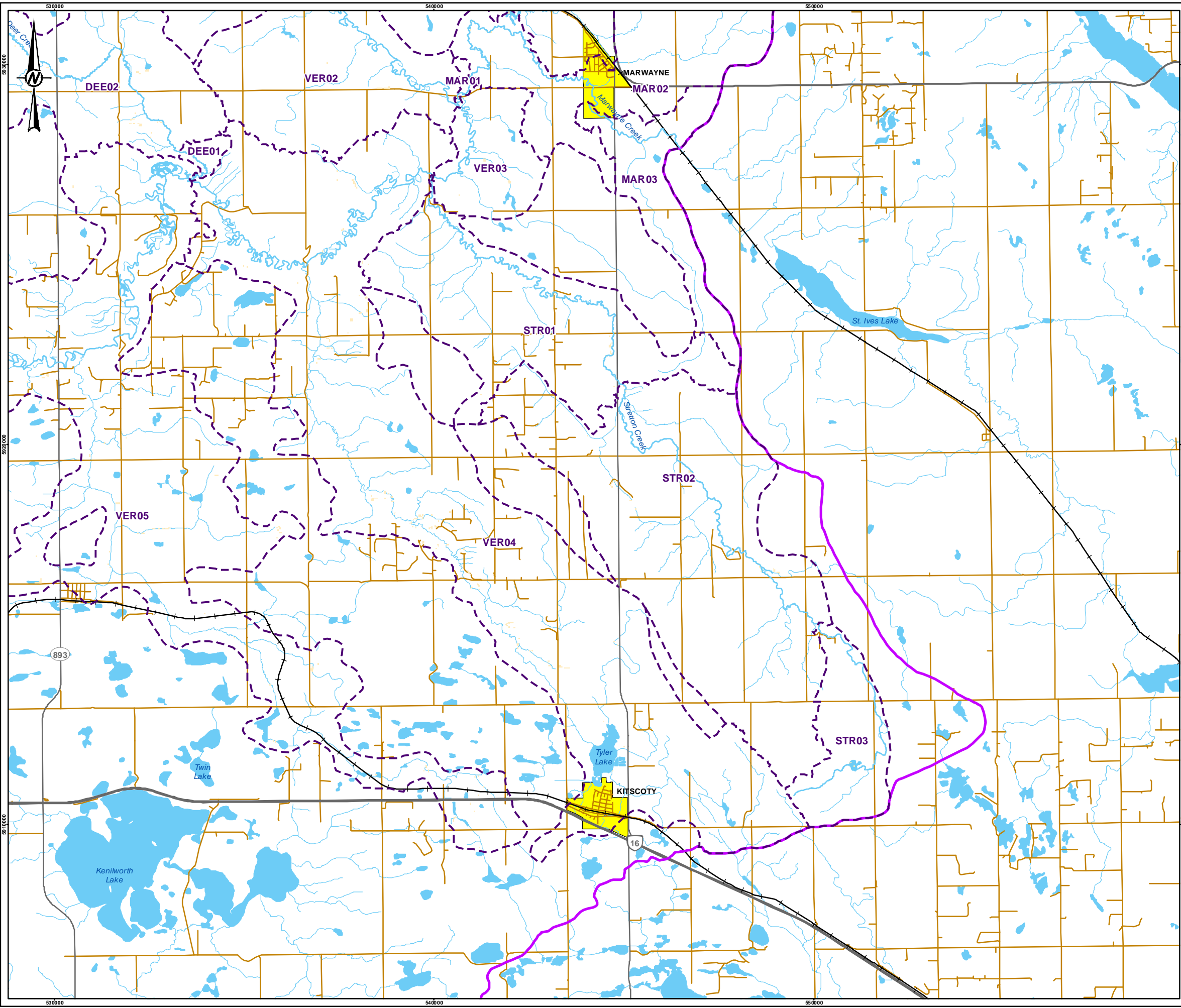
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-j

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:54:41 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8

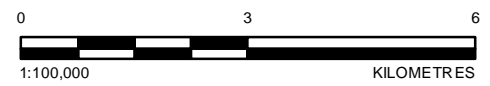
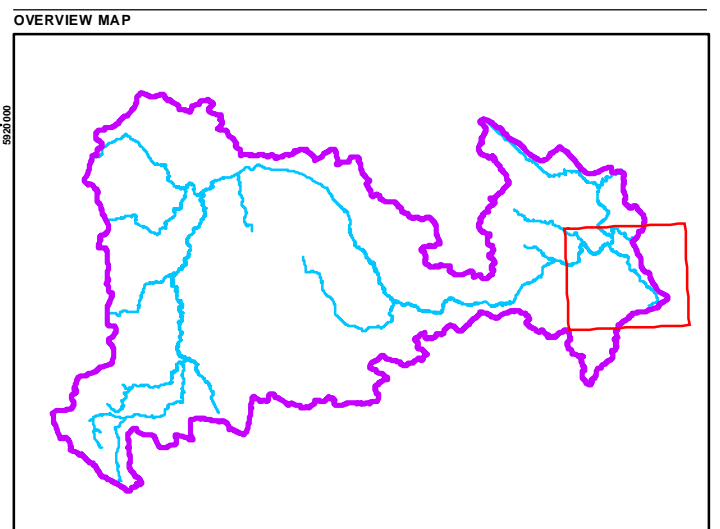


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

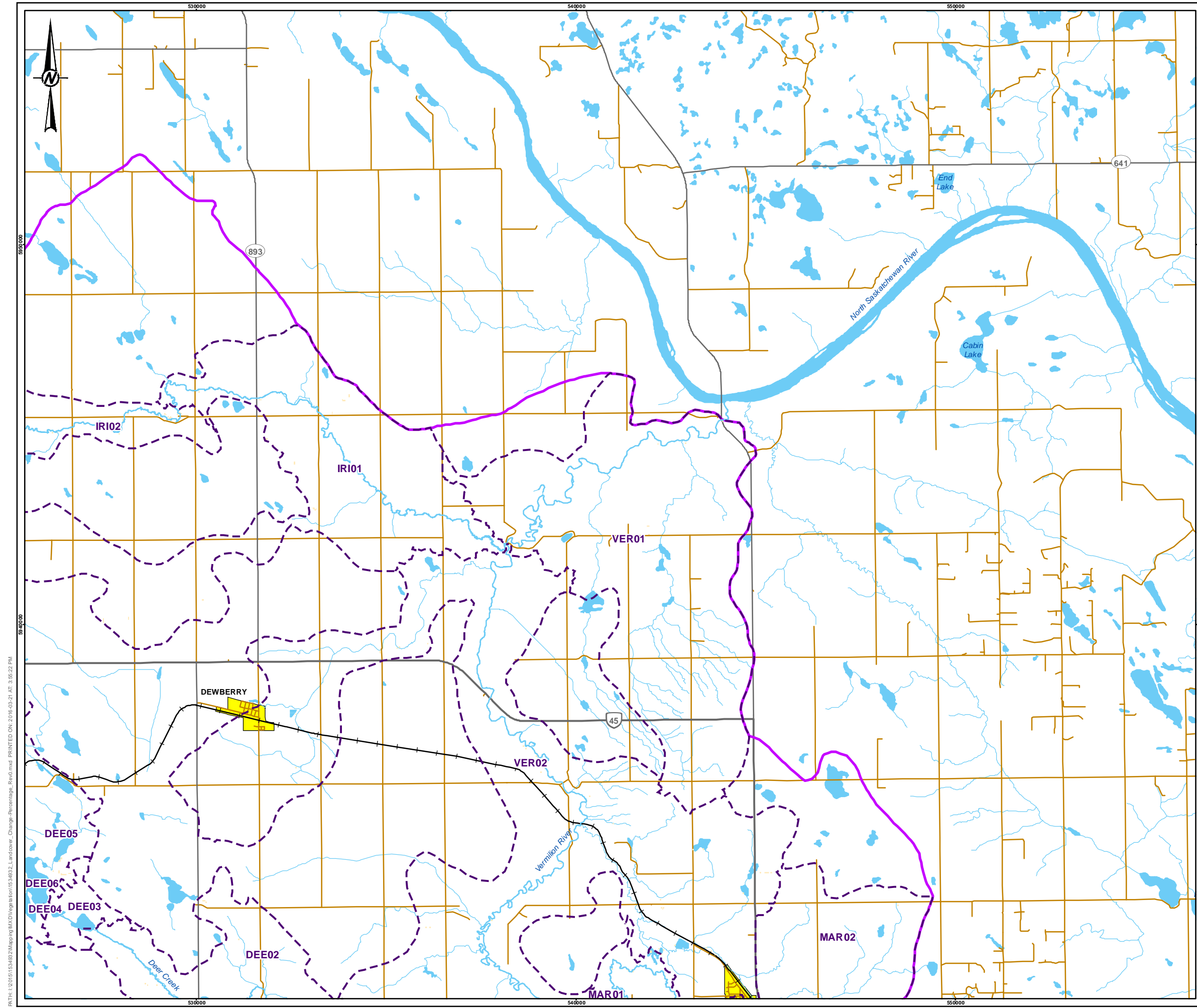
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

P:\TM\1310151524922\Maping\MXD\fig\B8-k\1534932\_Landcover\_Change\_Review.mxd PRINTED ON: 2016-03-21 AT: 3:55:02 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8-B





**LEGEND**

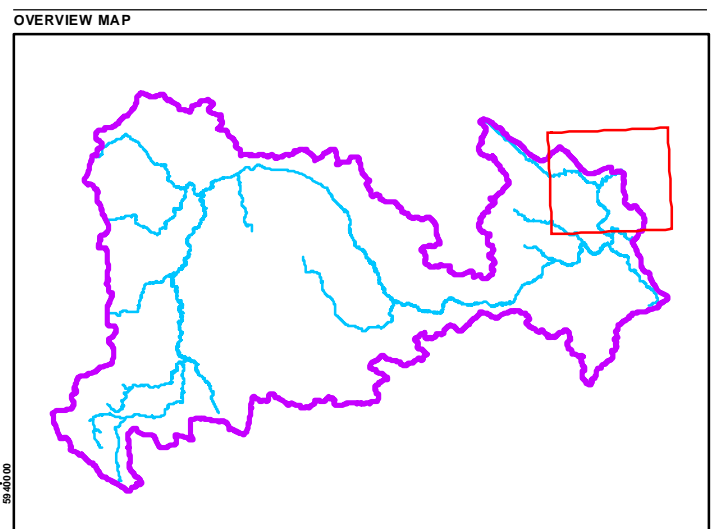
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

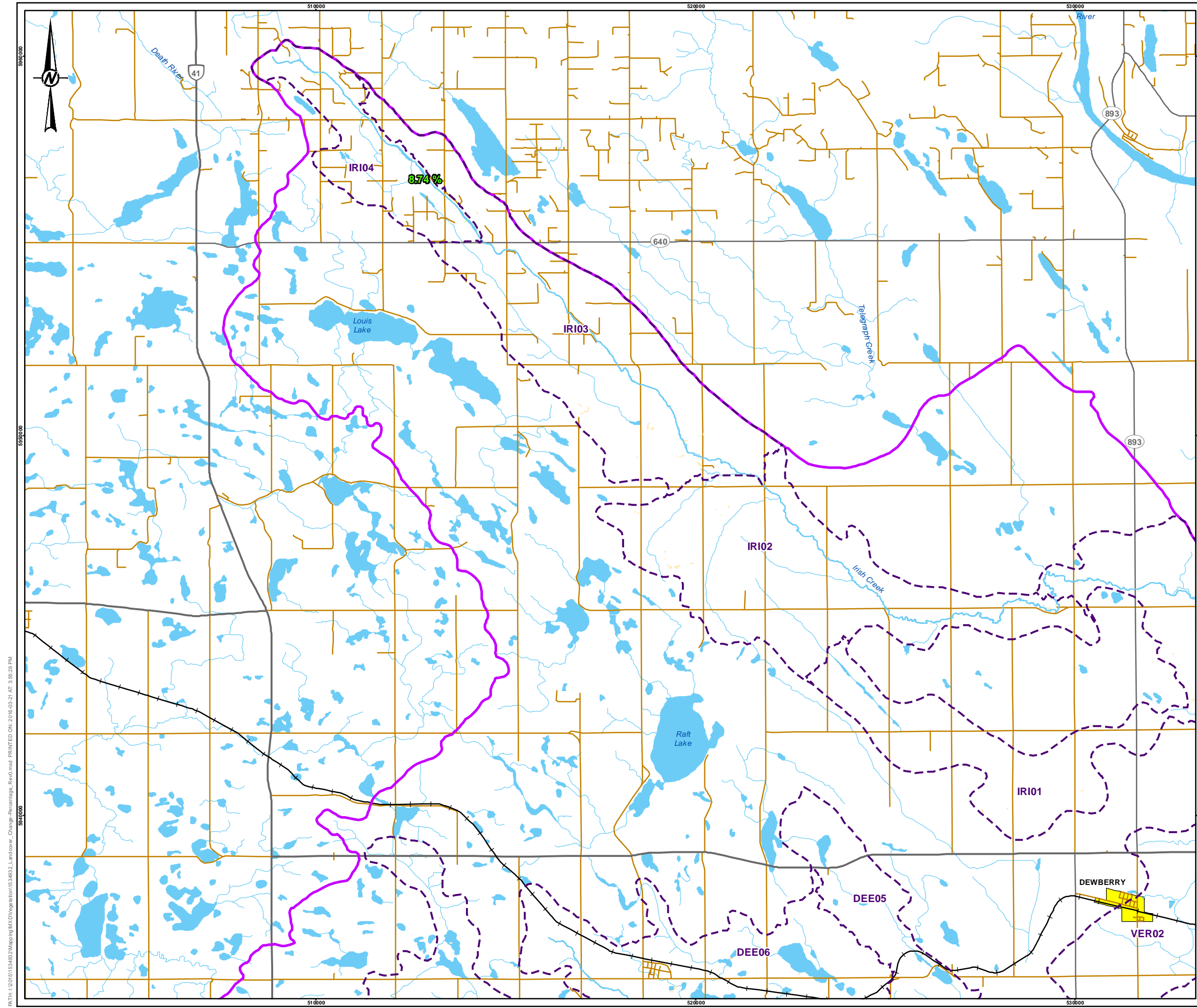
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B8-1

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:55:22 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



**LEGEND**

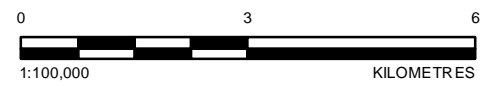
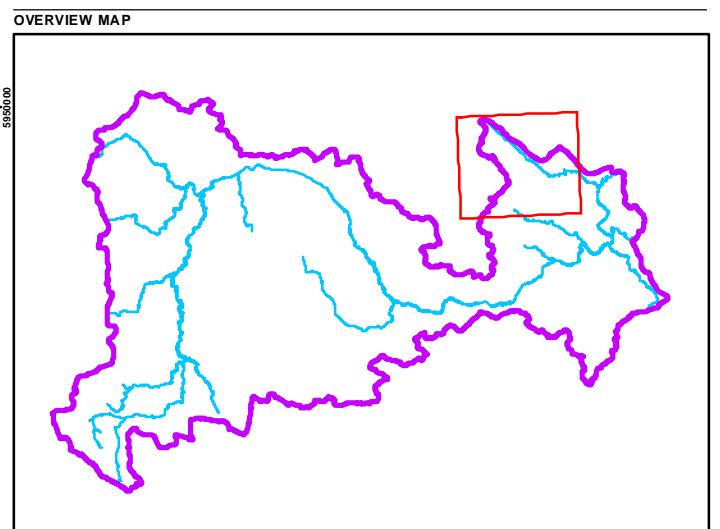
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

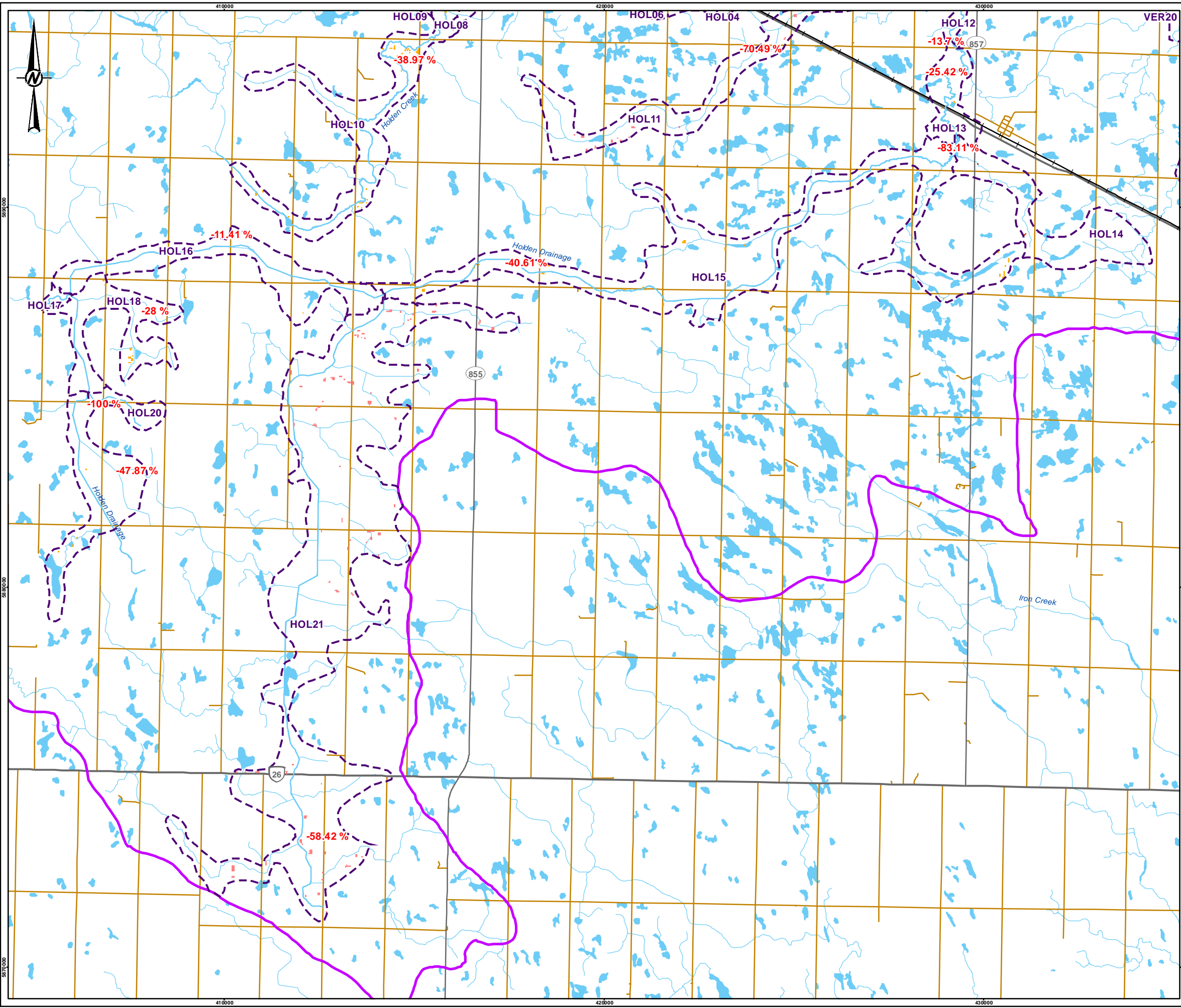
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREED WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B8-m**

PATH: I:\2016\1534932\MapProj\MapProj\1534932\_Landcover\_Change\_Overview.aprx Printed ON: 2016-03-21 AM 3:55:29 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

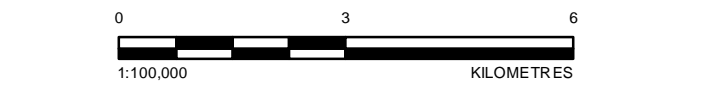
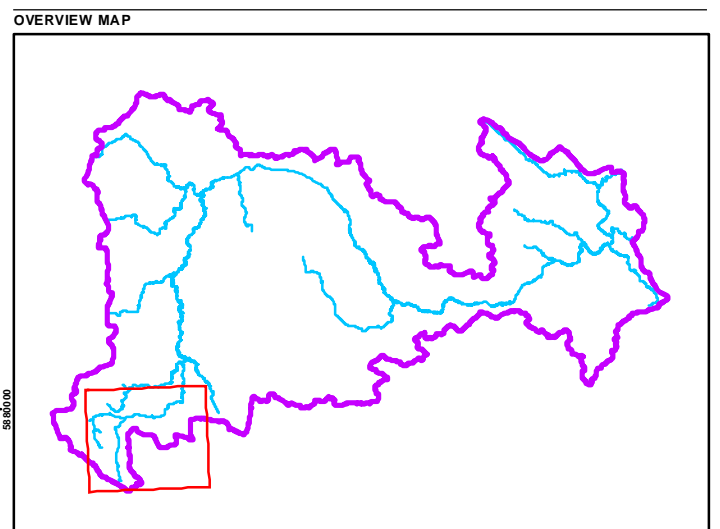
**LANDCOVER TYPE CHANGE PER REACH (%)**

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

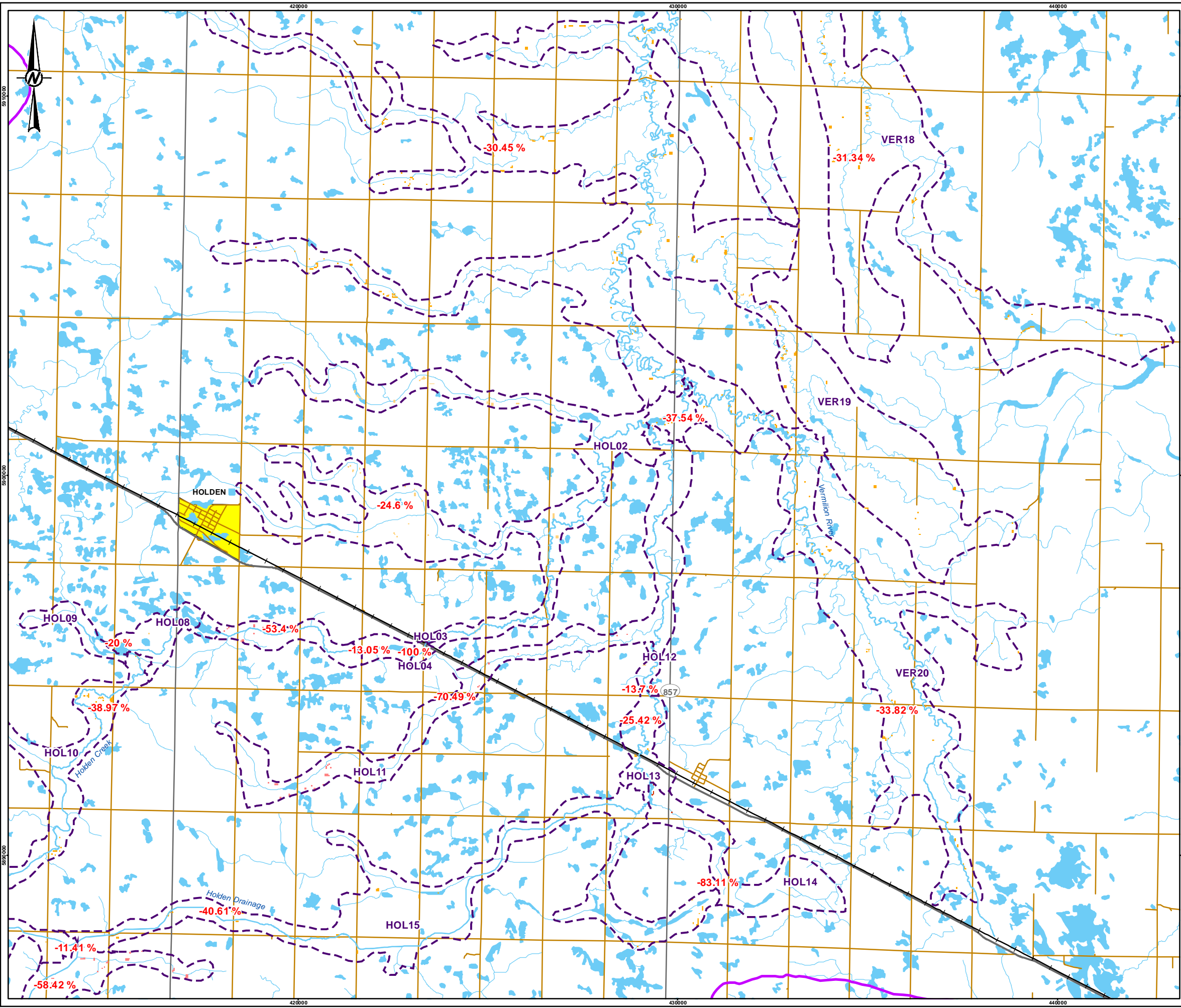
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

CONSULTANT	DATE
DESIGNED	2016-03-21
PREPARED	V.COENEN
REVIEWED	P.THIEDE
APPROVED	P.THIEDE
	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-a

P:\1534932\Maping\MXD\fig\B9-a.mxd PRINTED ON: 2016-03-21 AT: 3:55:36 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**LEGEND**

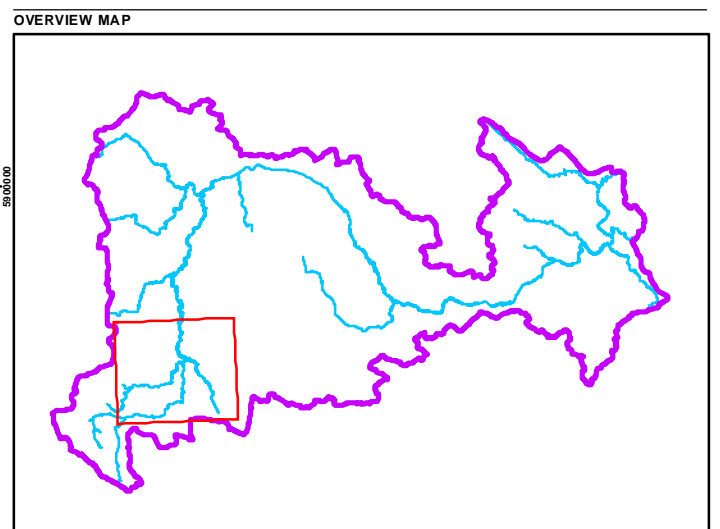
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)

Color scale for Landcover Type Change Per Reach (%):

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

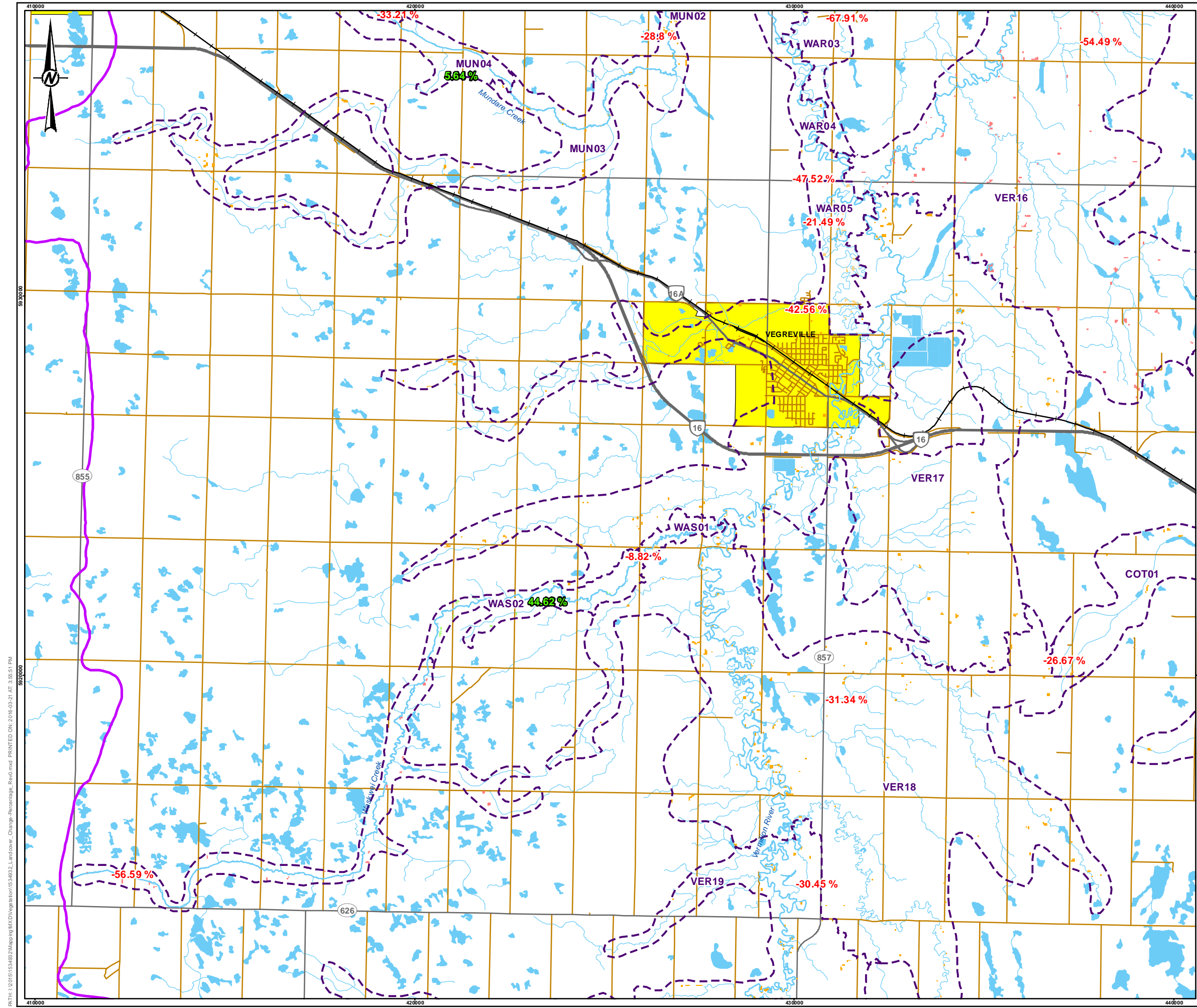
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:44 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

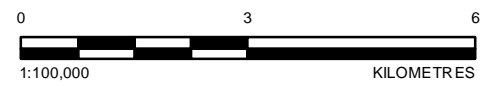
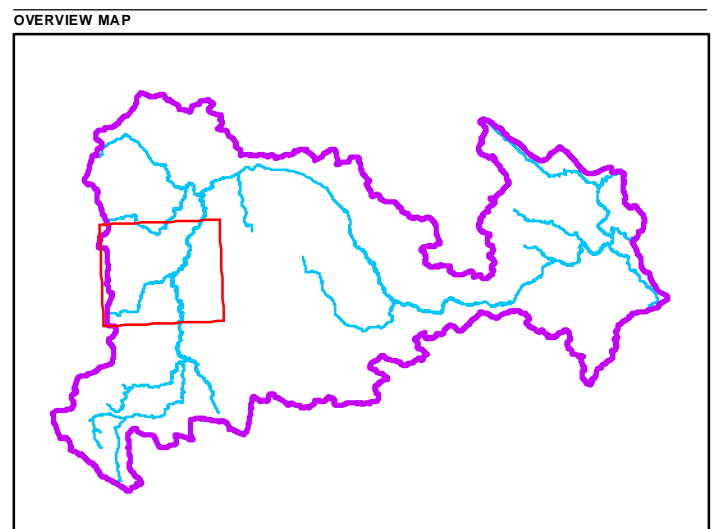


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

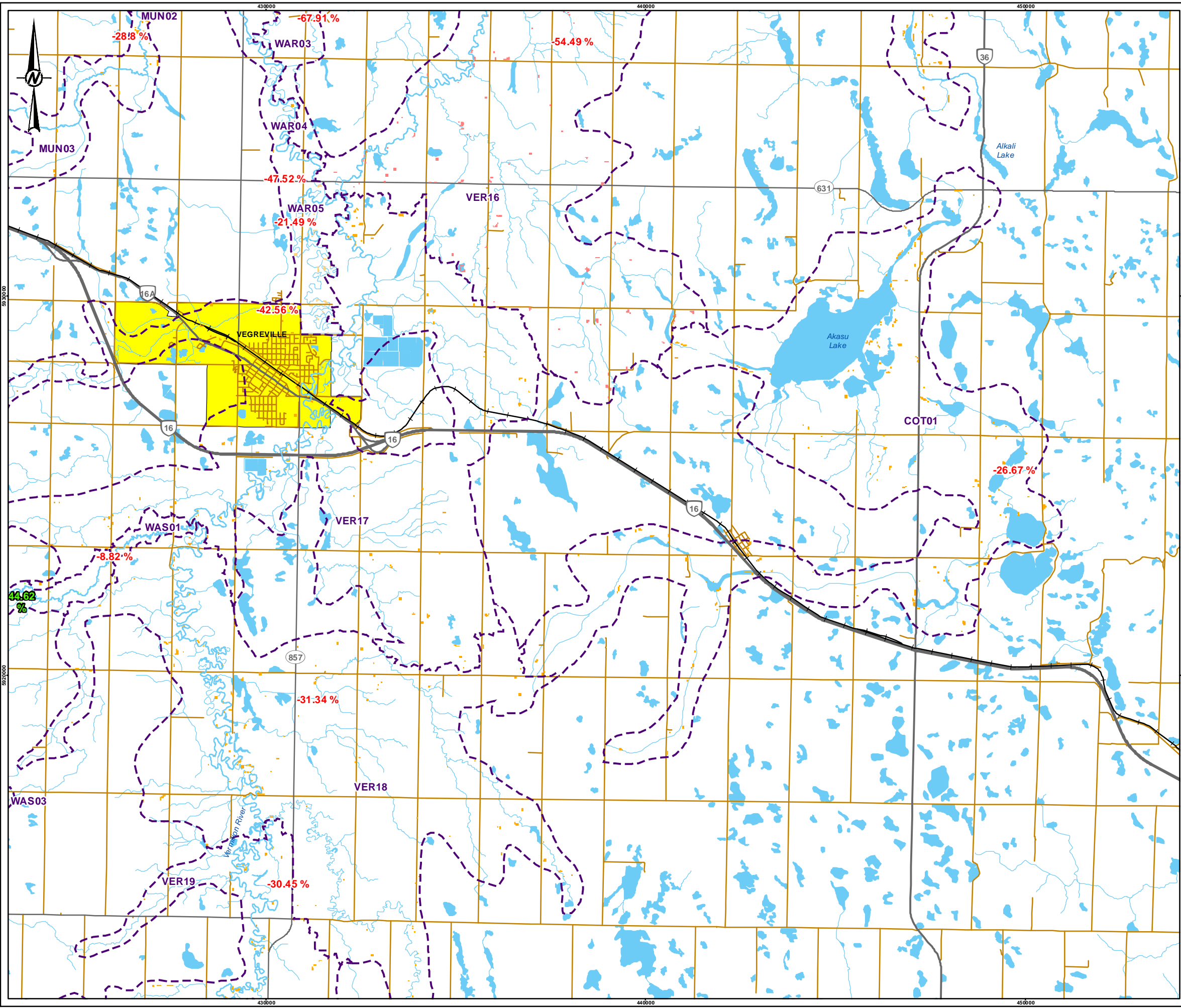
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:55:51 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



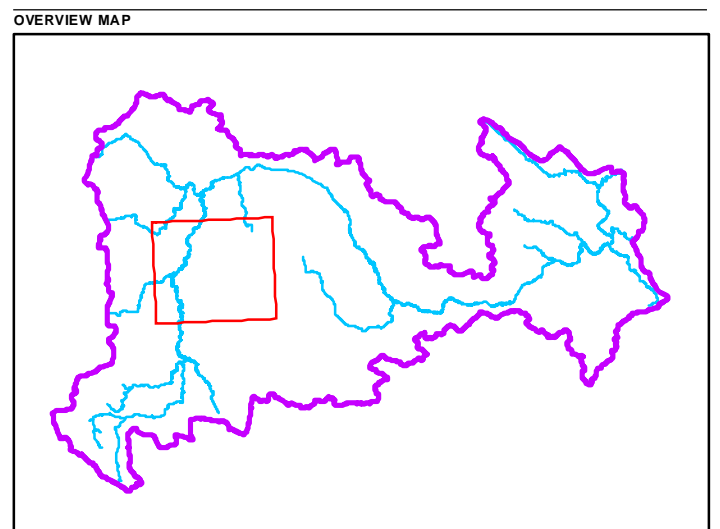


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

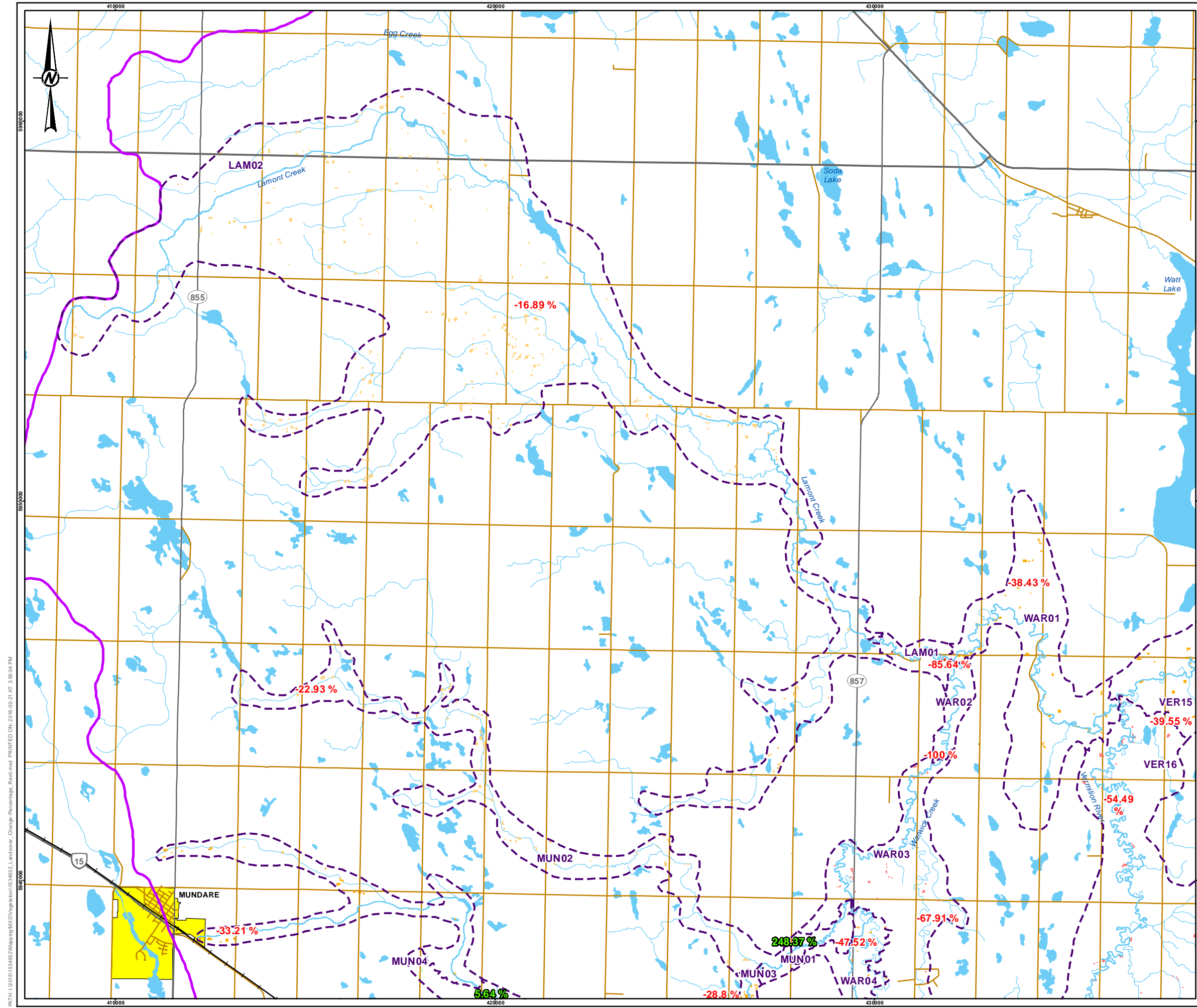
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\31015\1534932\Maping\Maping\1534932\_Landcover\_Change\_Phenology\_Rev0.mxd PRINTED ON: 2016-03-21 AT: 3:56:57 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

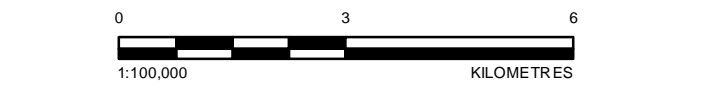
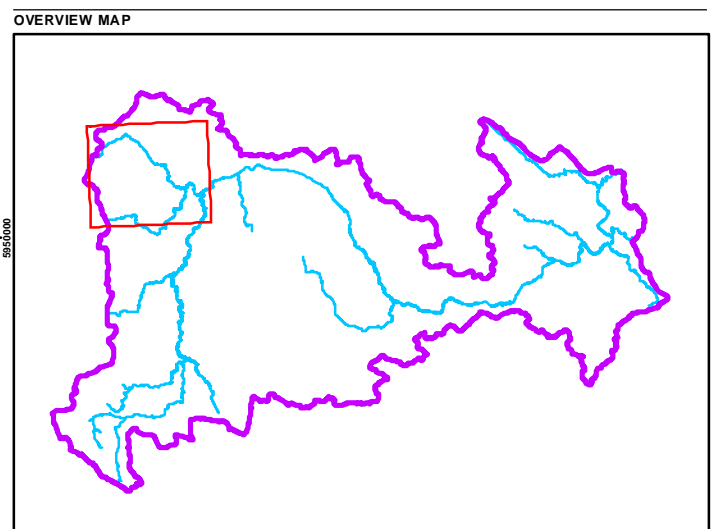
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

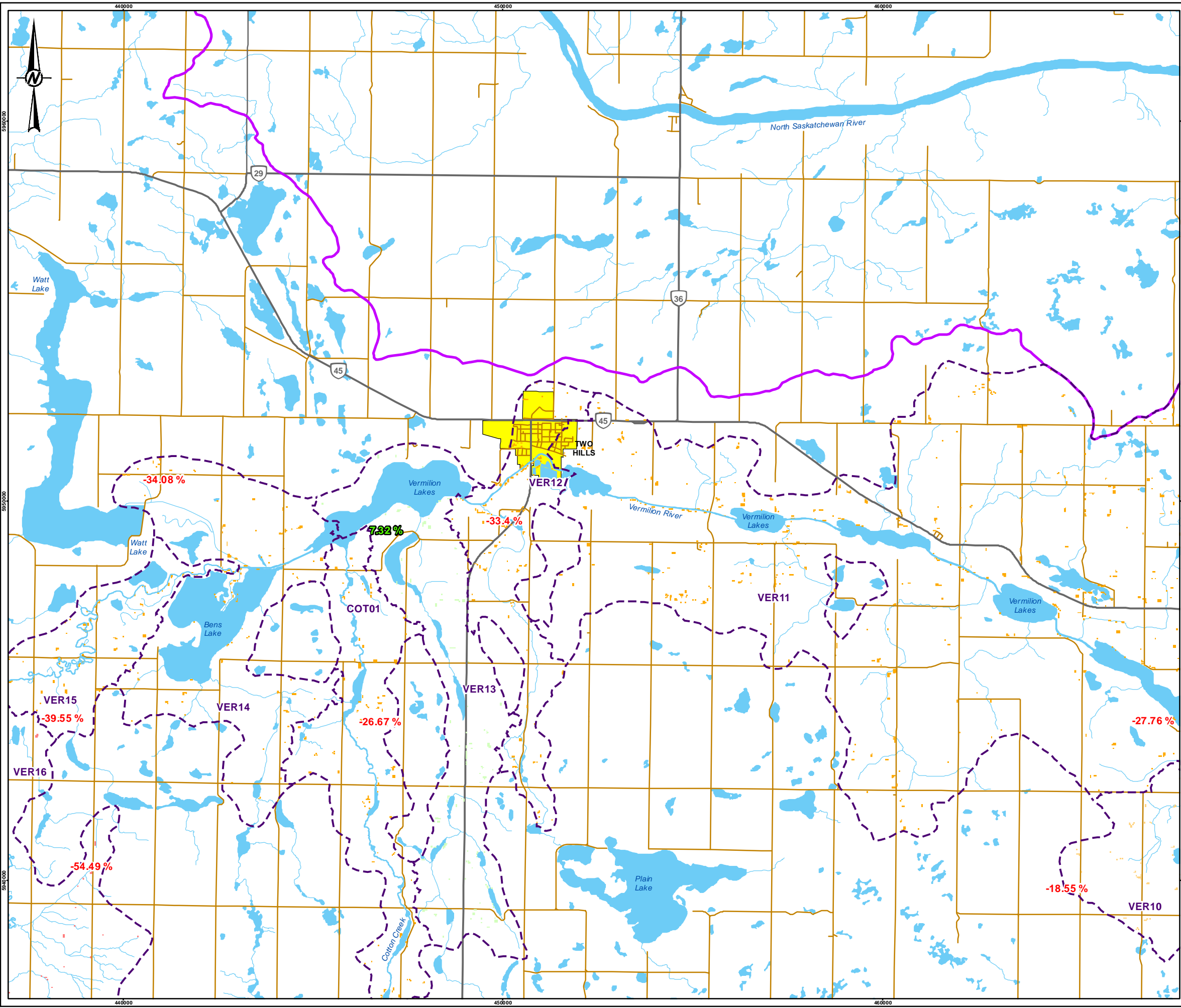
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-e

PATH: I:\2016\1534932\Maping\Map\CD\fig\hatch\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:04 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



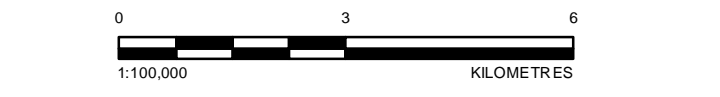
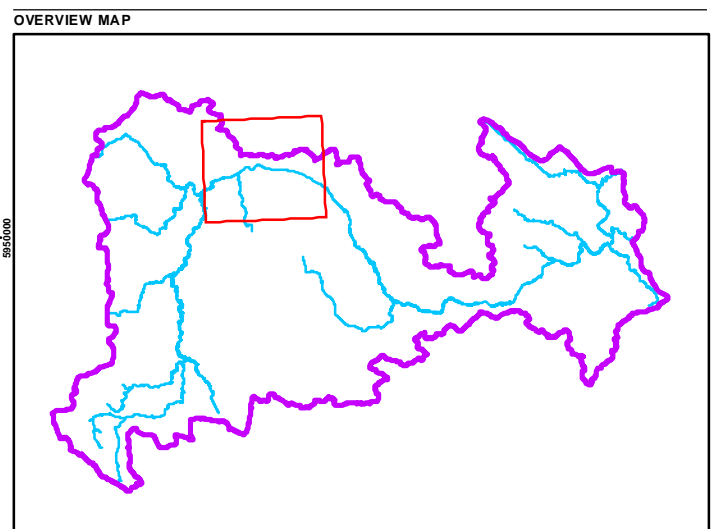
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

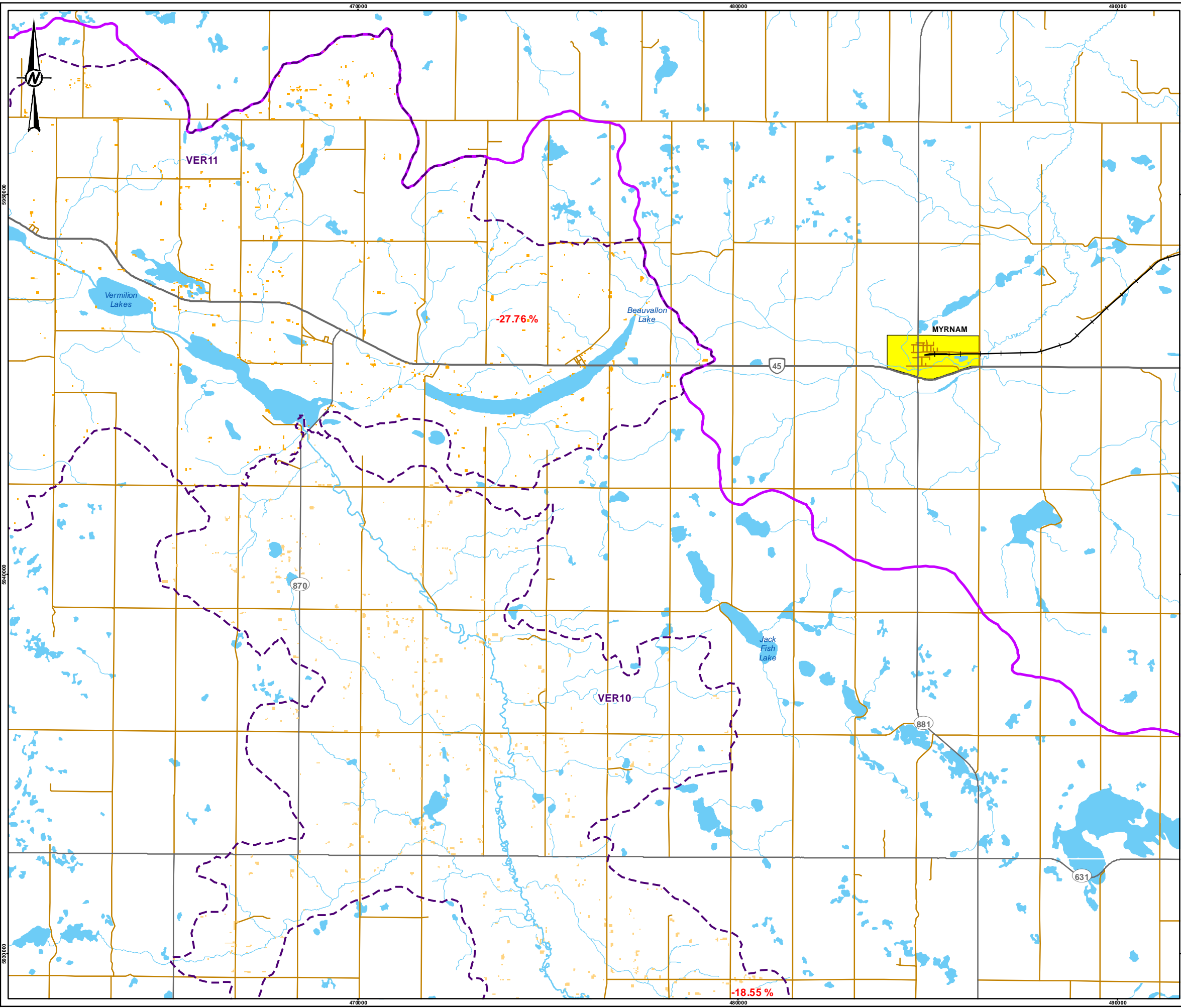
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-f

PATH: I:\2016\1534932\Maping\KCD\Output\1534932\_Landcover\_Change\_Presentation\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:10 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



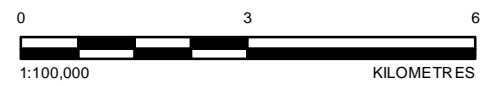
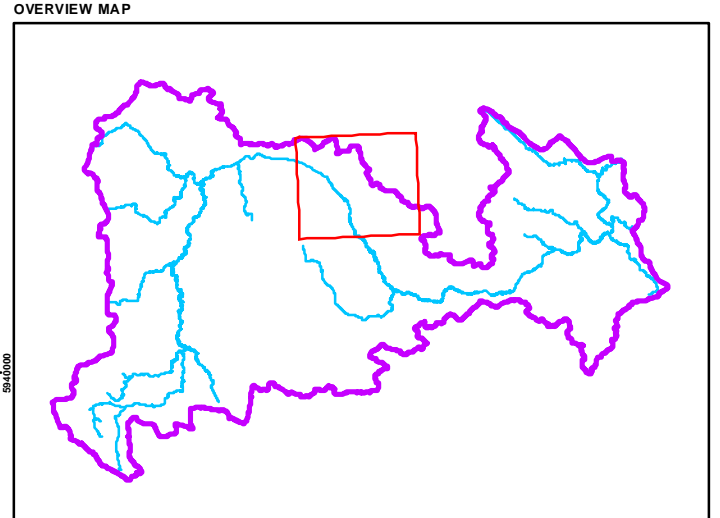
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

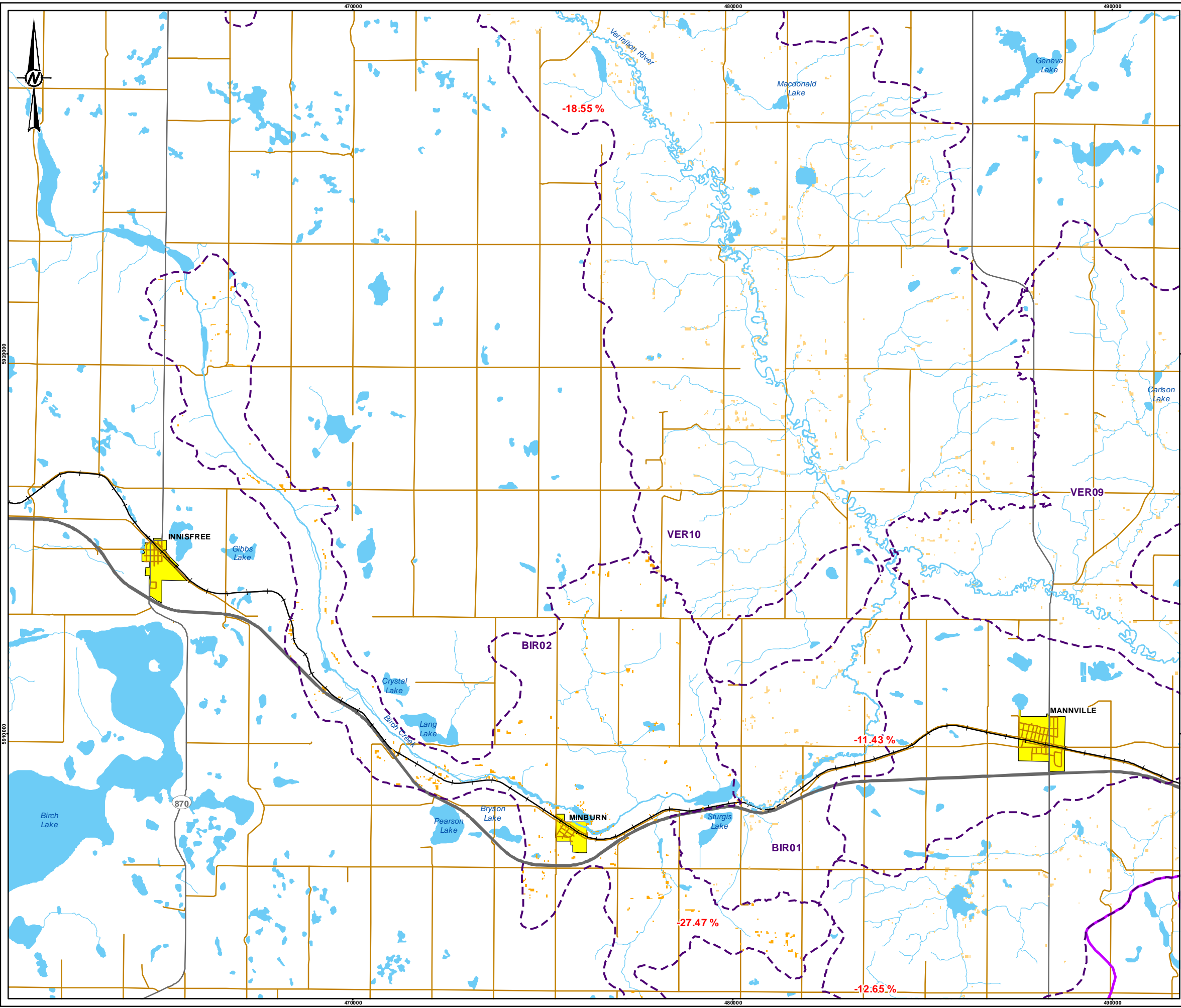
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:18 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8 28mm





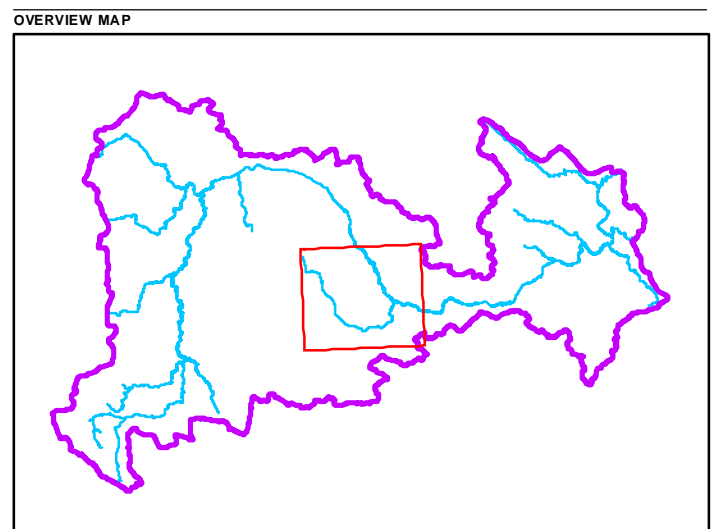
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

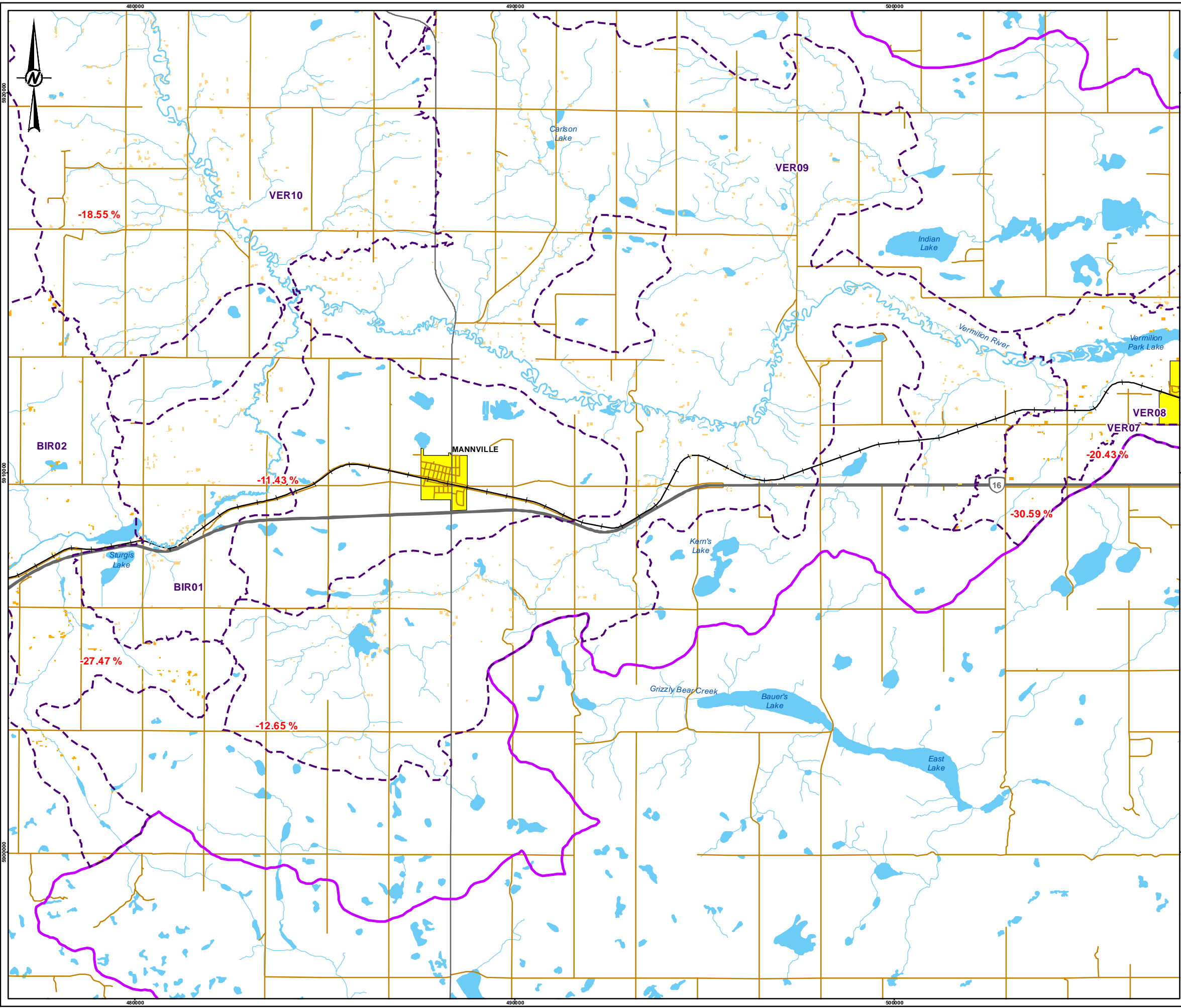
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Presentation\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:26 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**LEGEND**

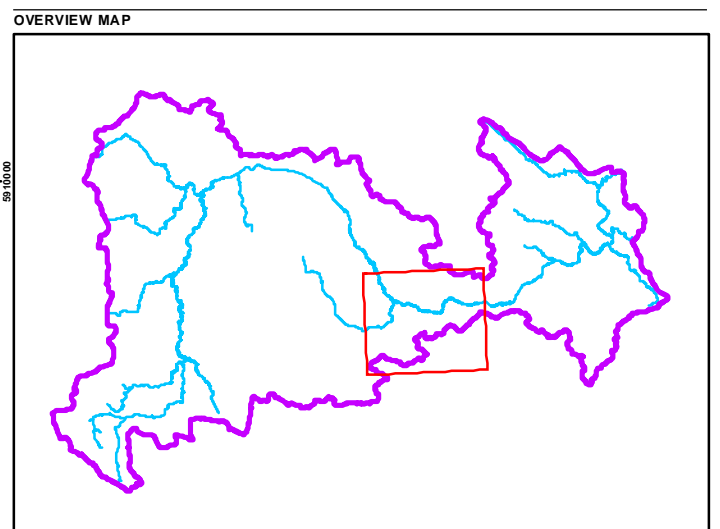
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5%

Landcover Type Change (%)

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

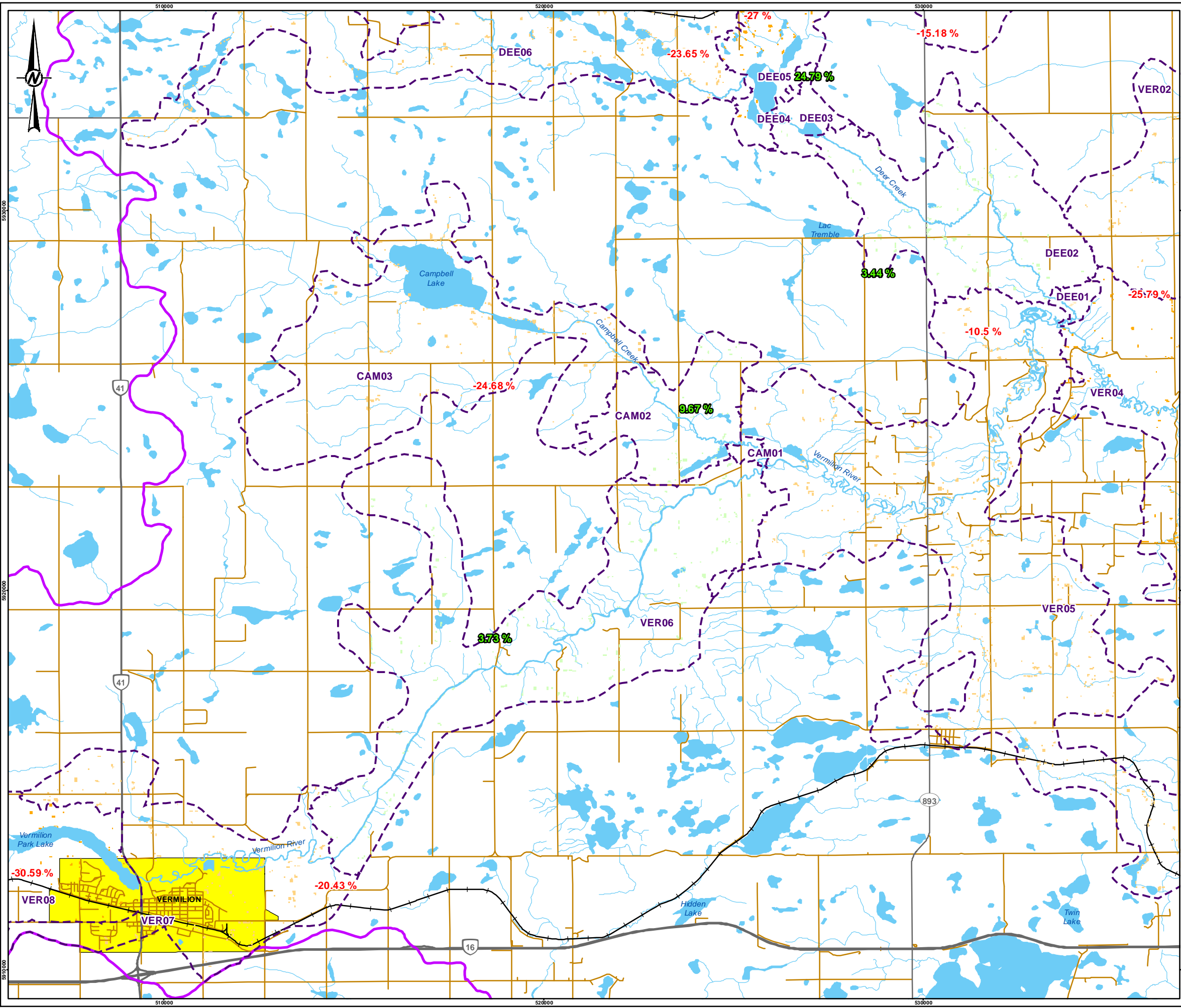
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PATH: I:\2016\1534932\Maping\MXD\fig\B9-i\B9-i\_1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:33 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

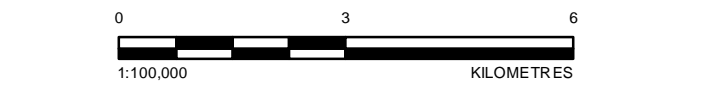
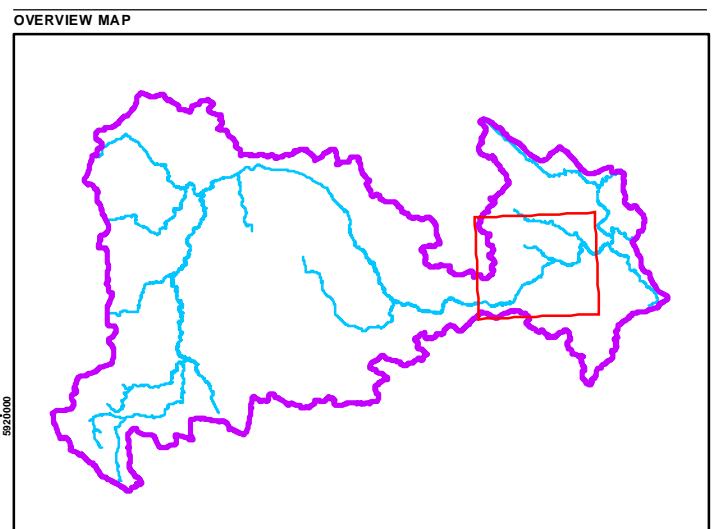
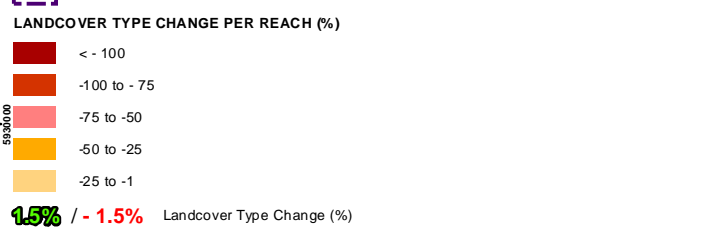


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

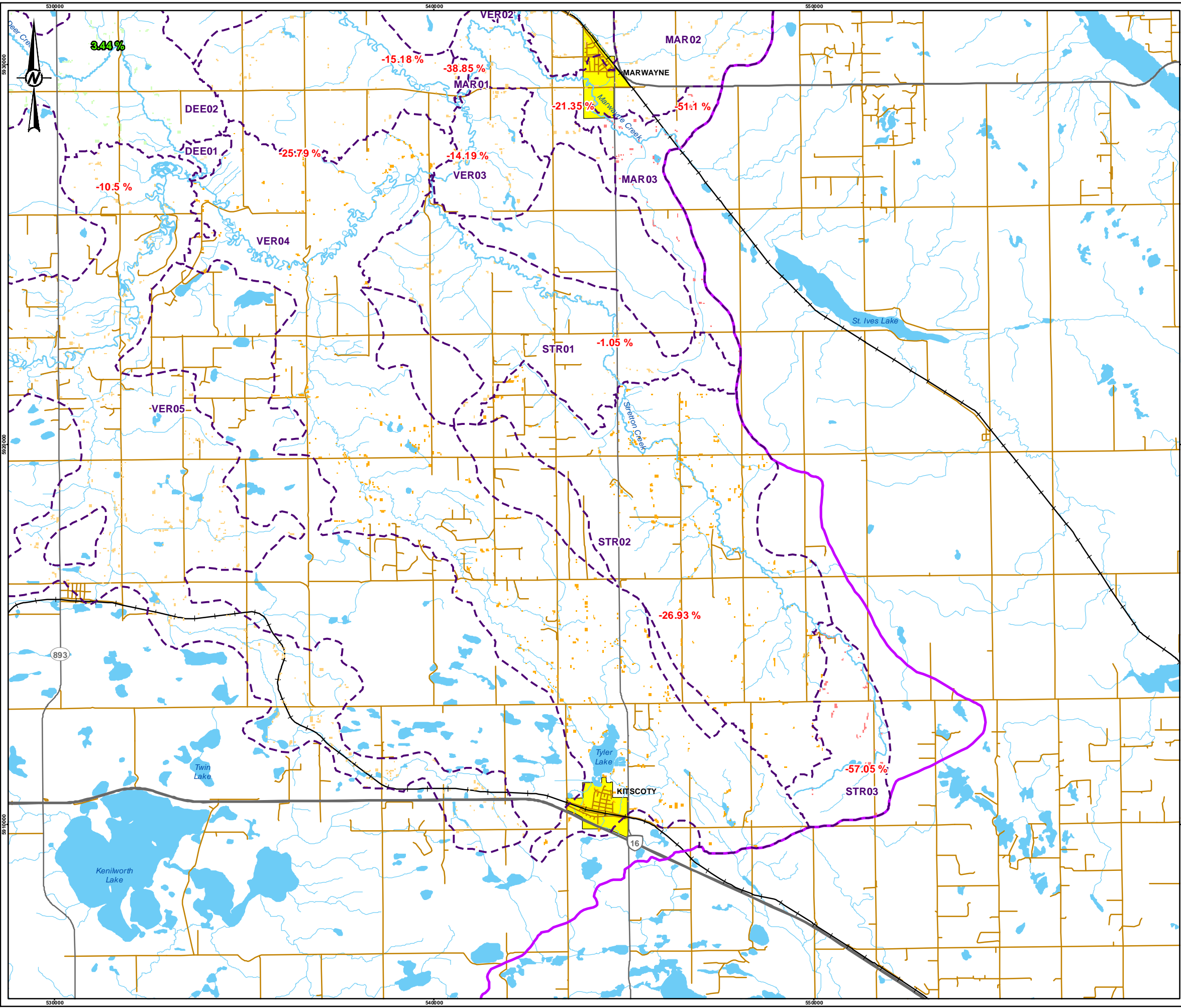
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\0105\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Report.mxd PRINTED ON: 2016-03-21 AT: 3:56:42 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



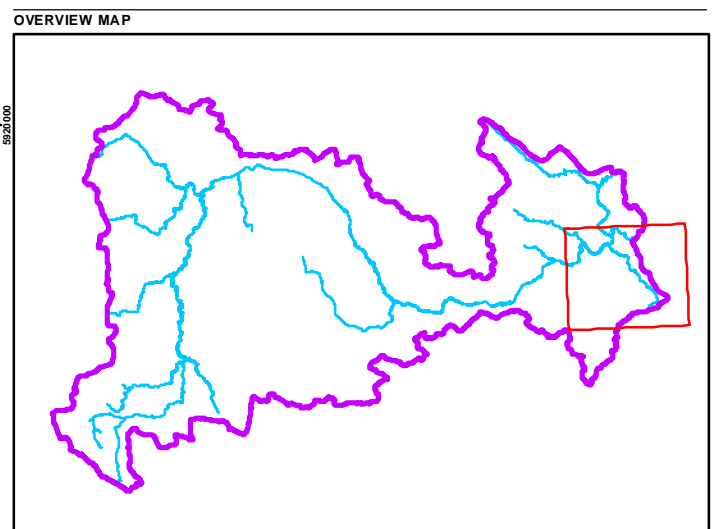


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

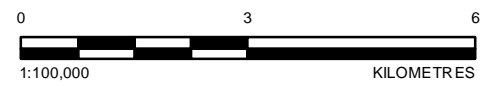
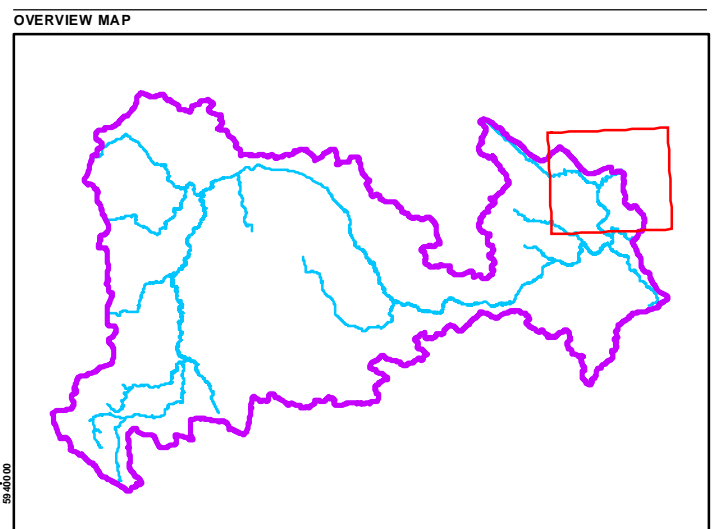
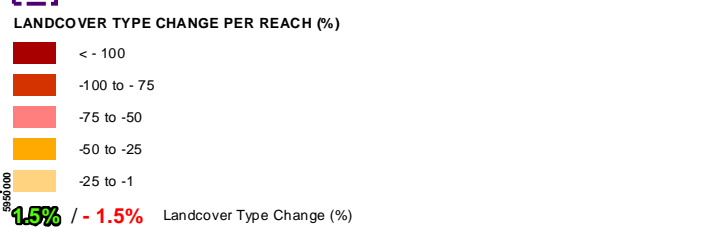
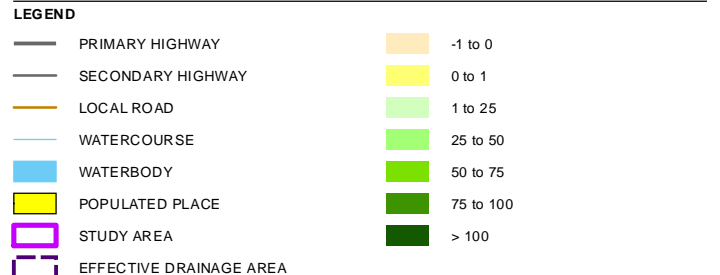
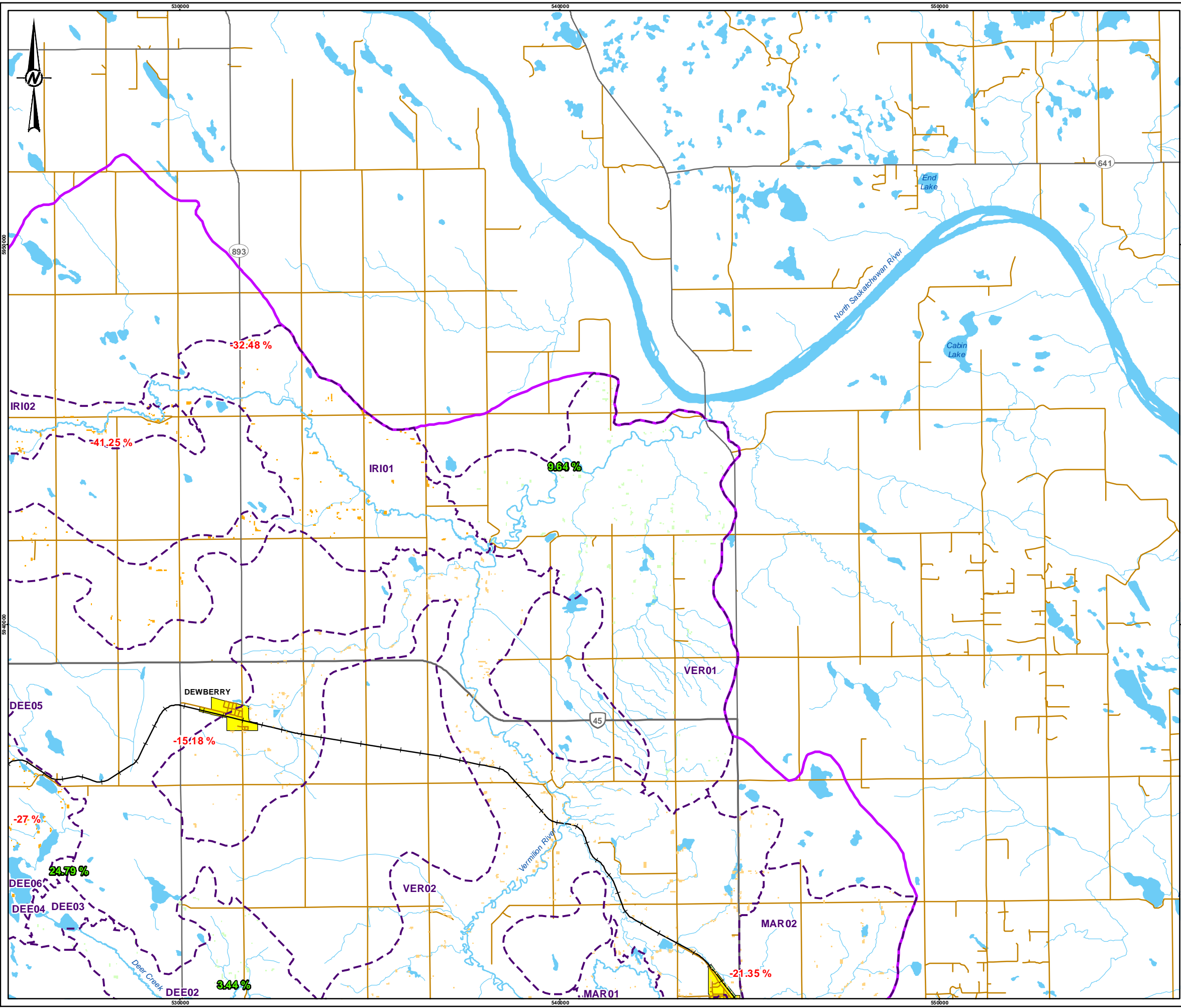
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

P:\1534932\Maping\Maping\1534932\_Landcover\_Change\_1990to2010\_Trees.mxd PRINTED ON: 2016-03-21 AT: 3:56:49 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



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 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

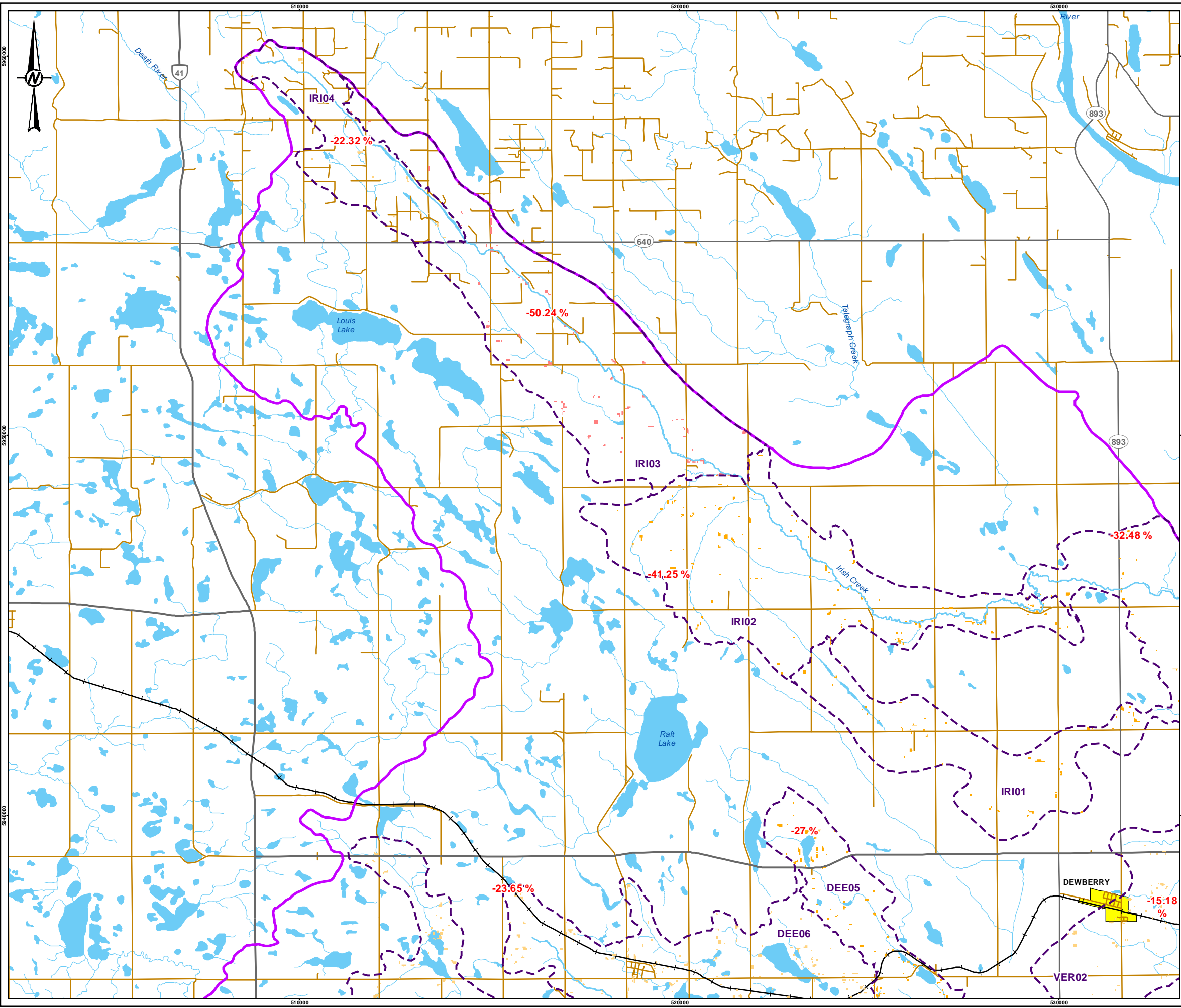
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2015\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:56:56 PM  
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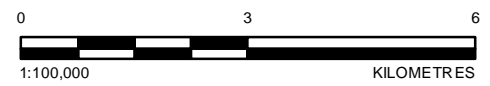
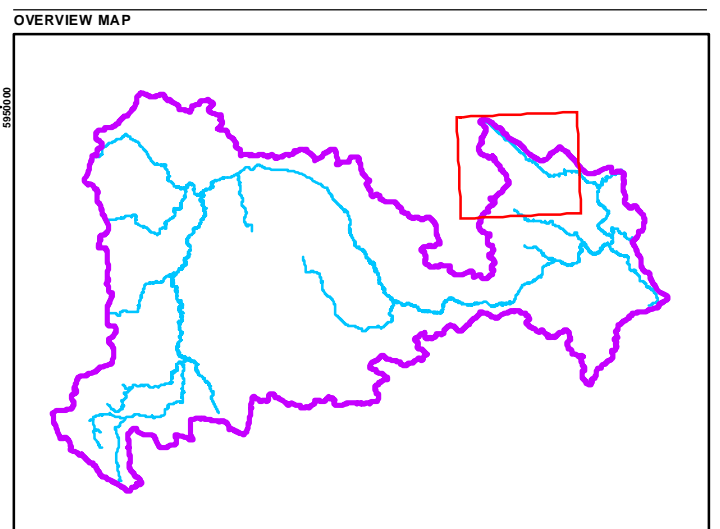


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - TREES

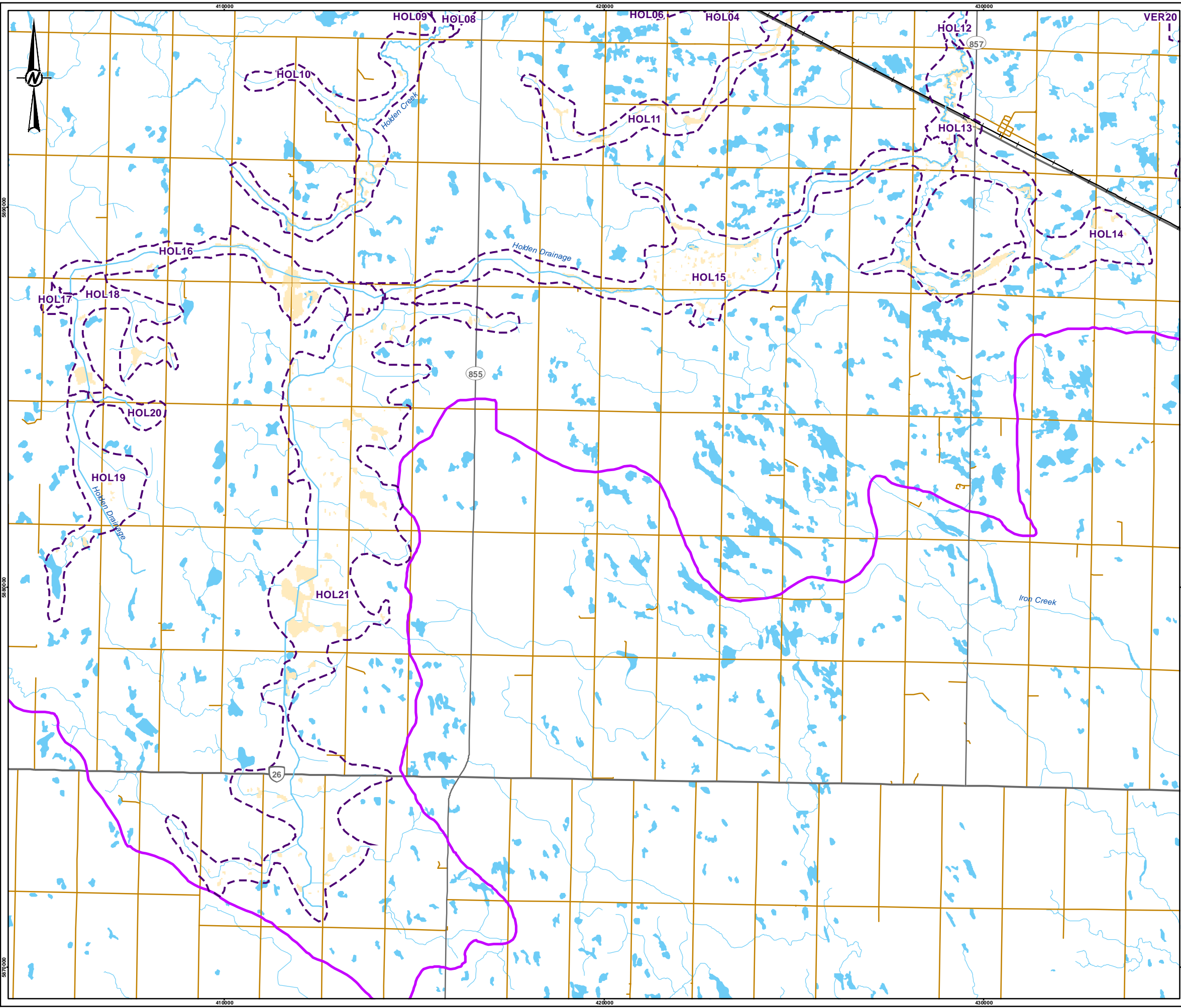
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B9-m

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:03 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





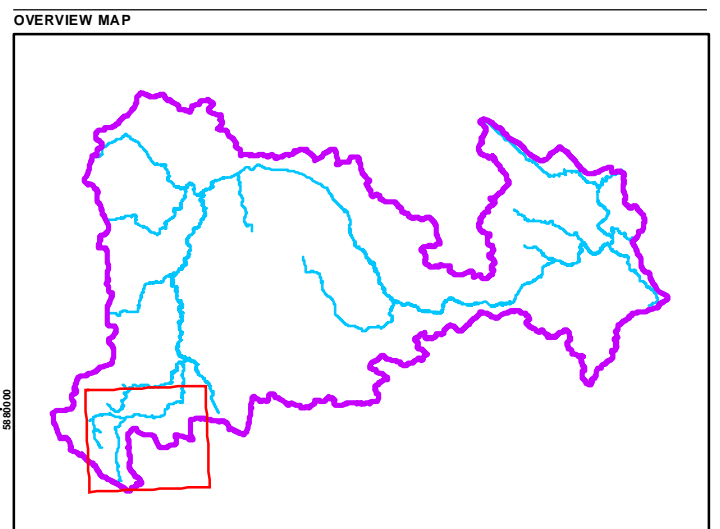
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

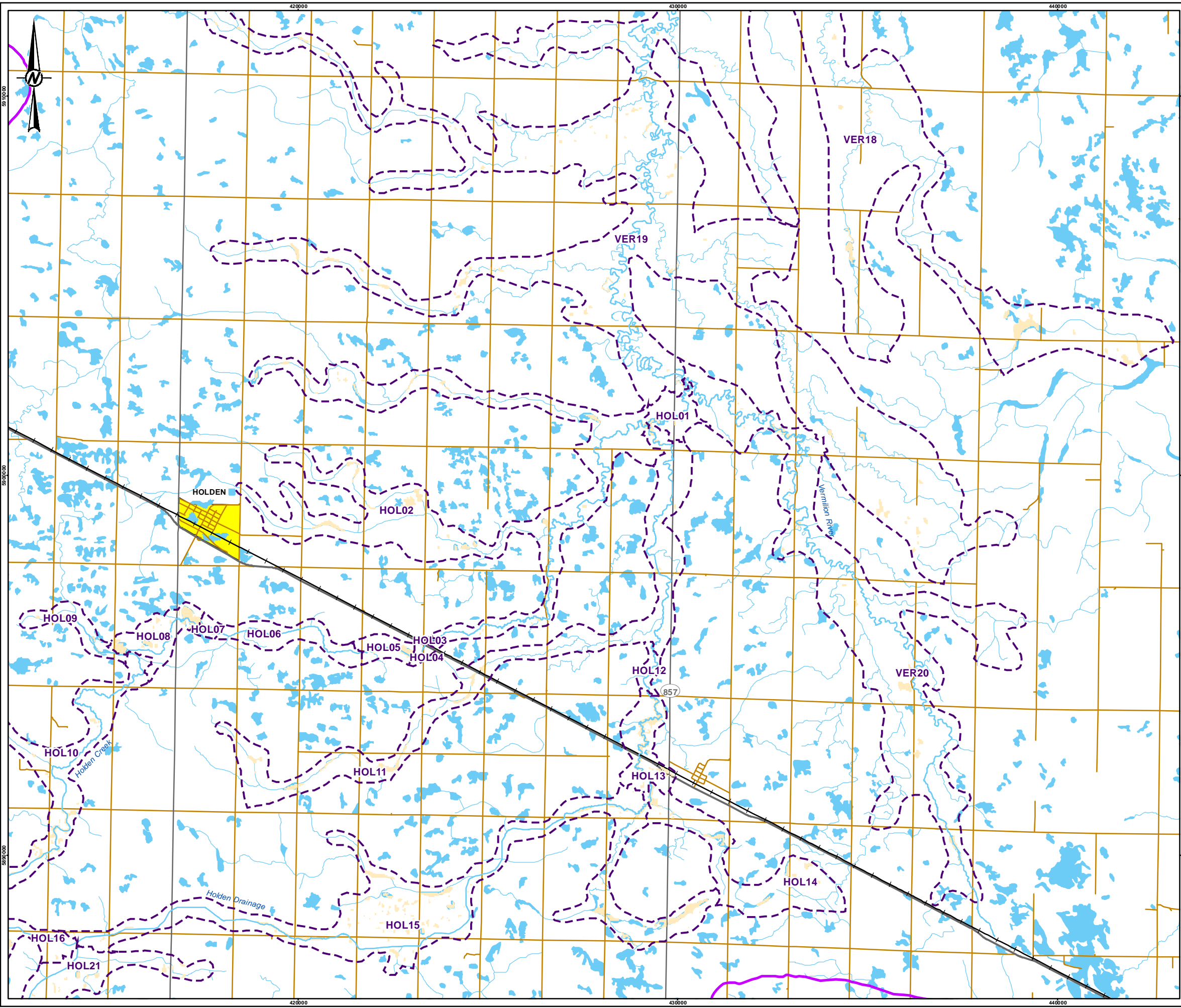
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B10-a**

P:\TM\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:08 PM  
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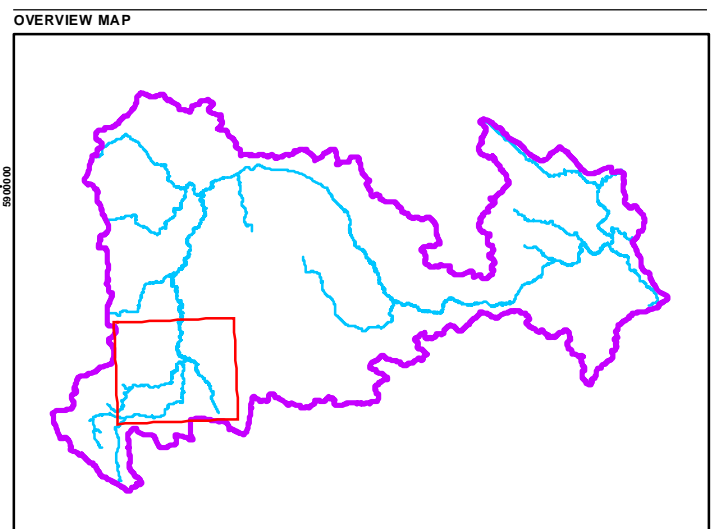
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

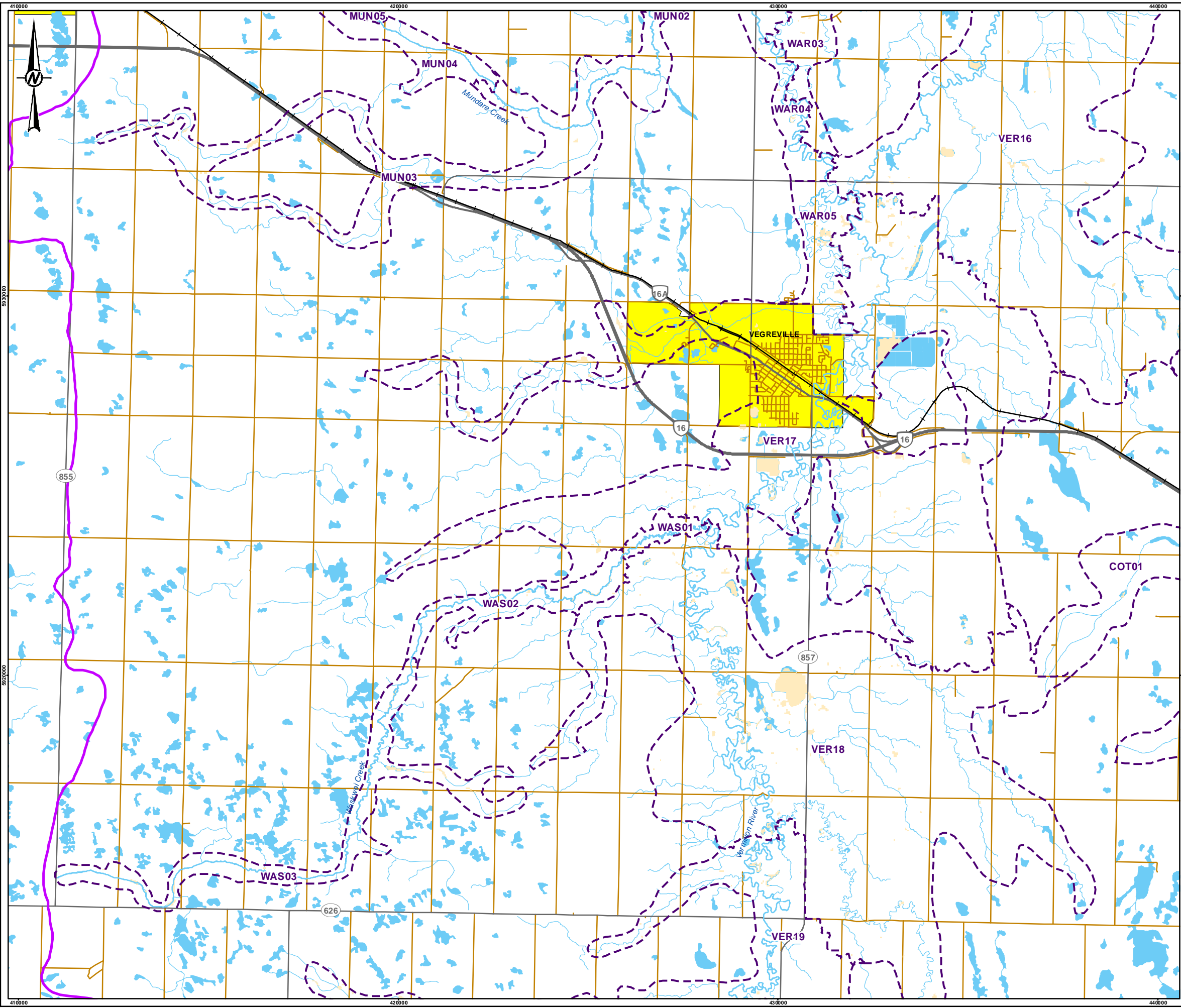
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Phenology\_Rev0.mxd PRINTED ON: 2016-03-21 AT: 3:57:15 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





**LEGEND**

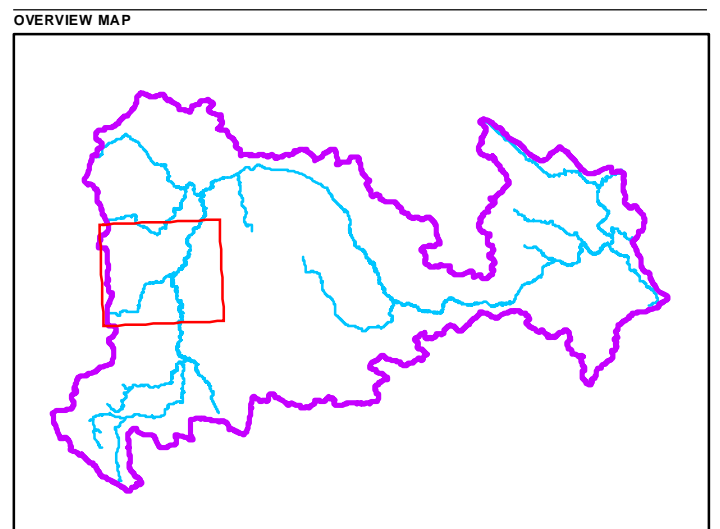
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

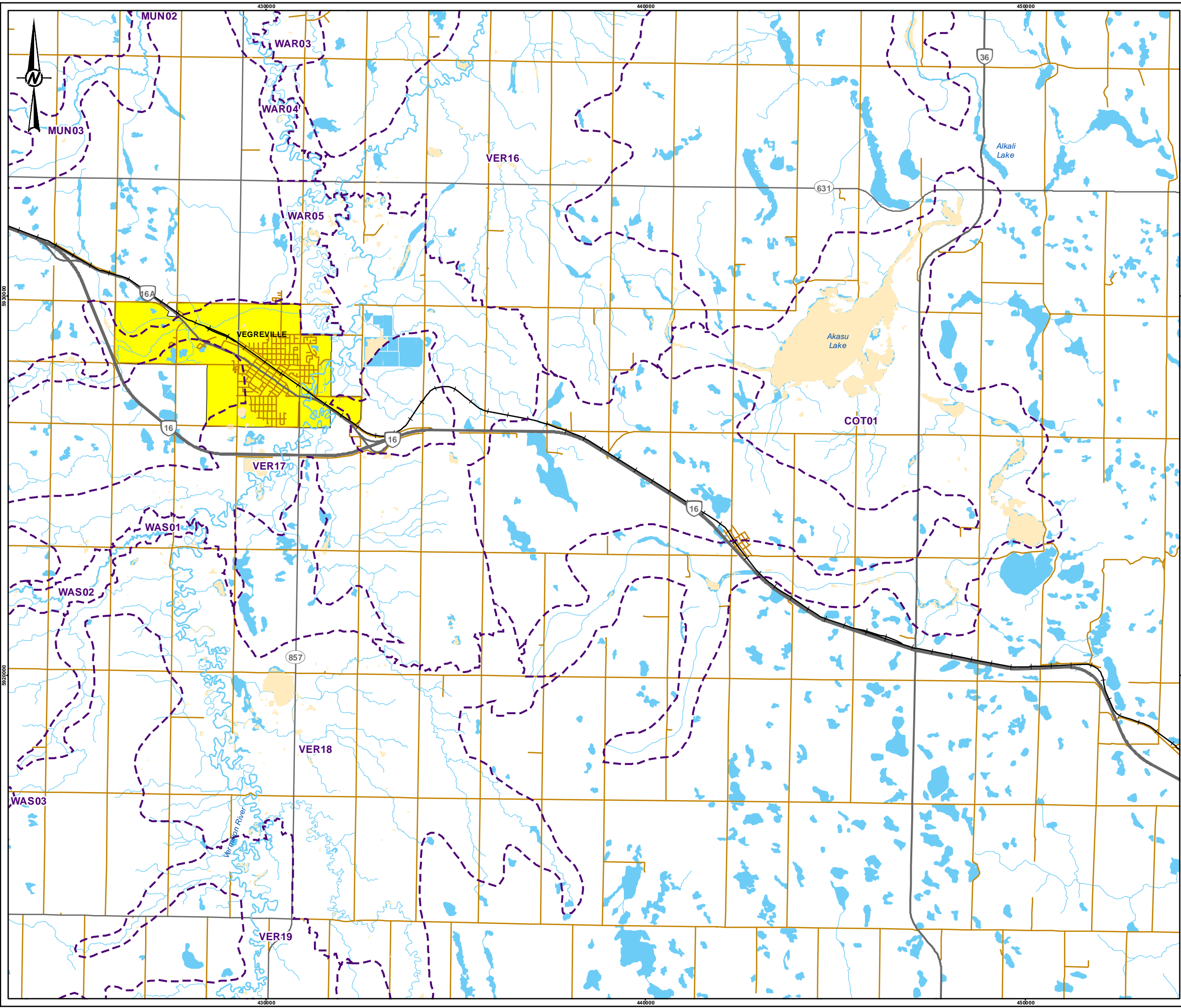
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-c

P:\TM\1534932\Maping\Maping\1534932\_Landcover\_Change\_Presentation\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:22 PM  
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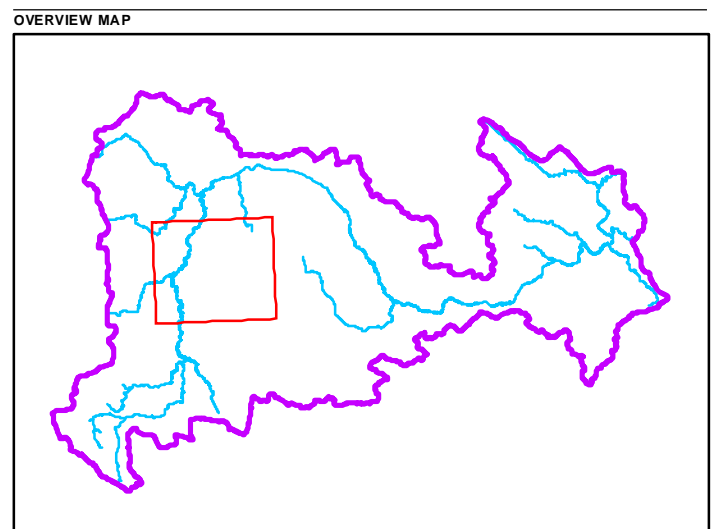


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5%
- Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

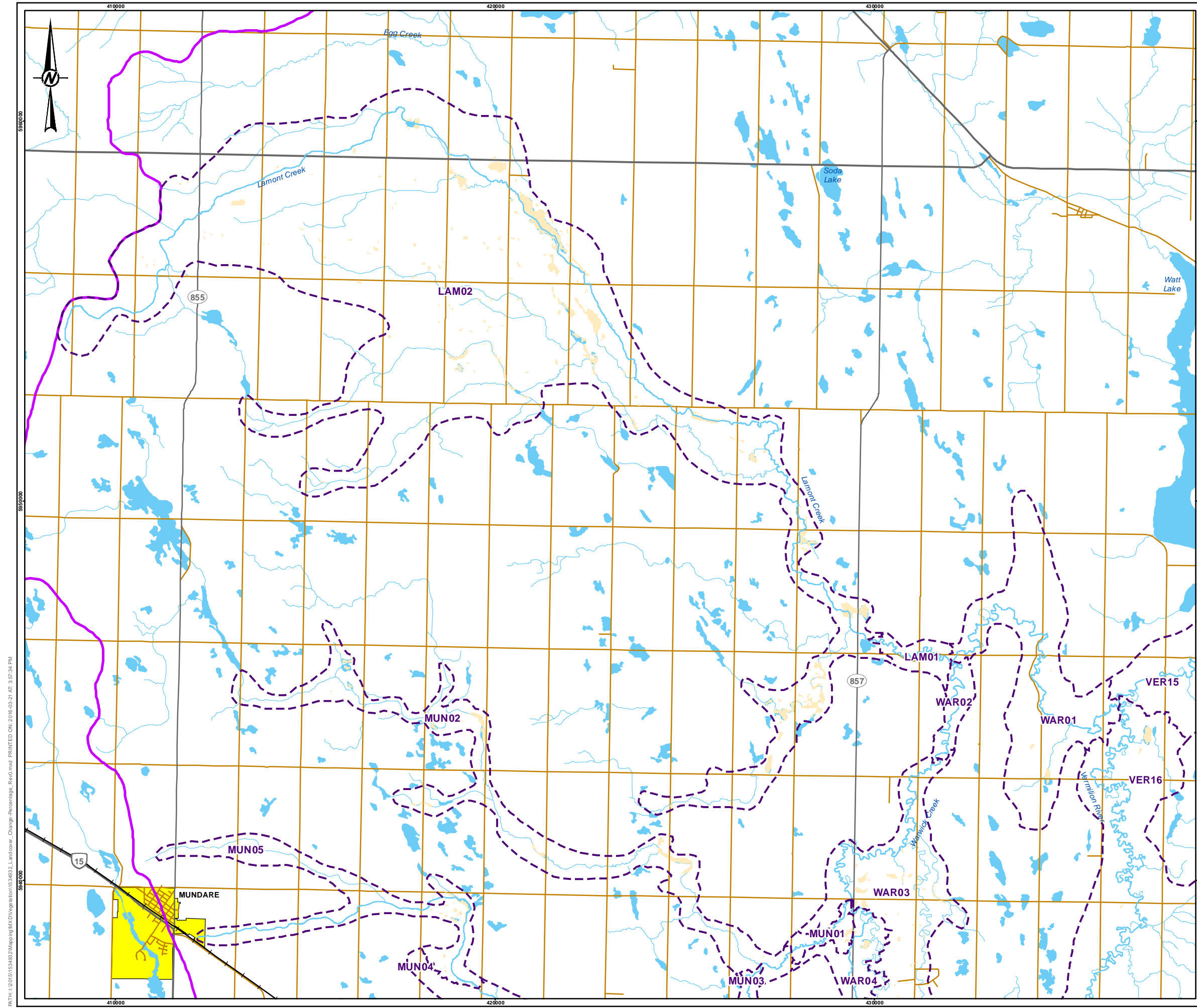
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-d

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:57:28 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



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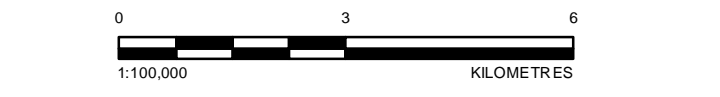
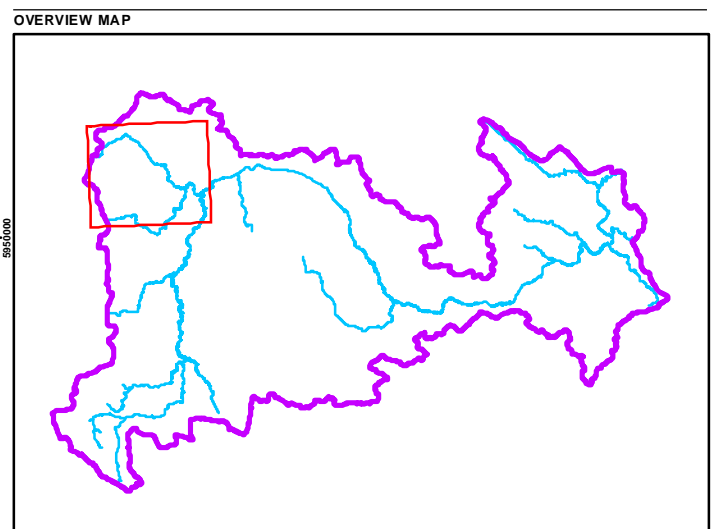
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

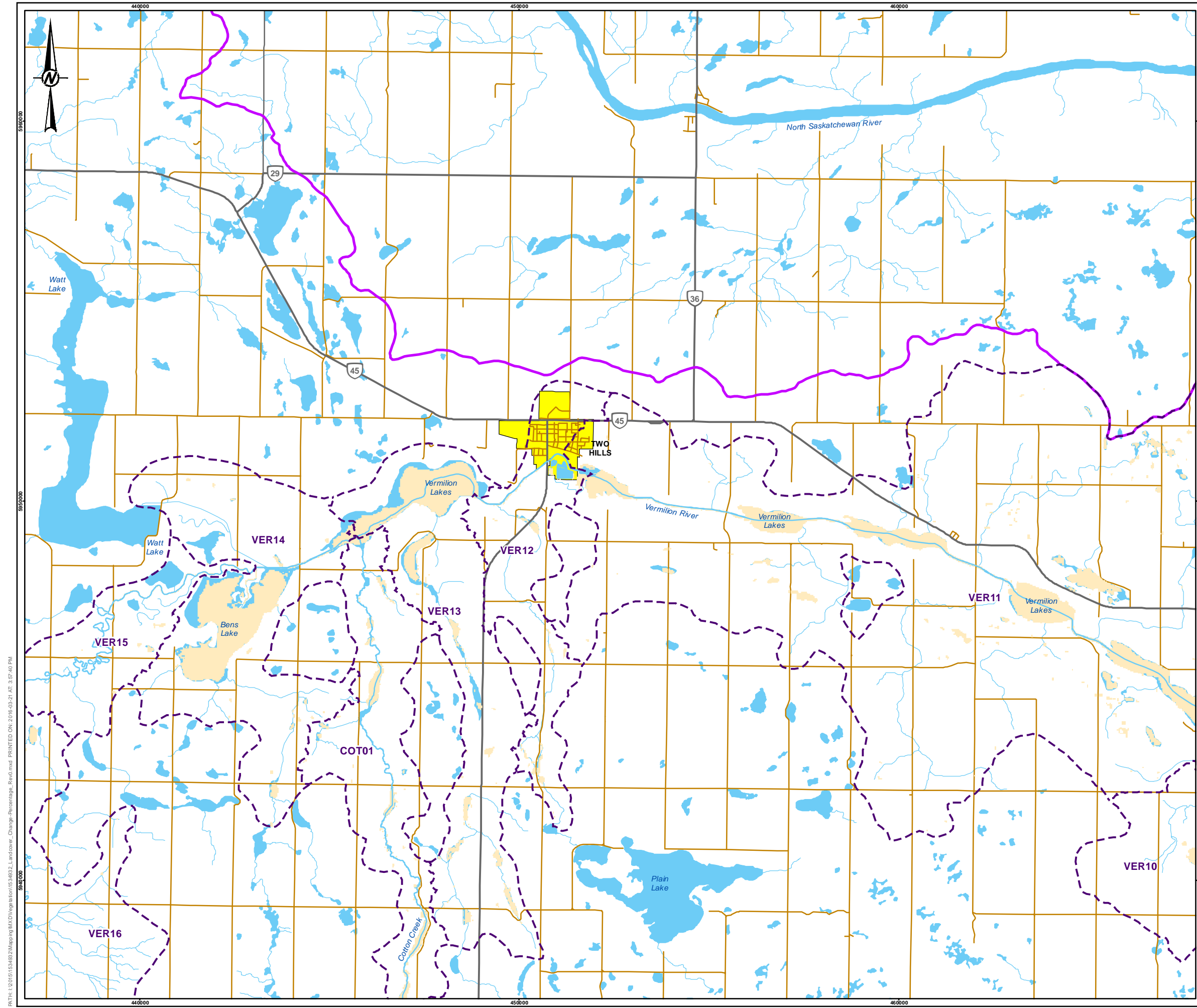
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:34 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





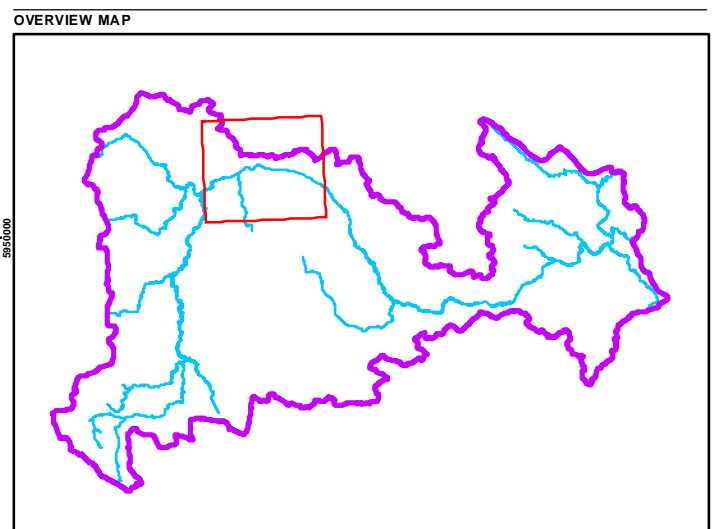
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

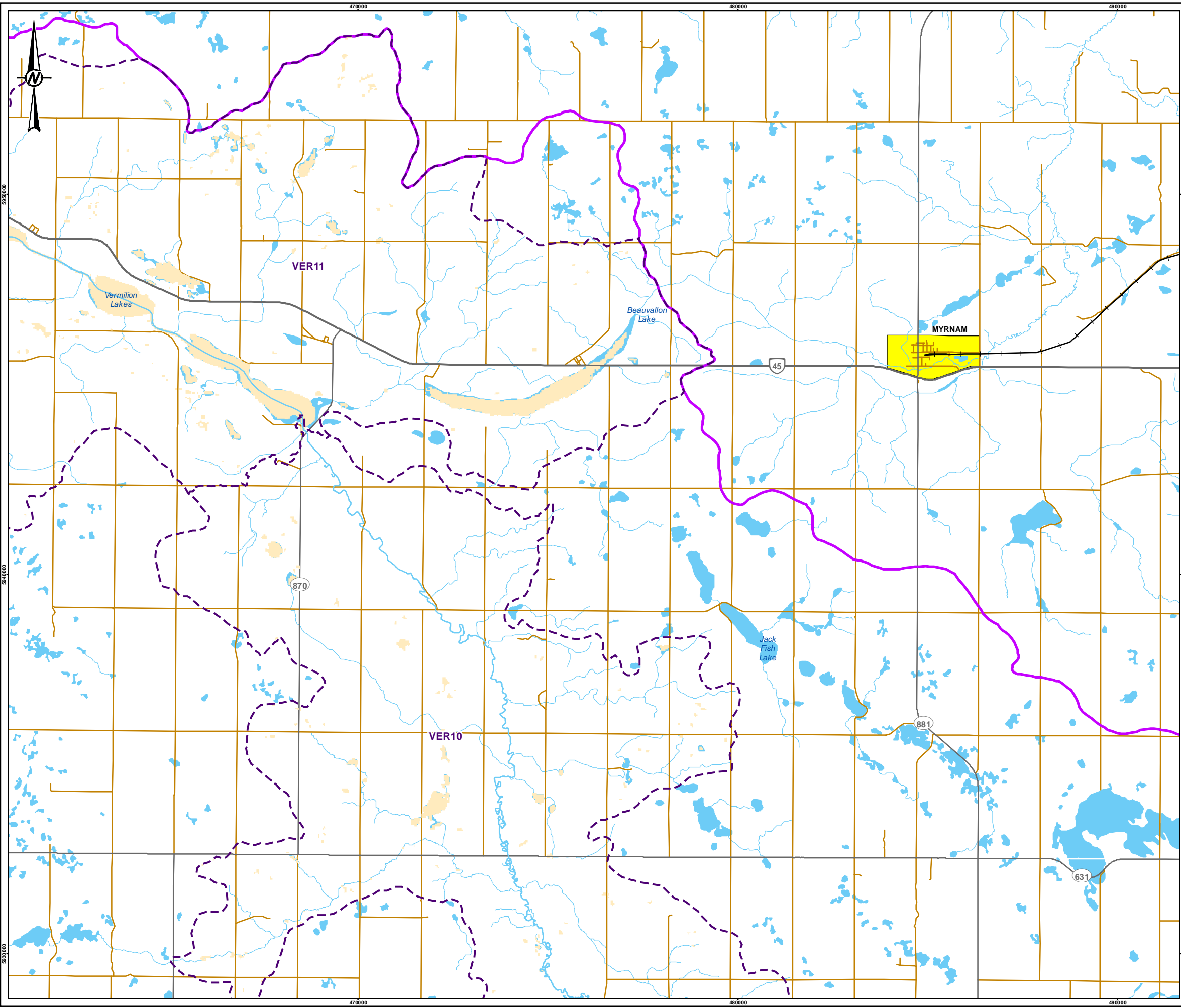
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B10-f**

PATH: I:\2016\1534932\Maping\Map\Output\1534932\_Landcover\_Change\_PerReach.mxd PRINTED ON: 2016-03-21 AT: 3:57:40 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





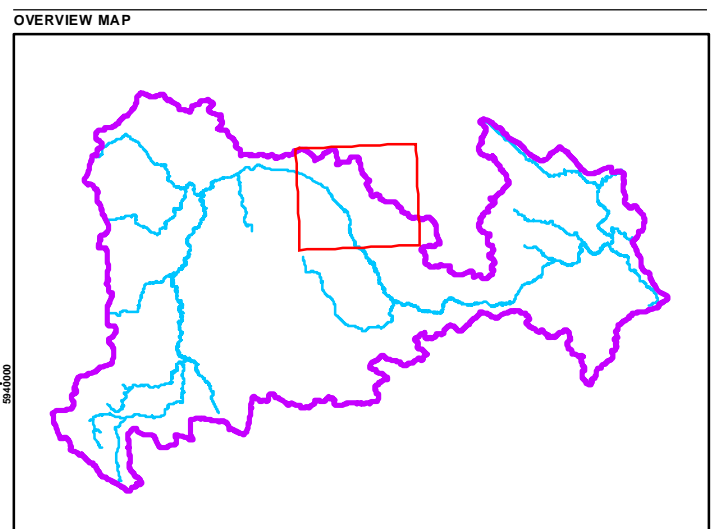
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- <math>< -100</math>
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

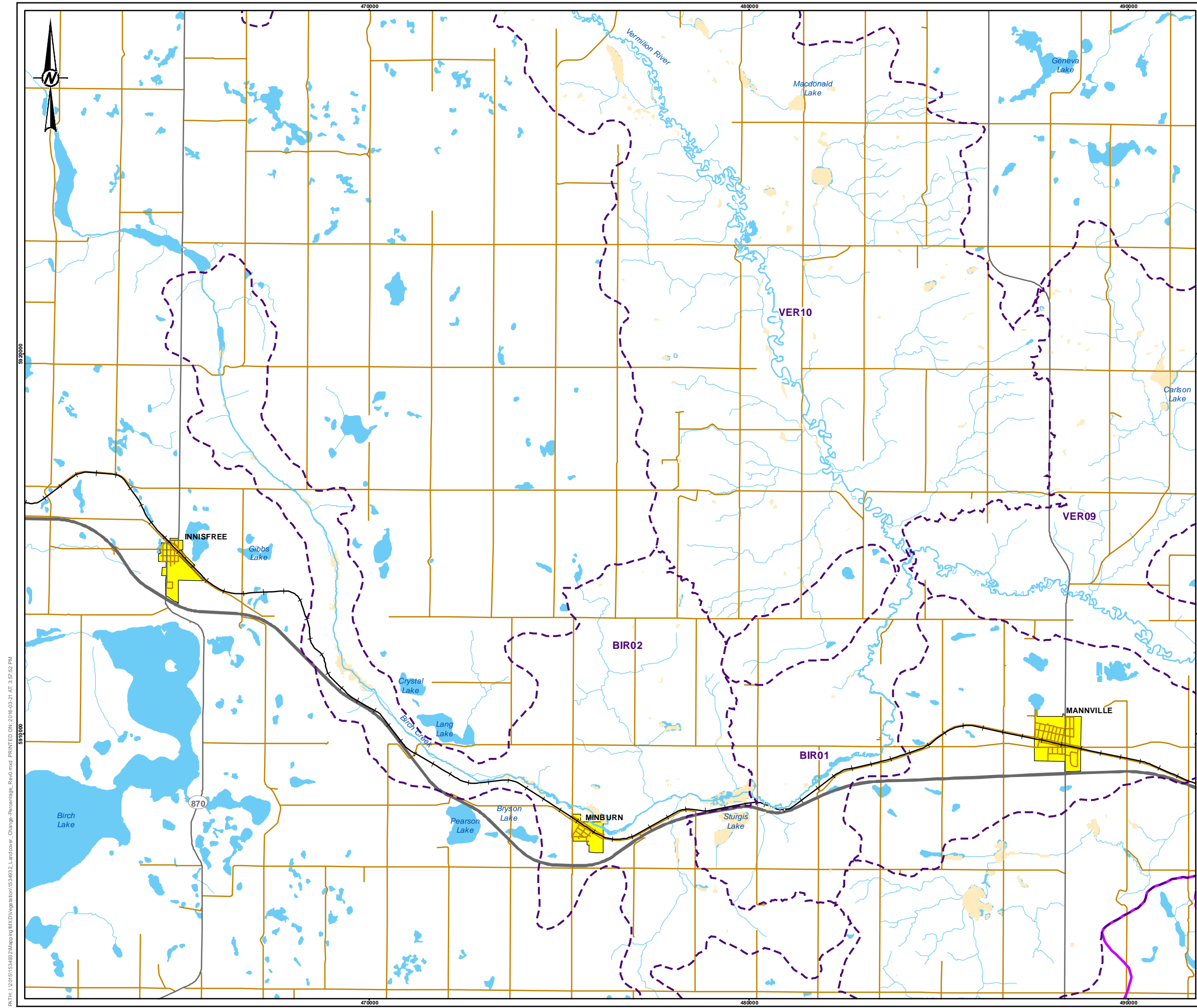
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:46 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



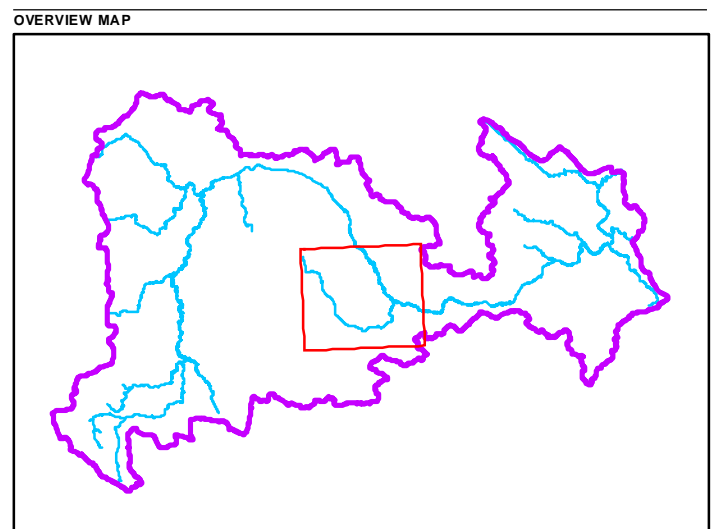
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

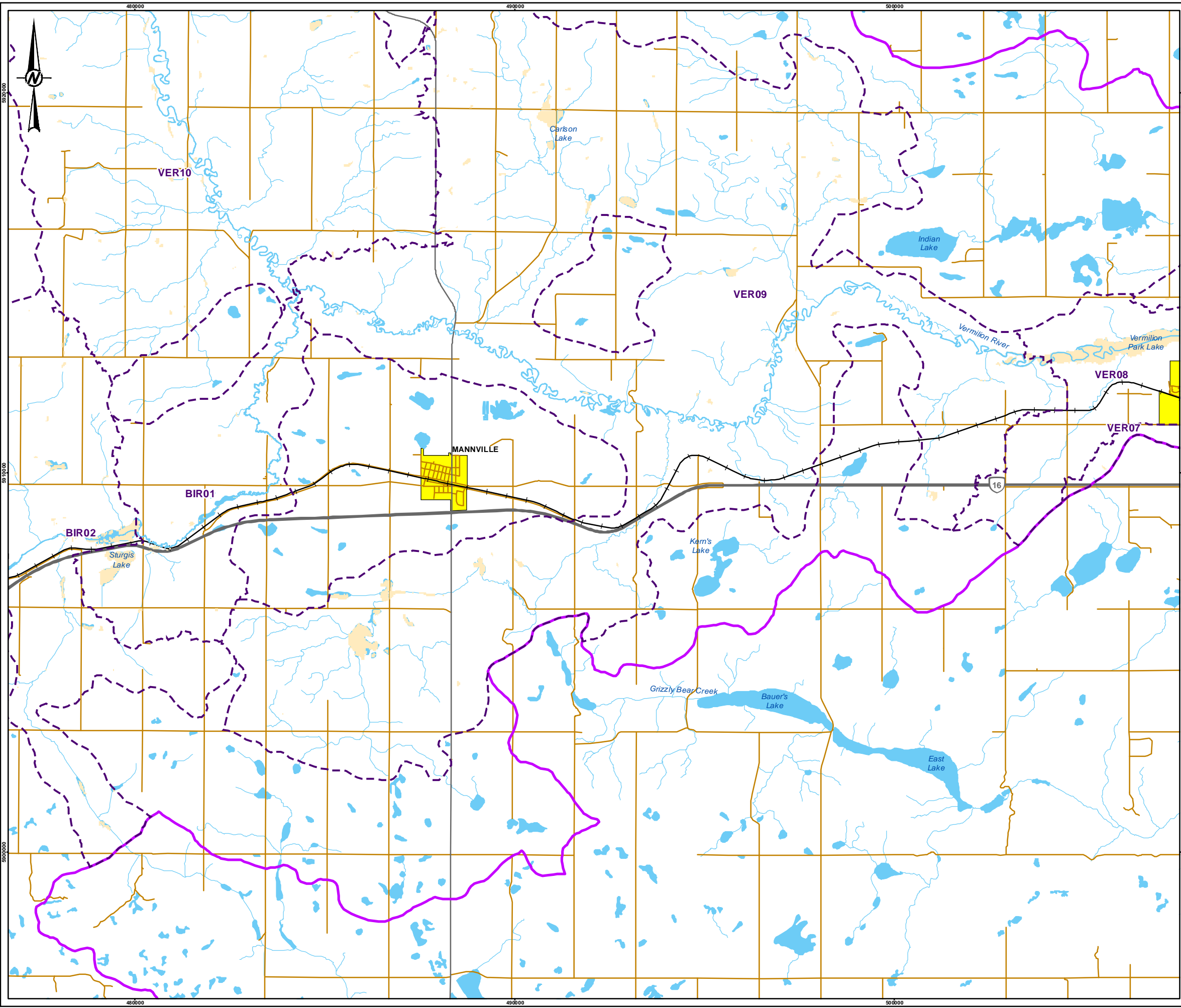
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-h

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:52 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

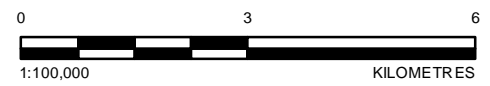
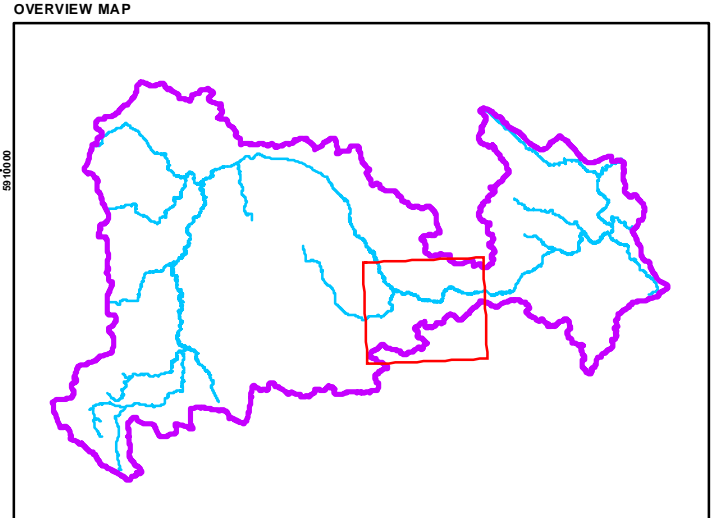


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

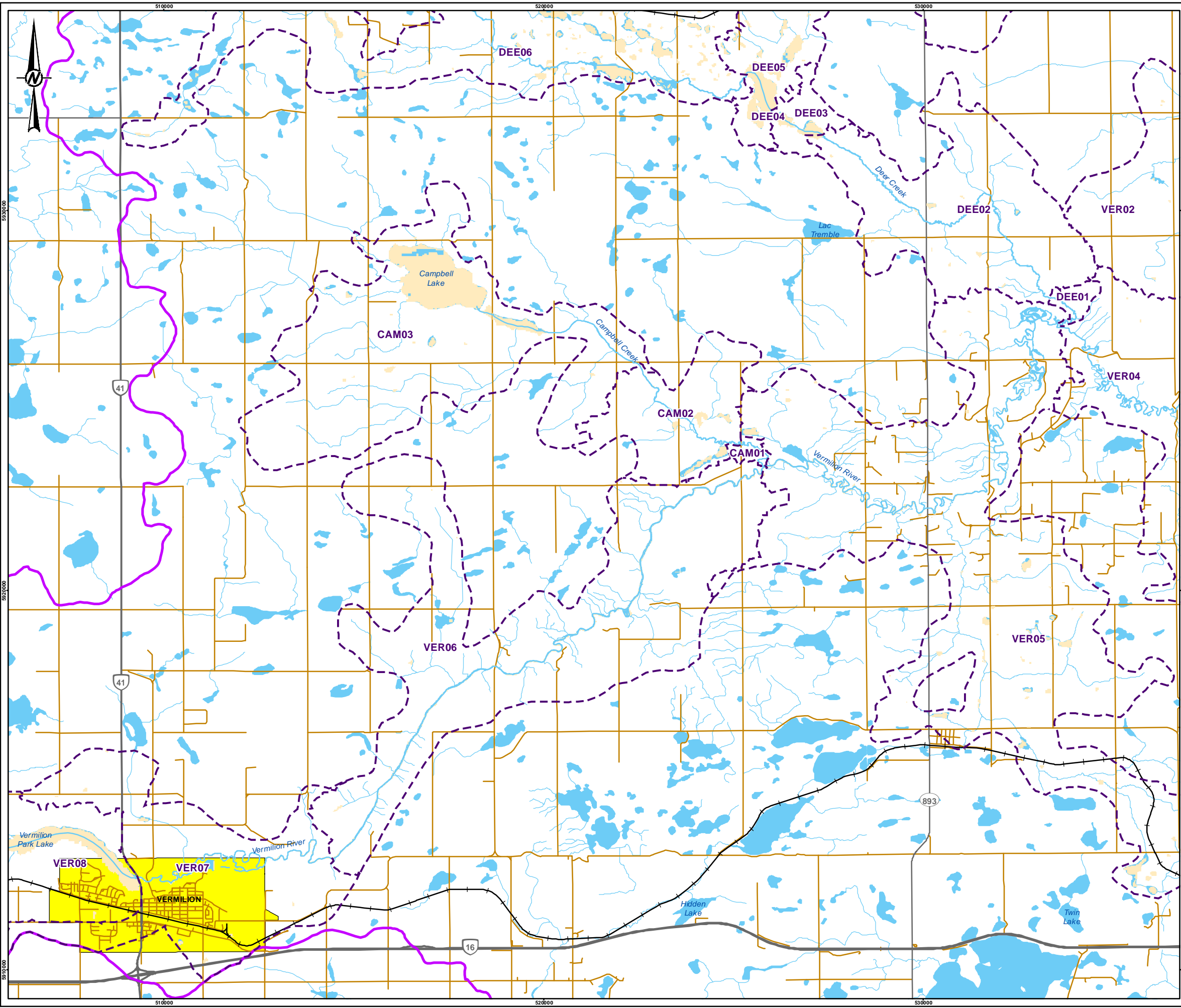
CONSULTANT	DATE
	YYYY-MM-DD
	DESIGNED
	PREPARED
	REVIEWED
	APPROVED

PROJECT NO. 1534932 CONTROL REV. A FIGURE B10-i

PATH: I:\2016\1534932\Maping\MXD\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:57:57 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**LEGEND**

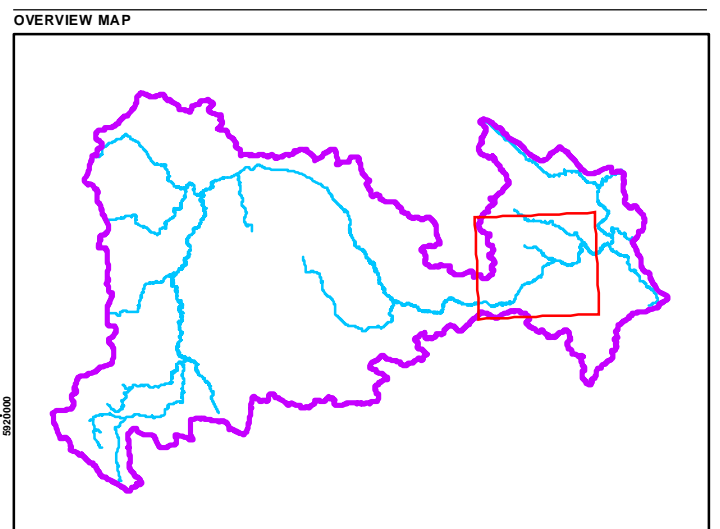
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

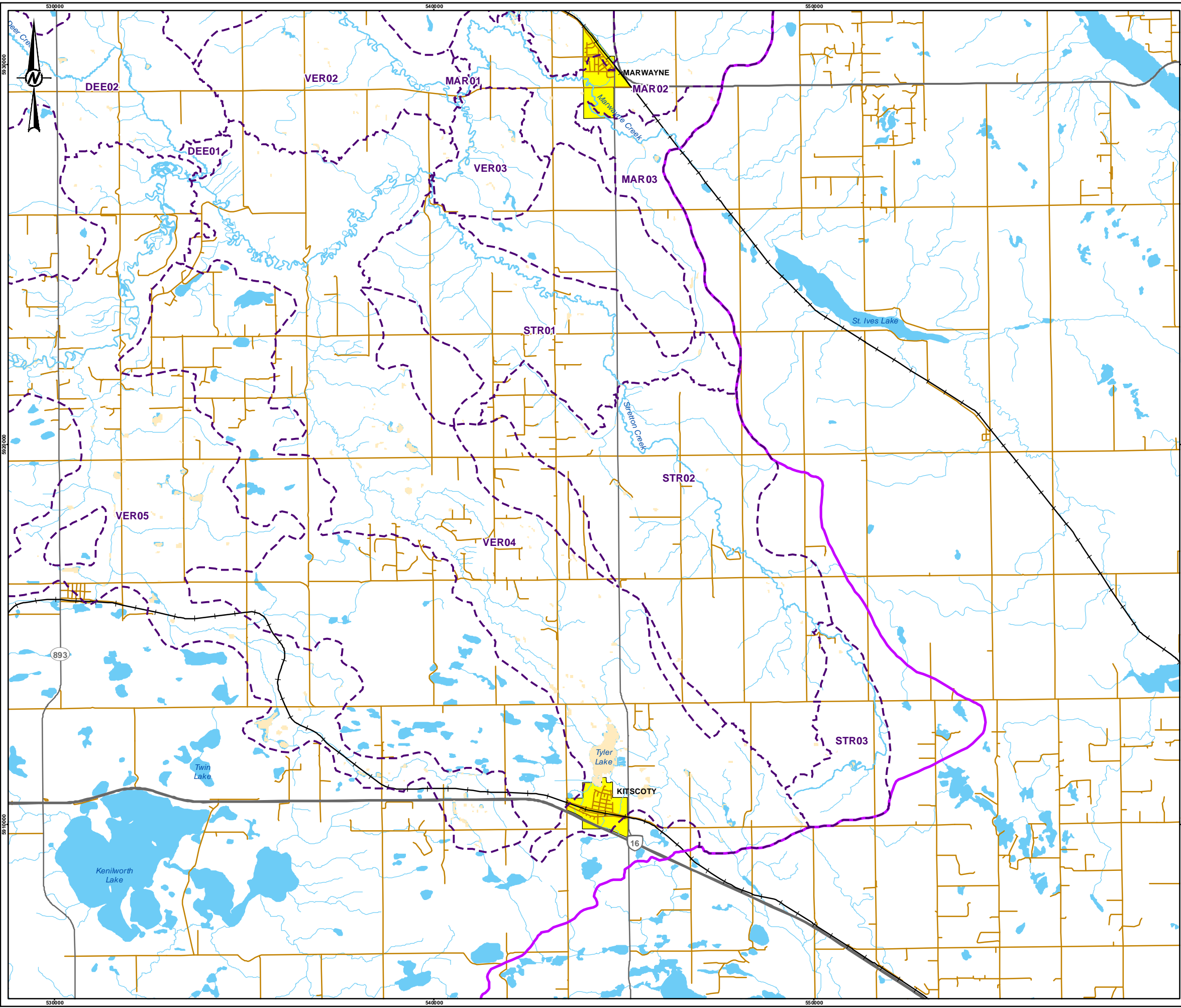
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:02 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

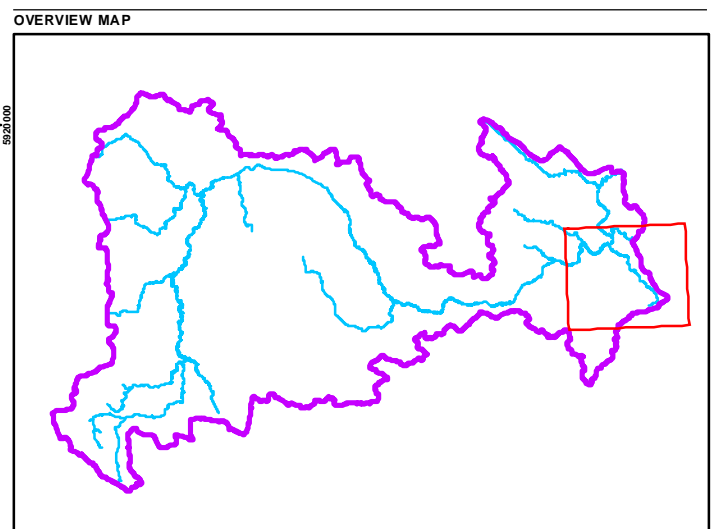


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

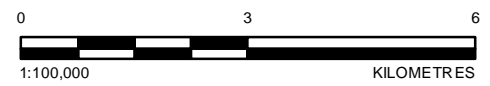
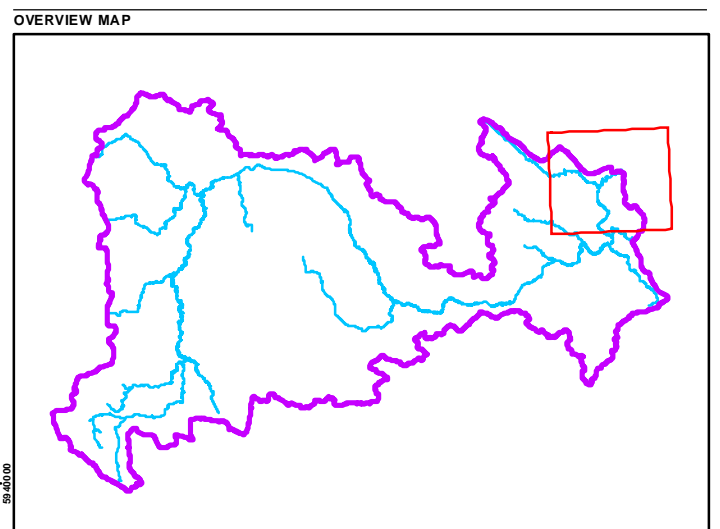
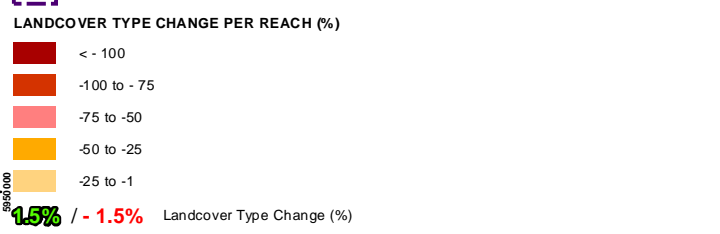
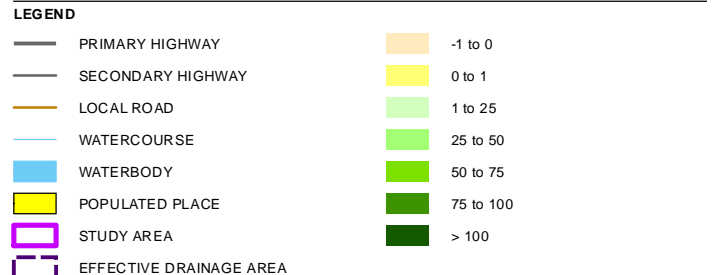
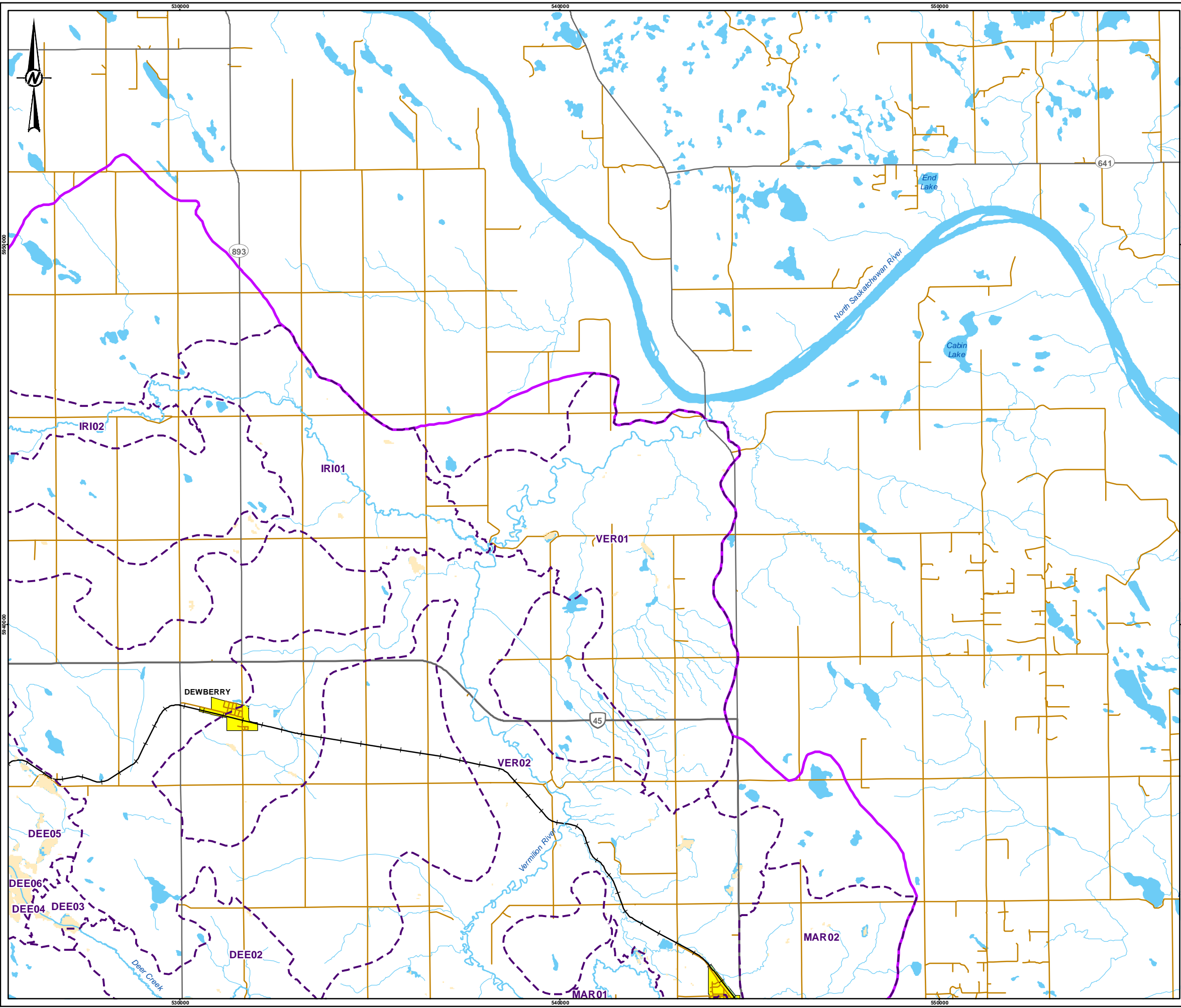
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Review.mxd PRINTED ON: 2016-03-21 AT: 3:59:08 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



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 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

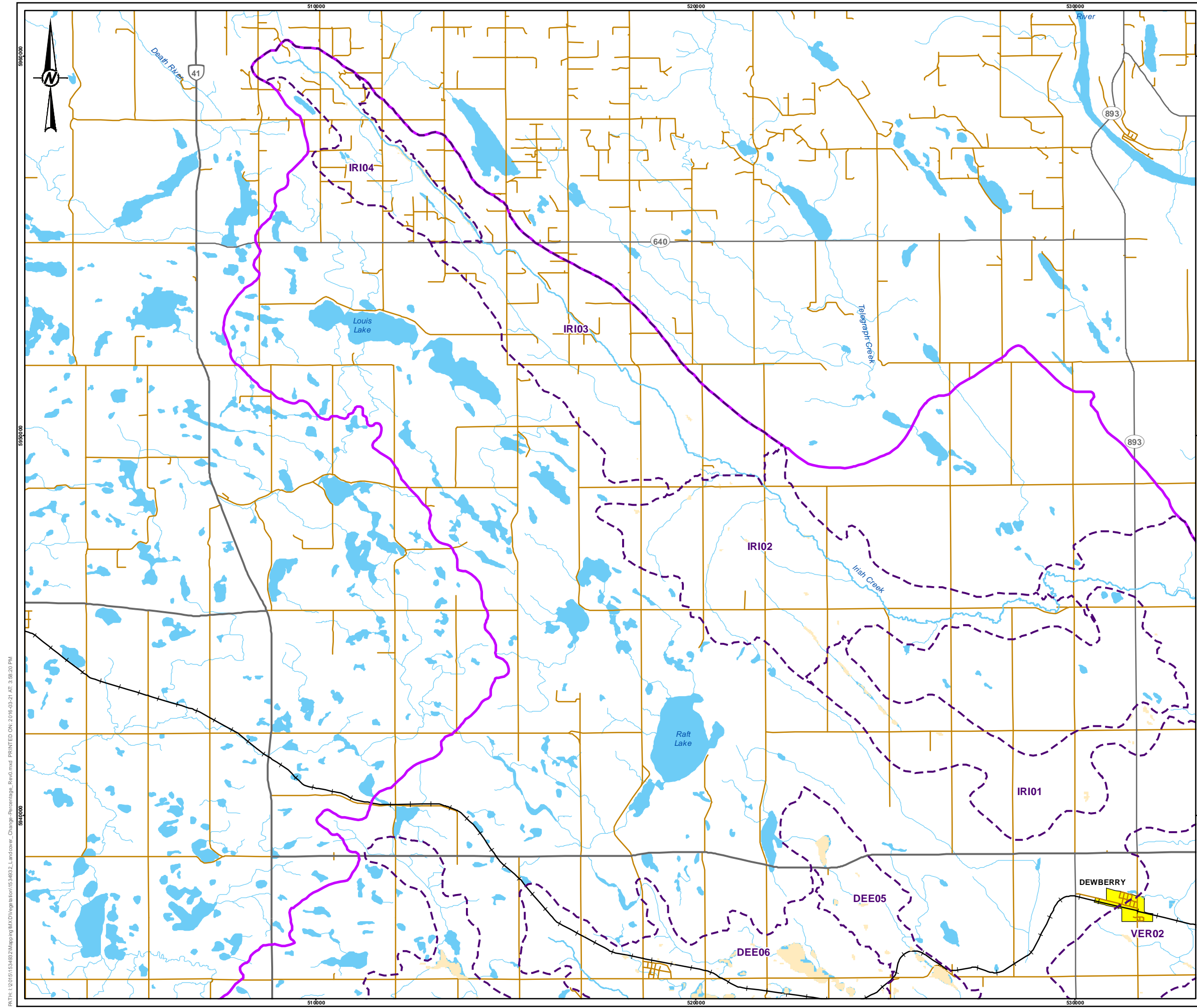
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WATER

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:15 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





**LEGEND**

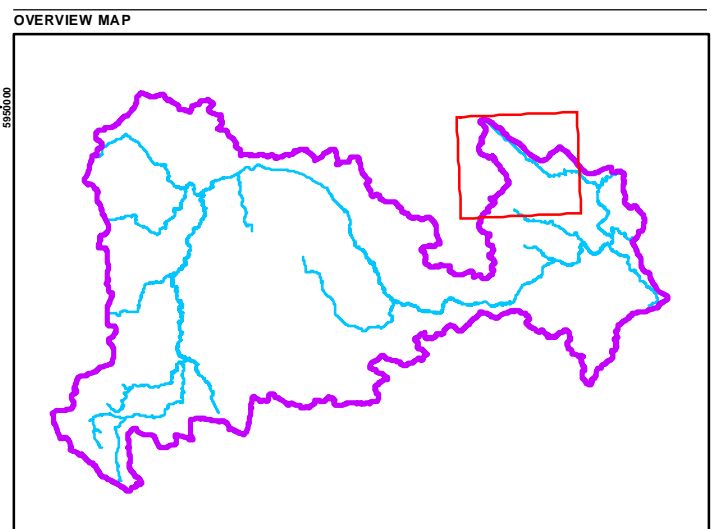
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT  
**NORTH SASKATCHEWAN WATERSHED ALLIANCE**

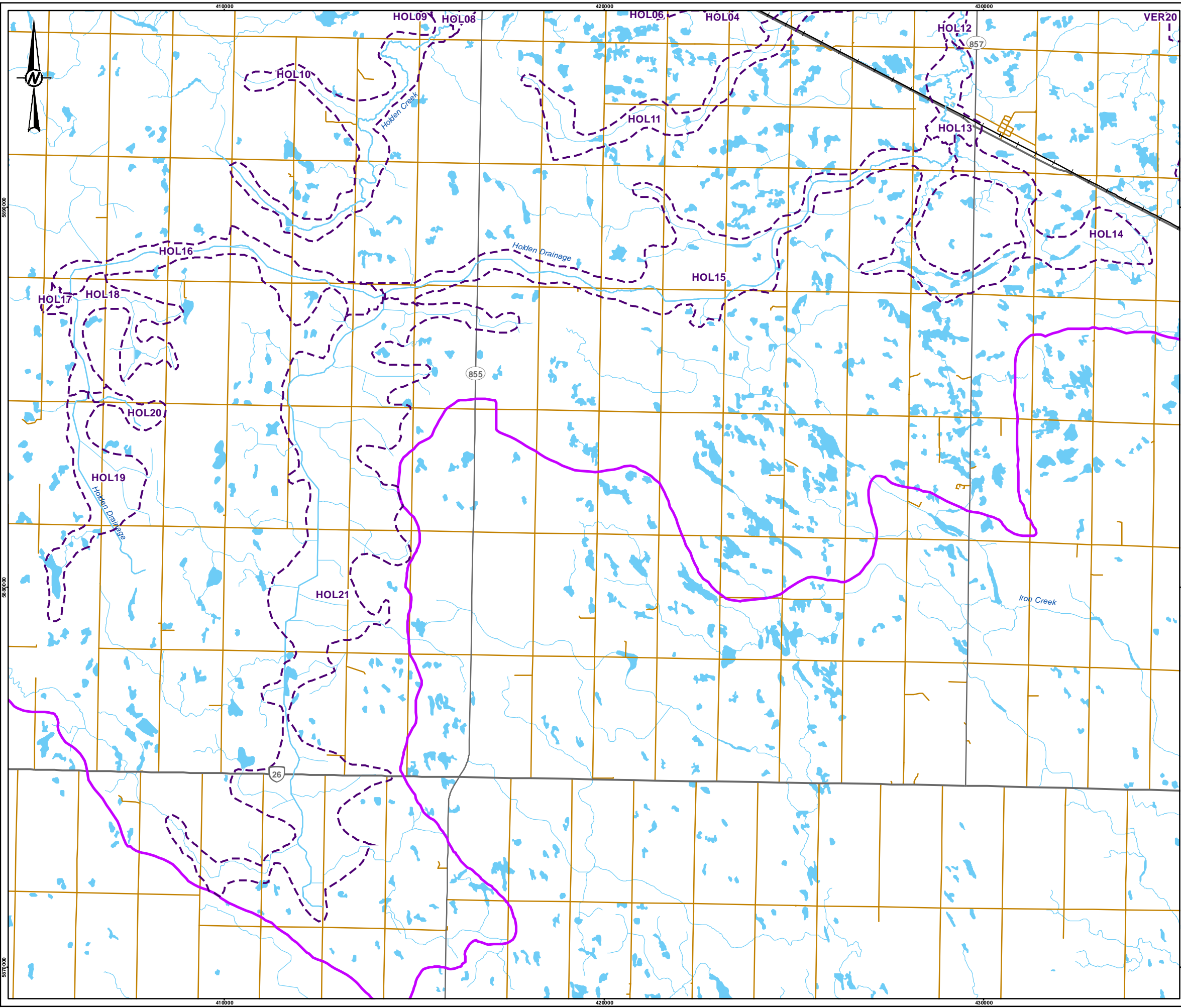
PROJECT  
**AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER**

TITLE  
**LANDCOVER CHANGE 1990 TO 2010 - WATER**

CONSULTANT	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B10-m**

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Overview.aprx Printed on: 2016-03-21 AM 3:59:20 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



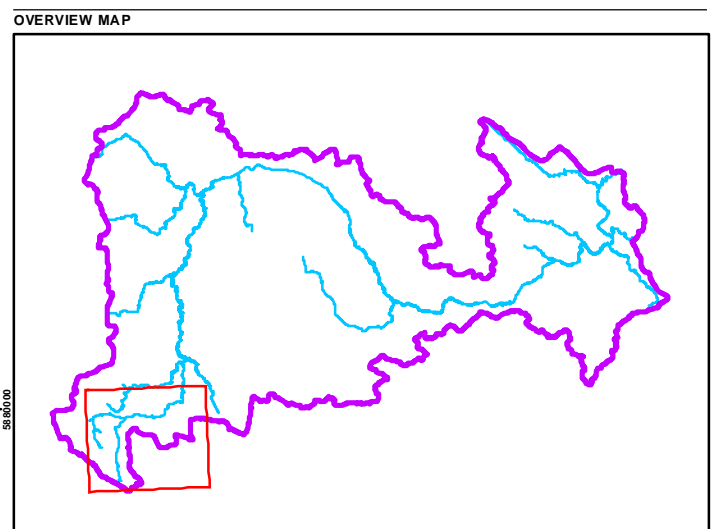
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

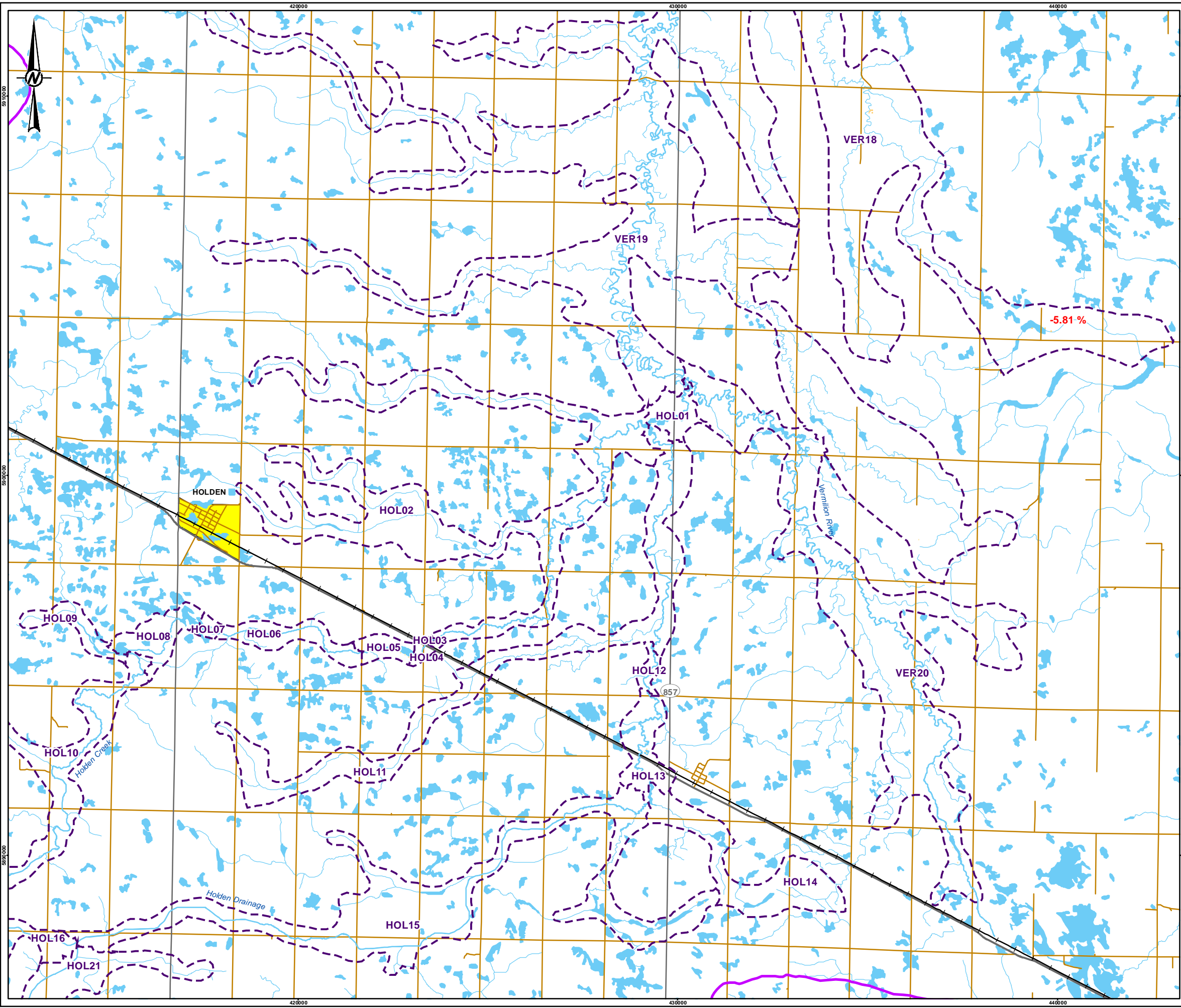
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-a

P:\TM\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:27 PM  
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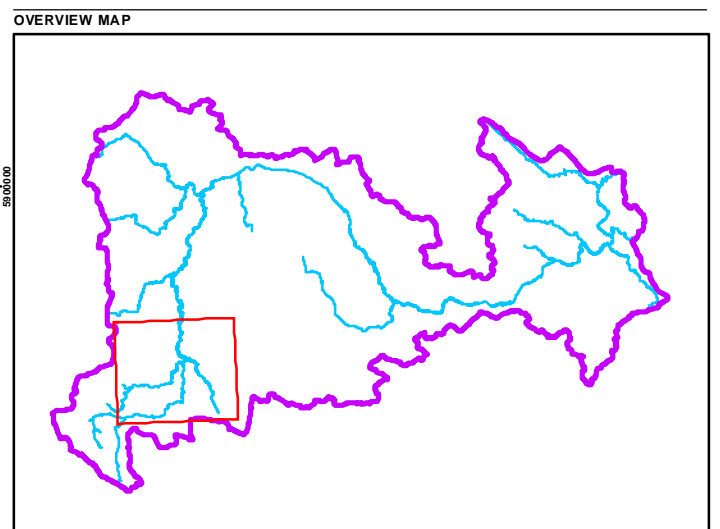
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

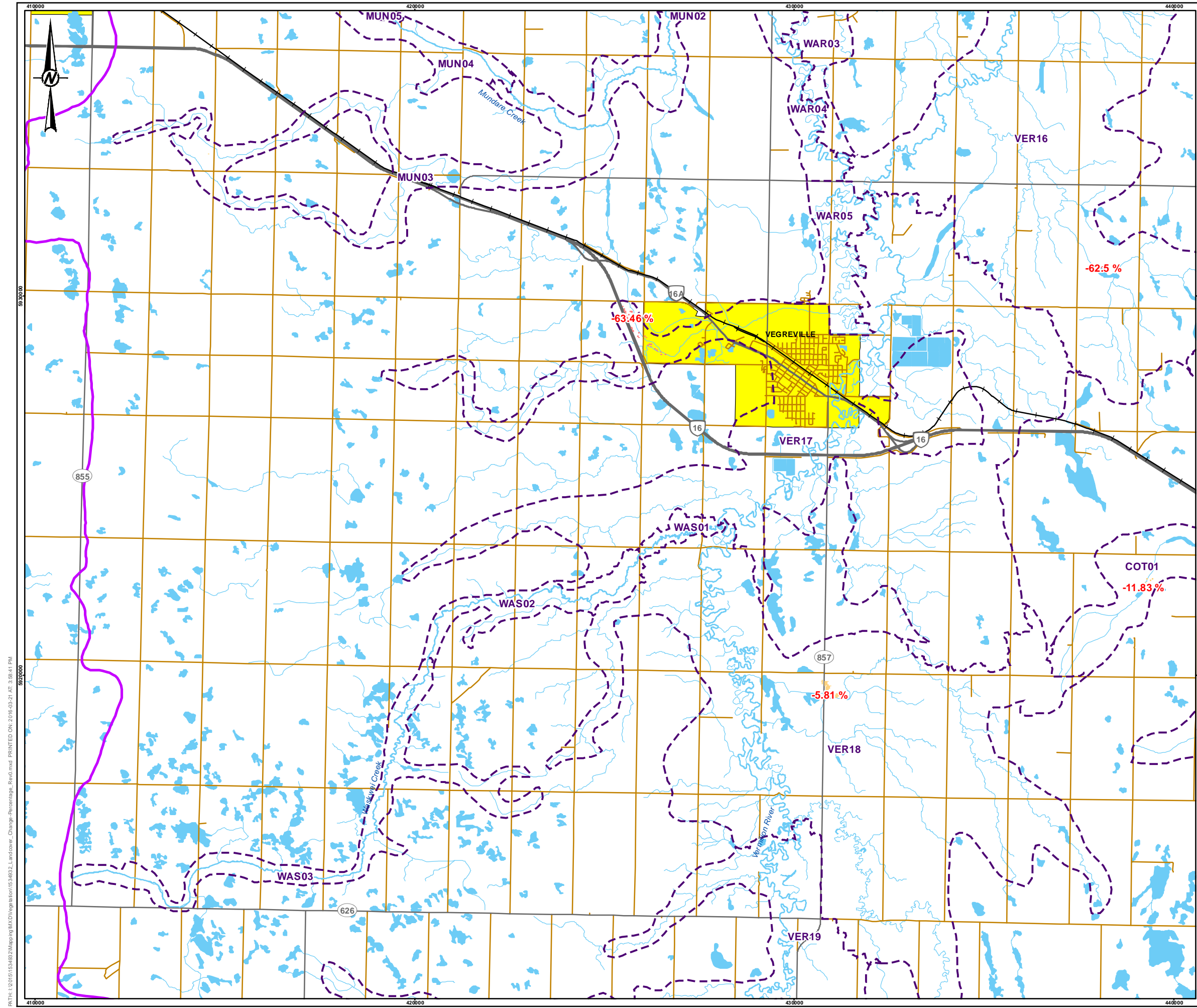
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B1-1b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:33 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





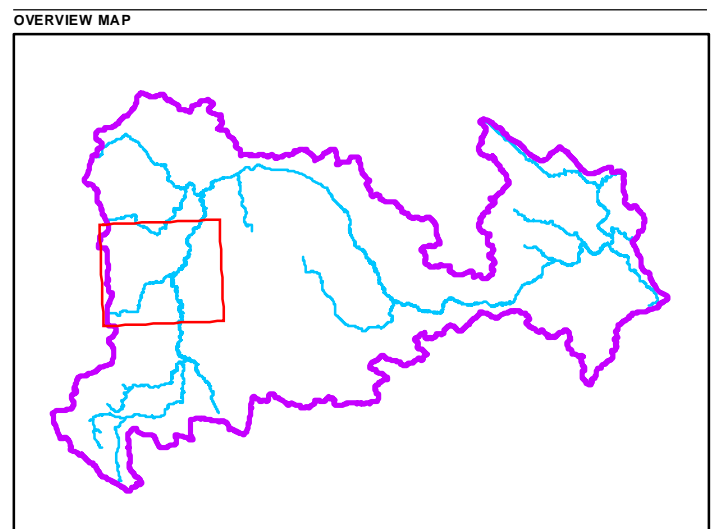
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / -1.5% Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

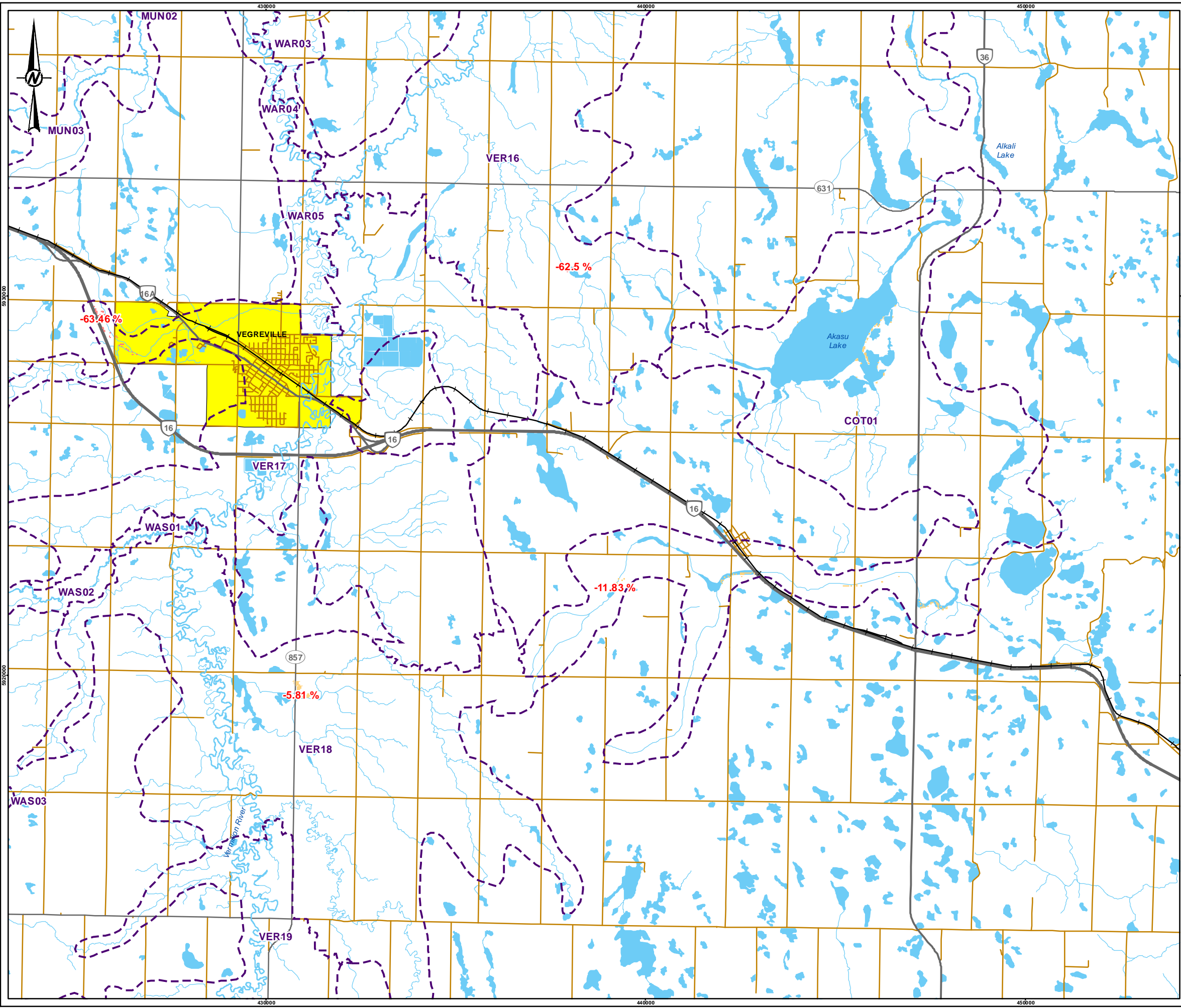
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 3:59:44 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

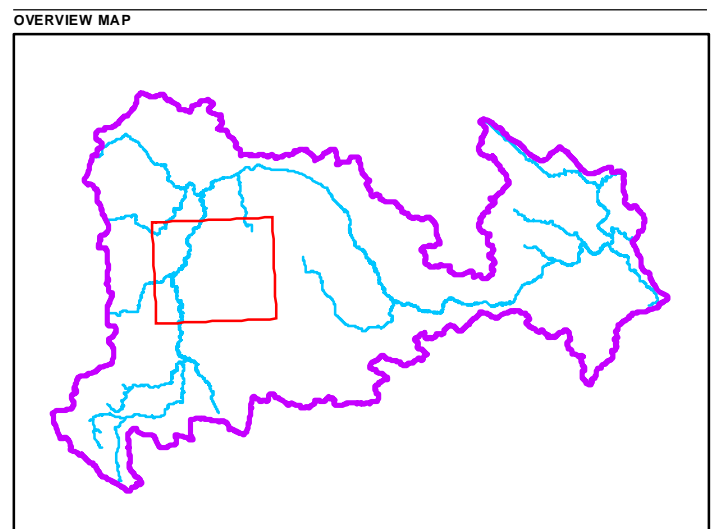


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5%
- Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

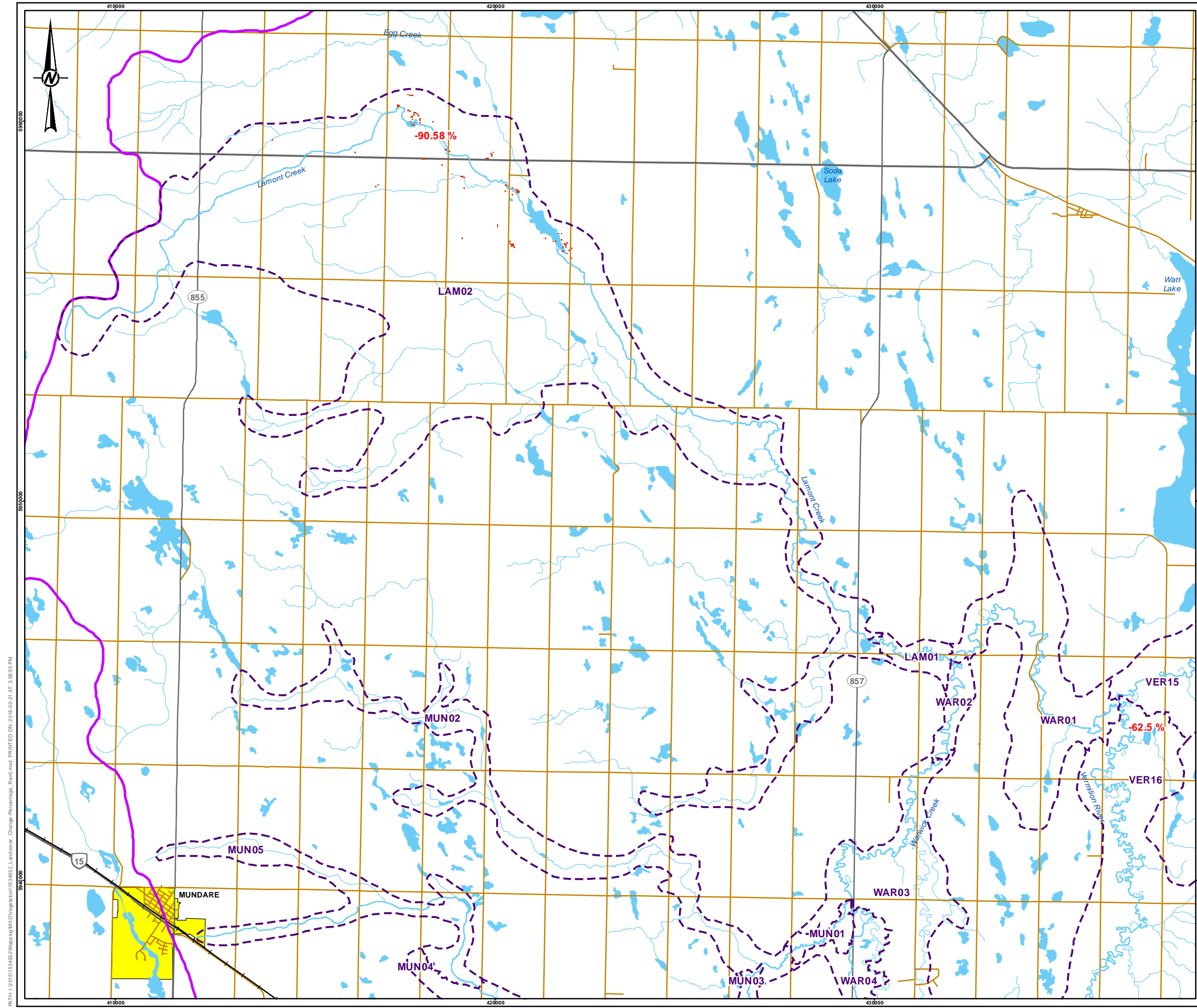
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-d

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:47 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**LEGEND**

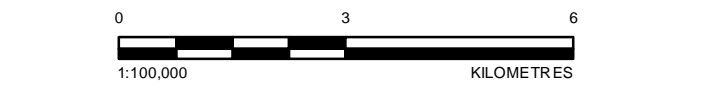
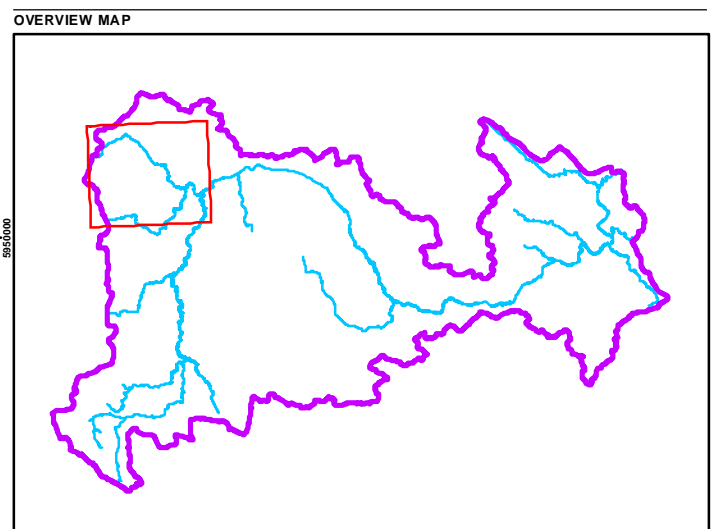
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100
-100 to - 75
-75 to -50
-50 to -25
-25 to -1
1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

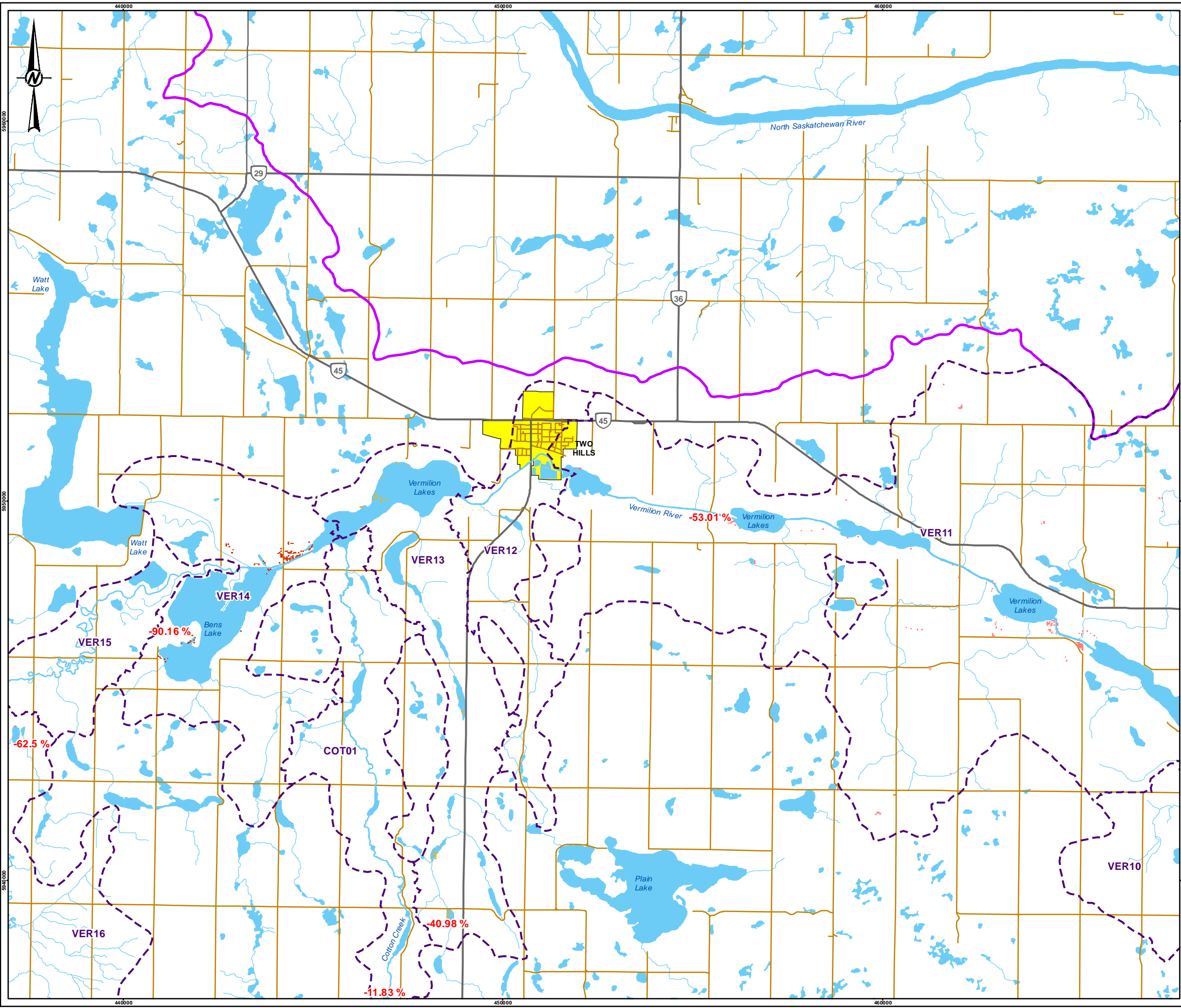
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:58:53 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4 (8)





**LEGEND**

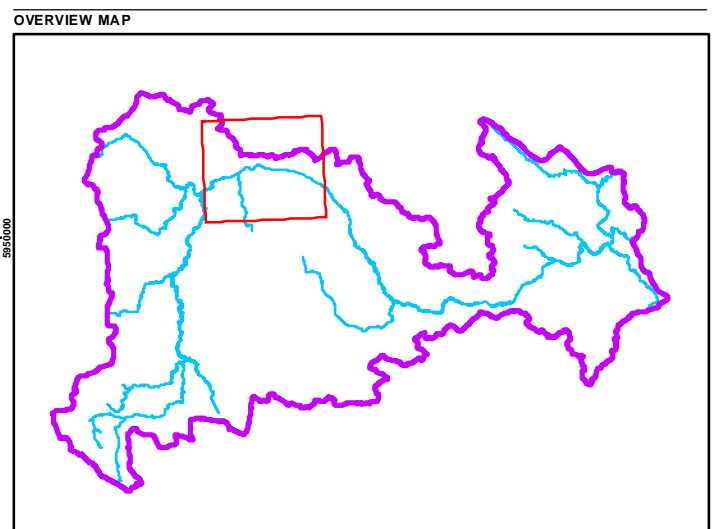
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%

Landcover Type Change (%)

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

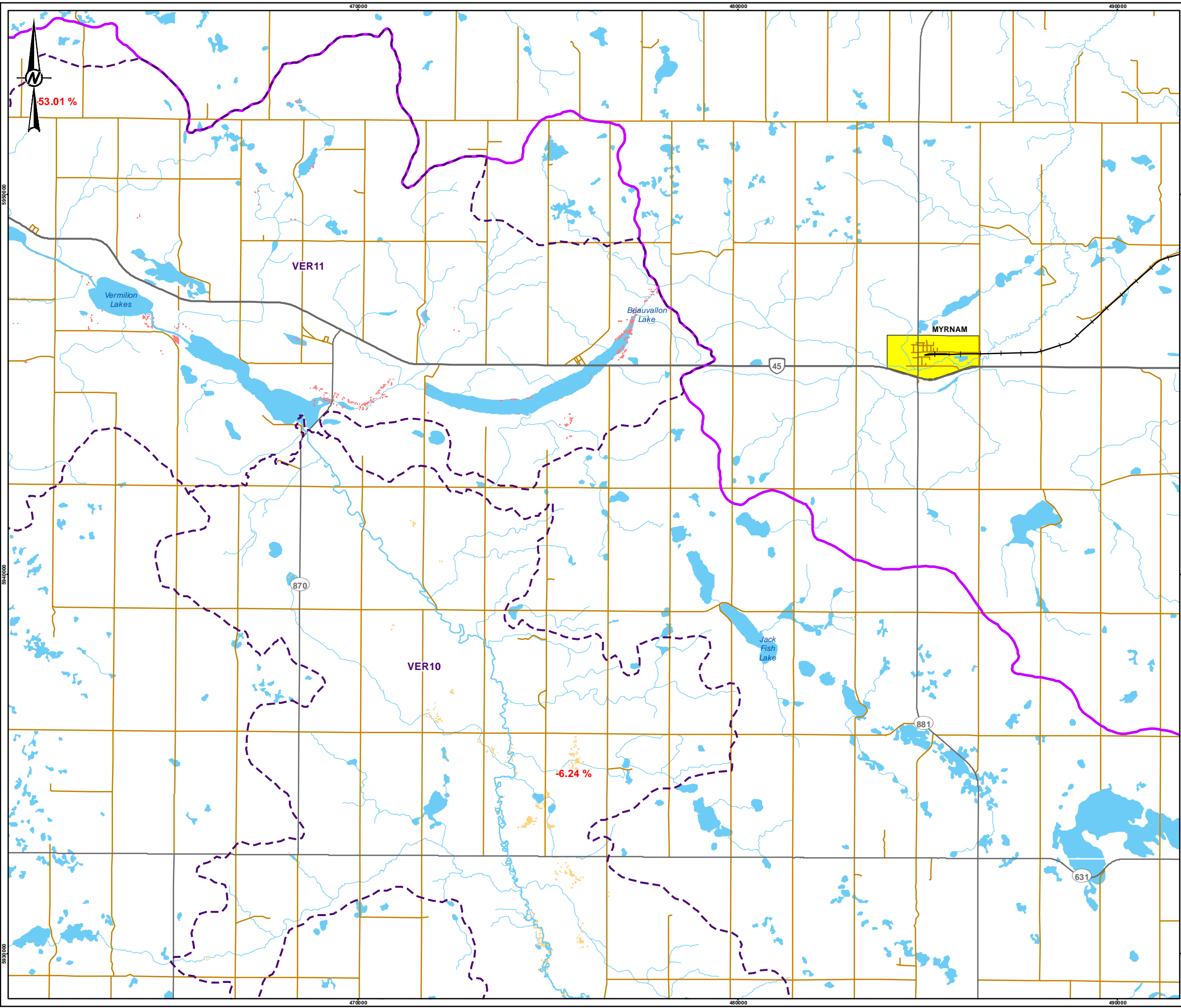
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-f

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Report.mxd PRINTED ON: 2016-03-21 AT: 3:59:59 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



**LEGEND**

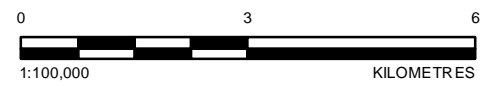
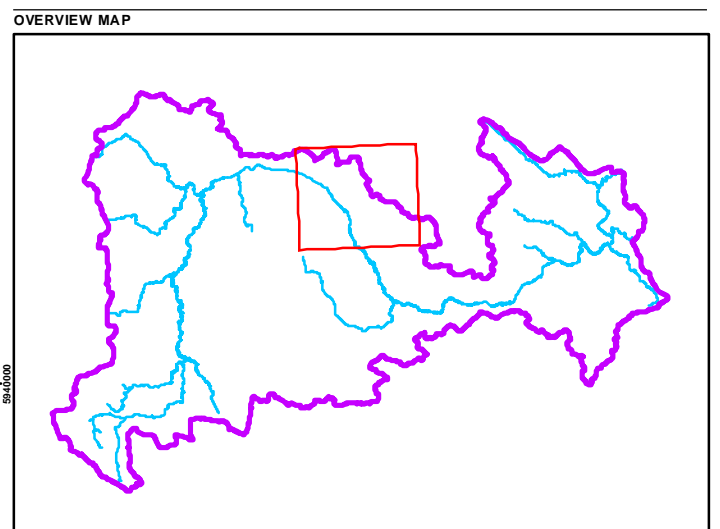
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1
	1 to 1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

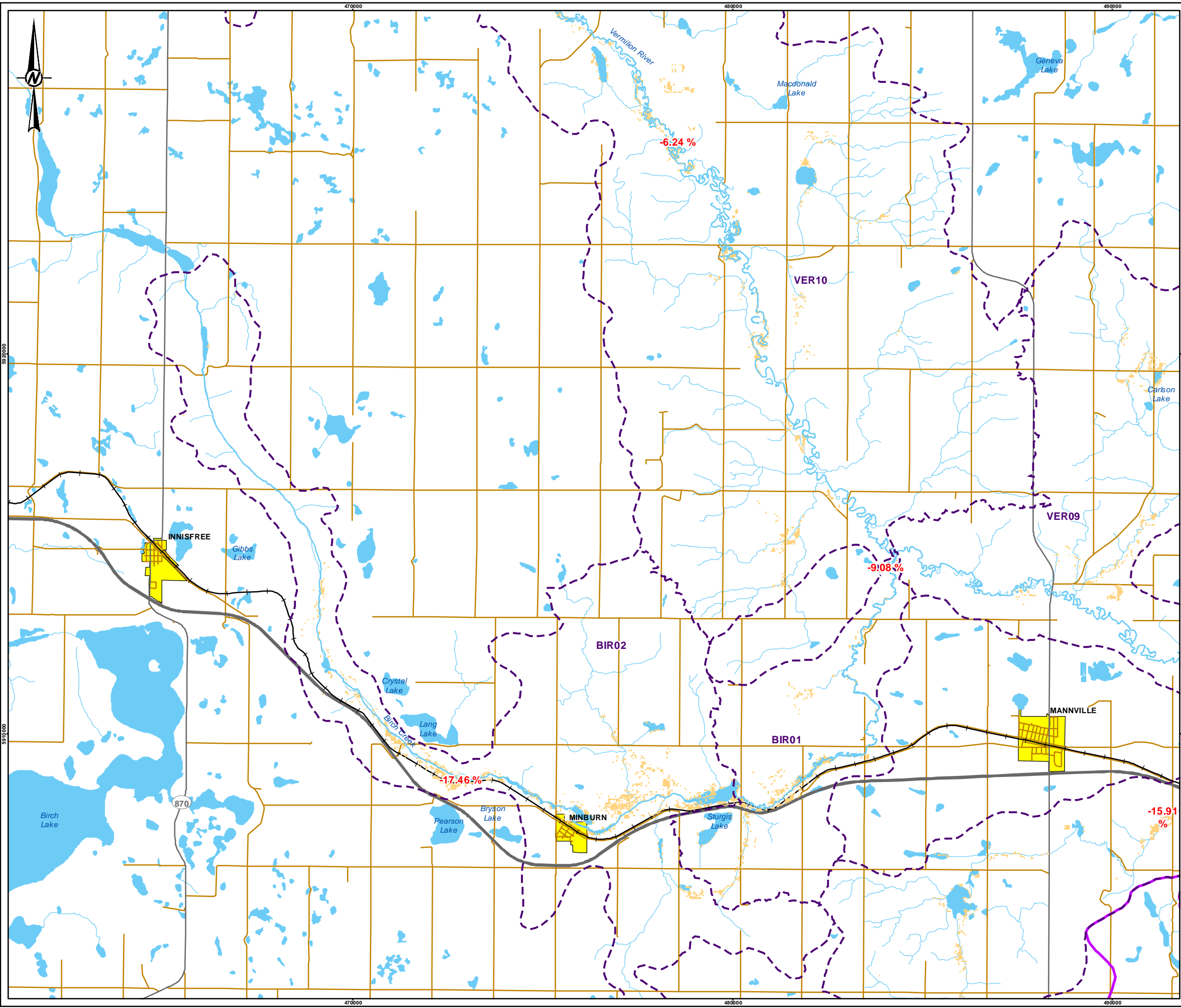
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:05:05 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 6 25mm



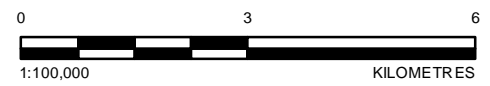
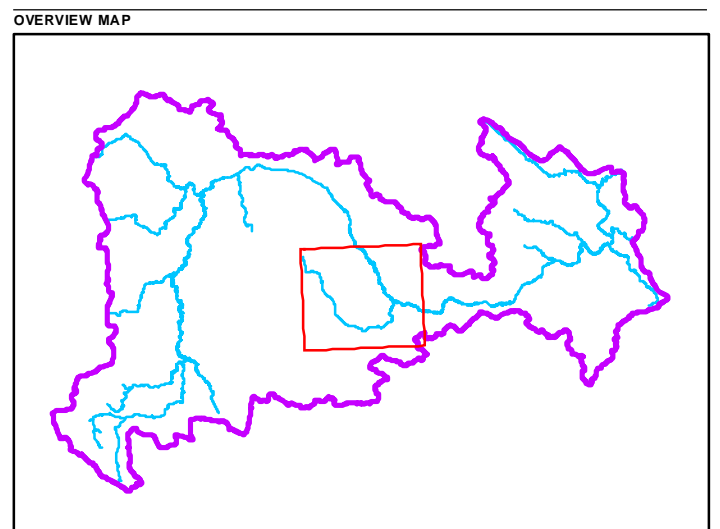
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / - 1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

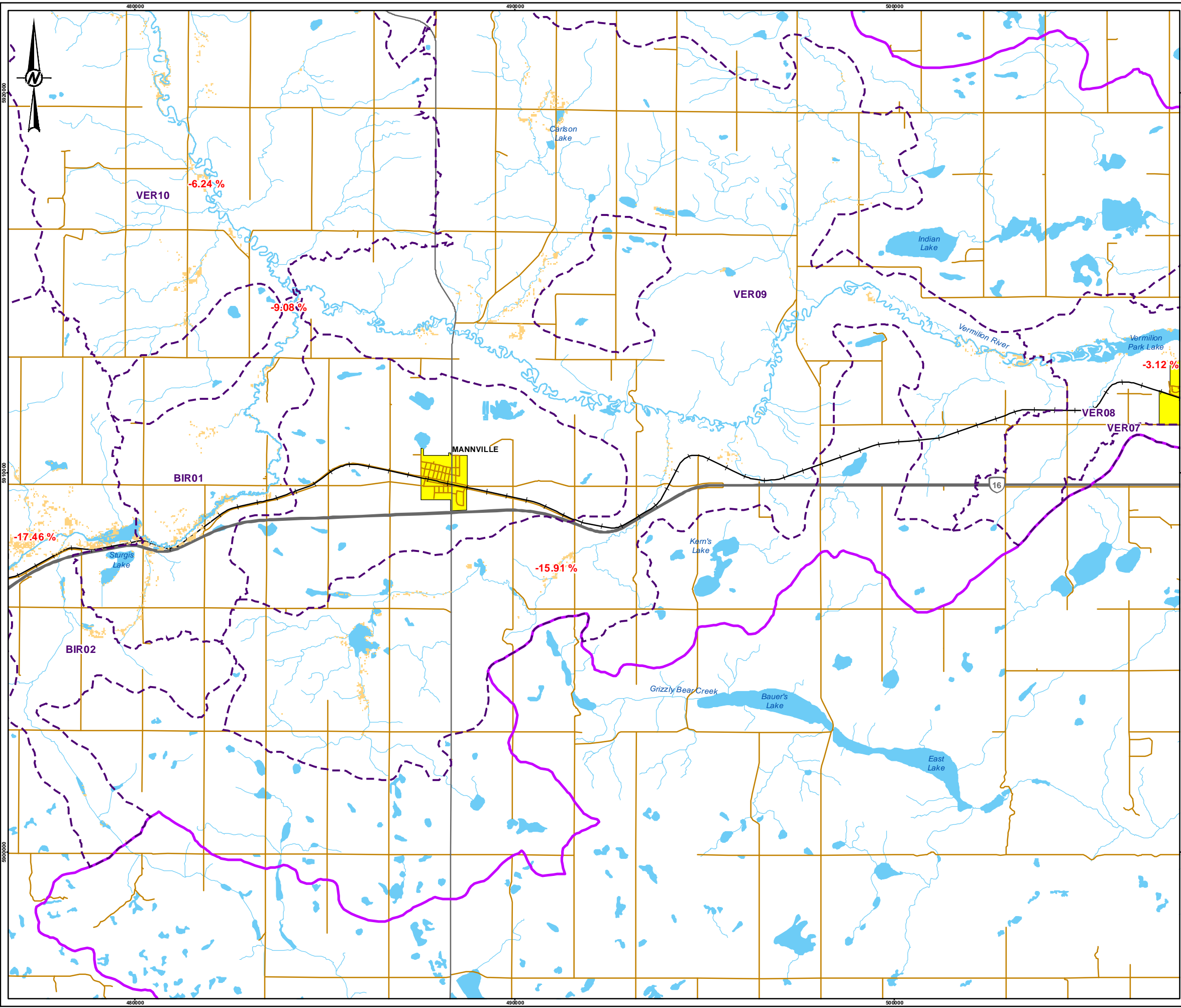
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-h

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:12 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



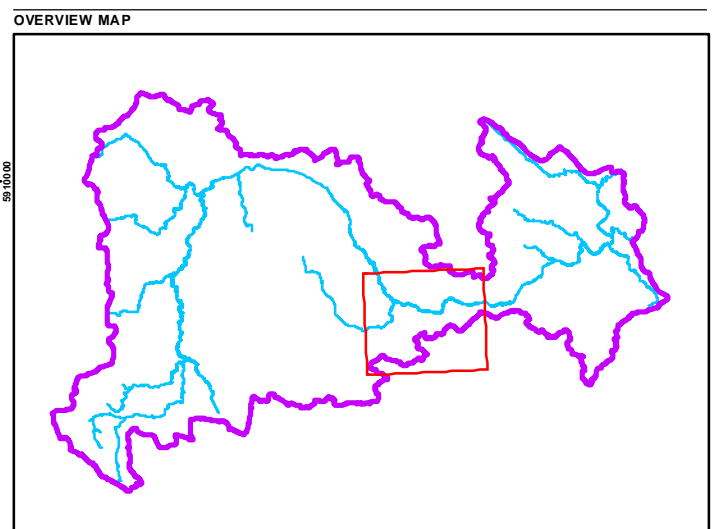


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

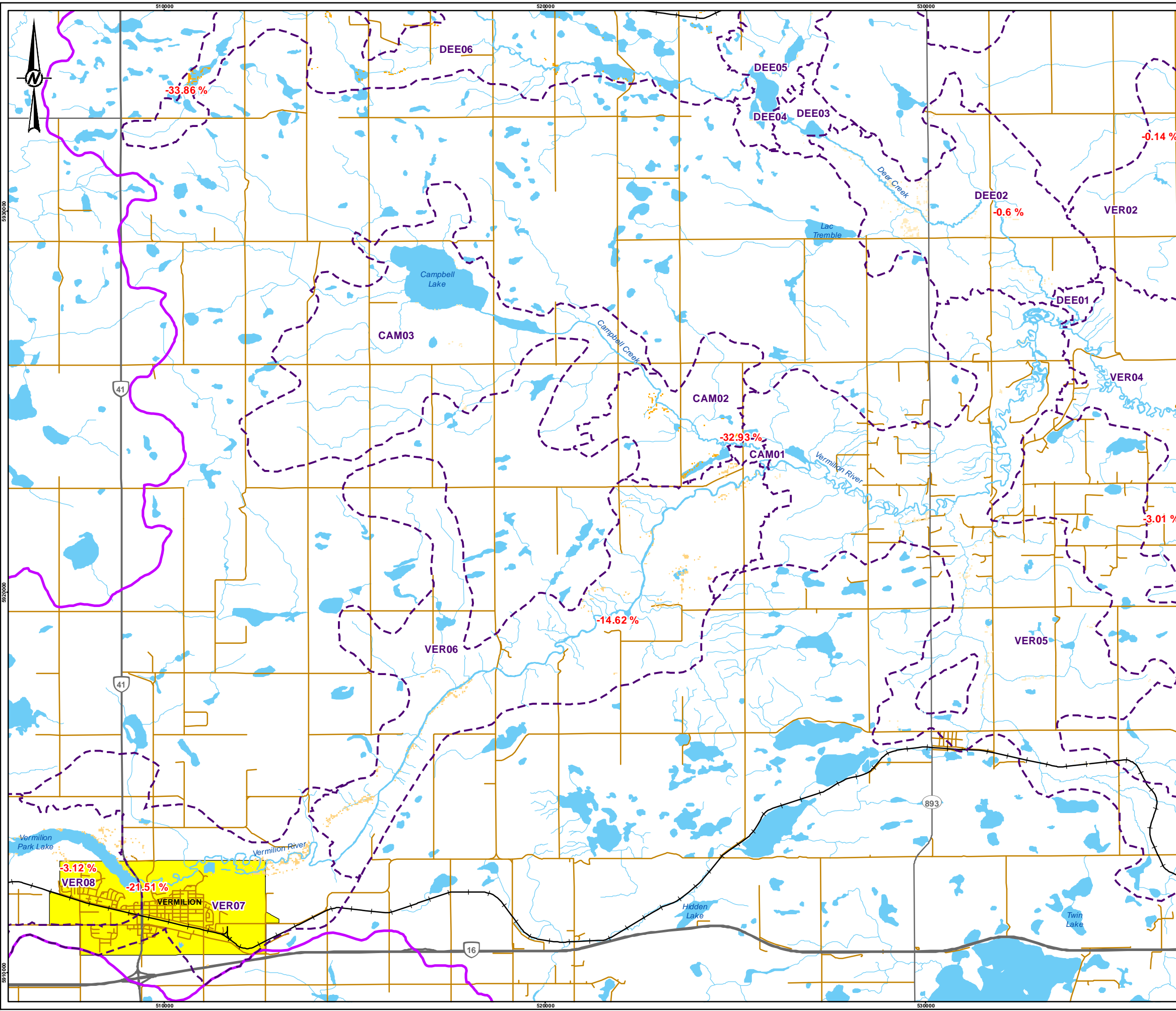
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B11-i

PATH: I:\2016\1534932\Maping\MXD\fig\B11-i\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:50:19 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A11-8



**LEGEND**

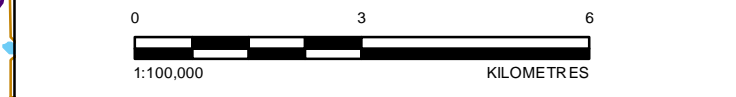
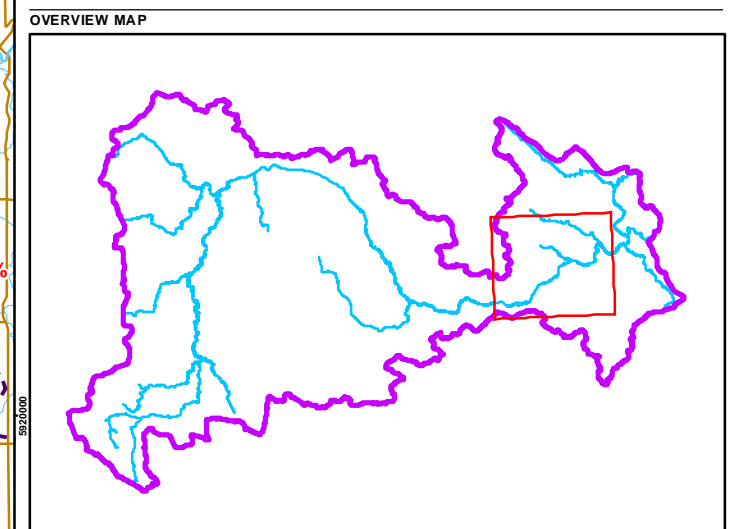
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

1.5% / -1.5% Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

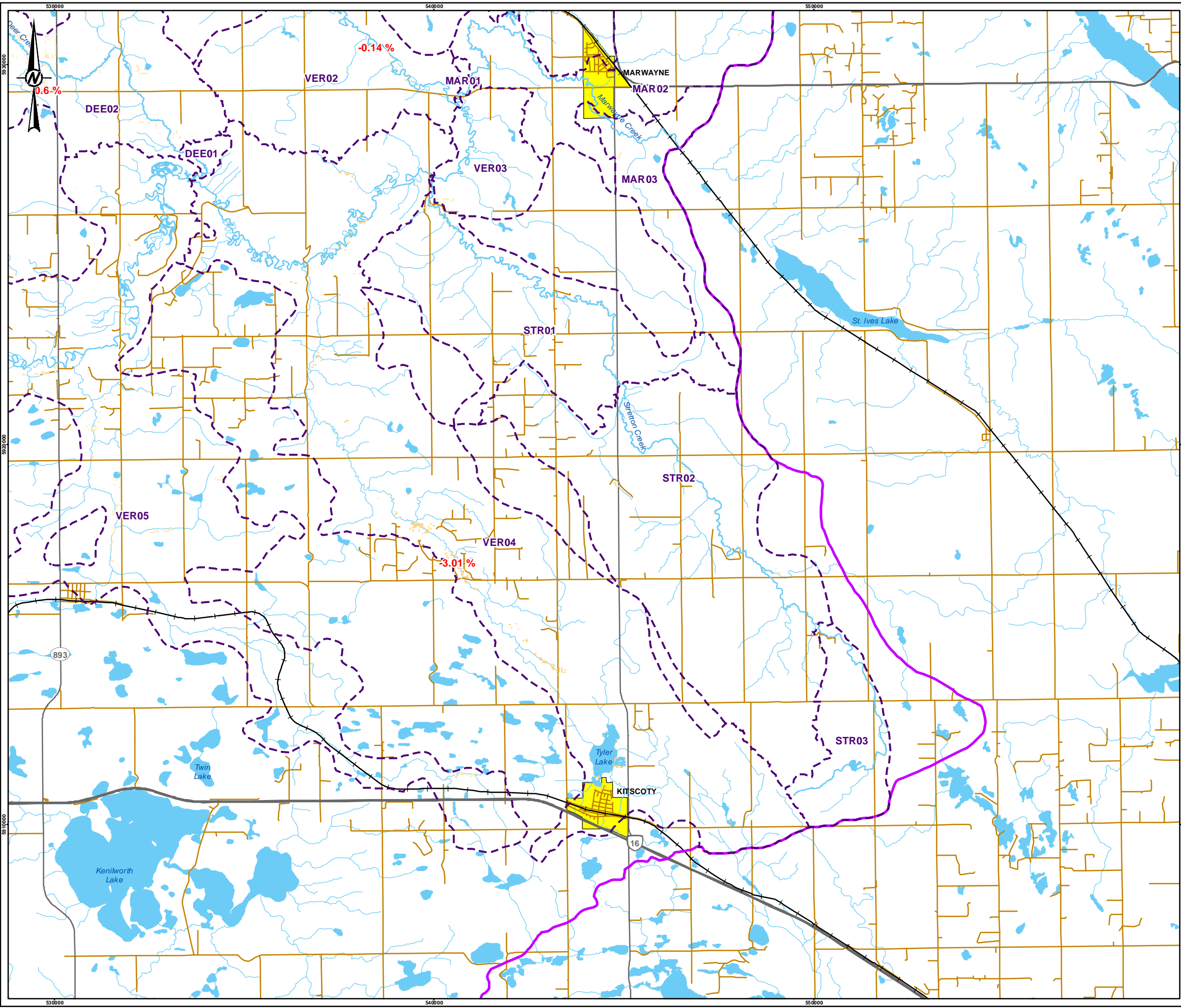
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AM 3:09:26 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4 (8)



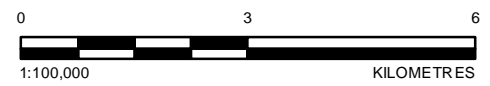
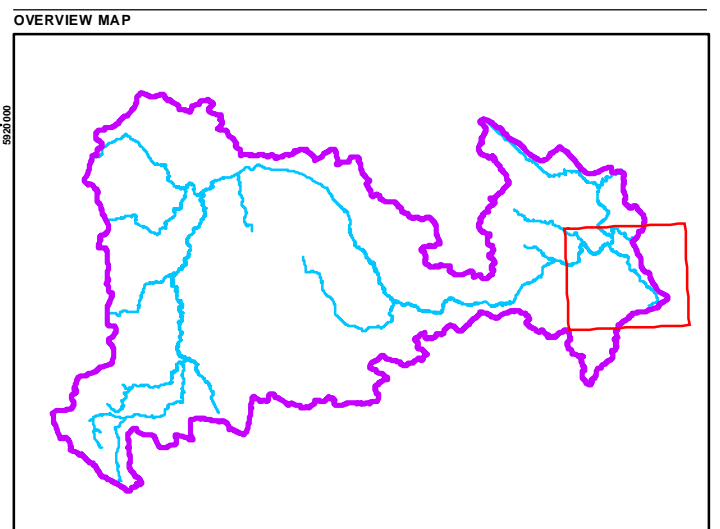
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

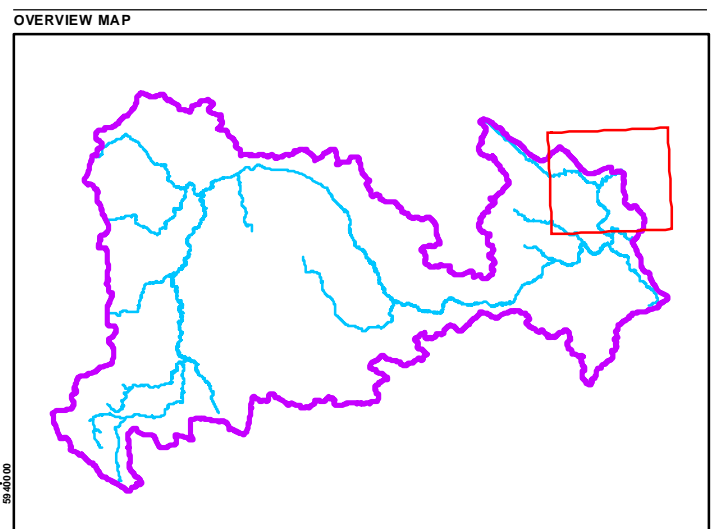
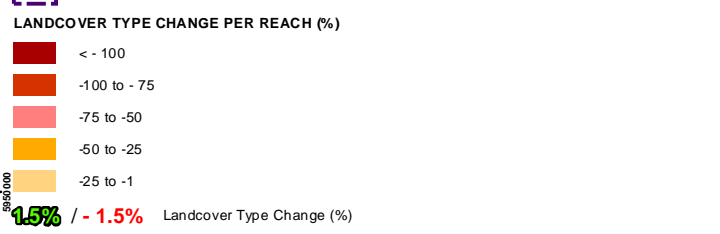
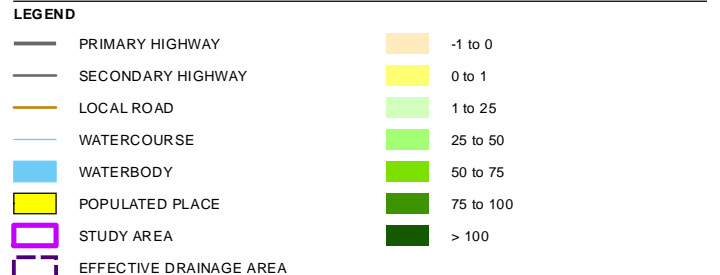
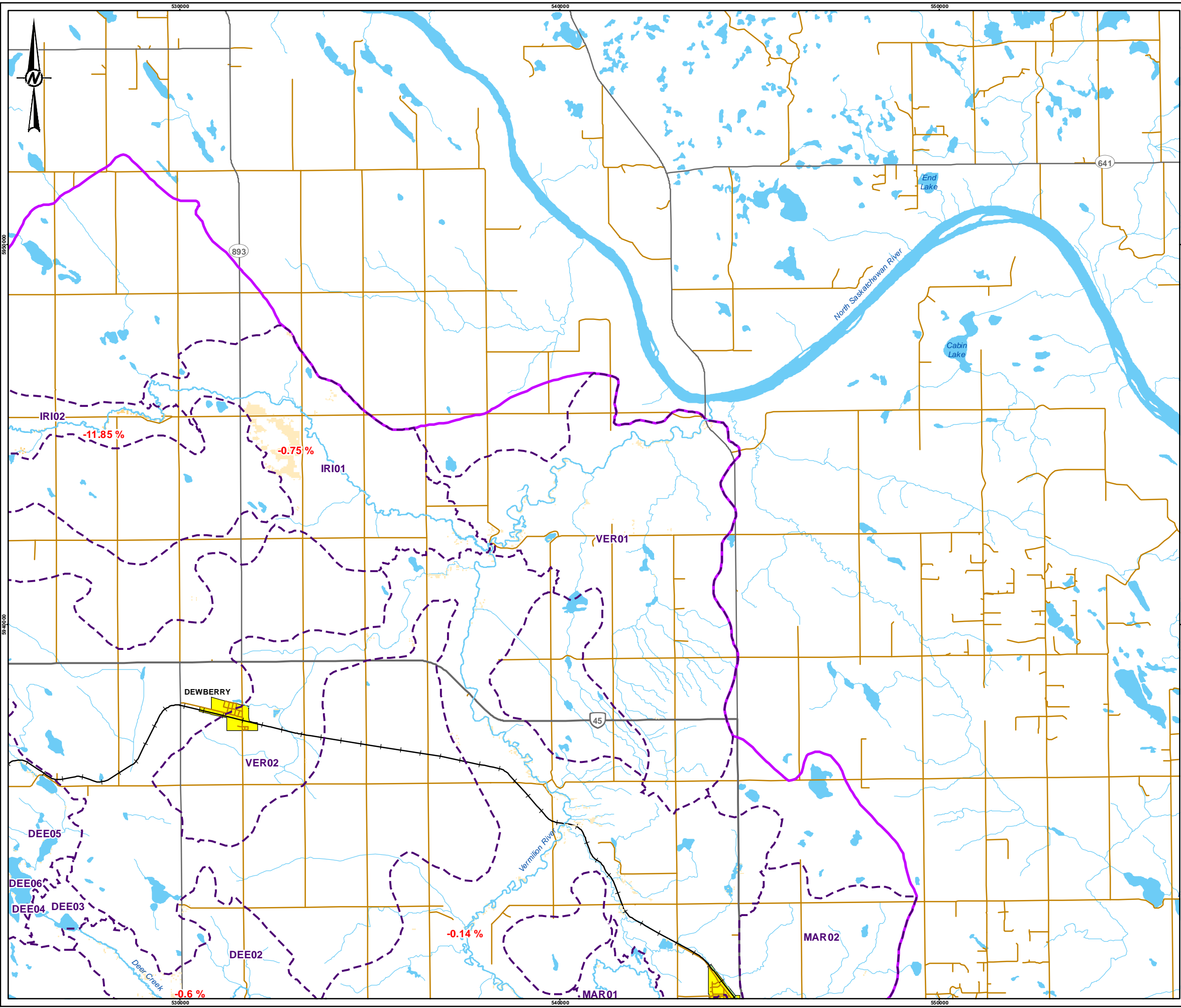
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Review.mxd PRINTED ON: 2016-03-21 AT: 3:59:32 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

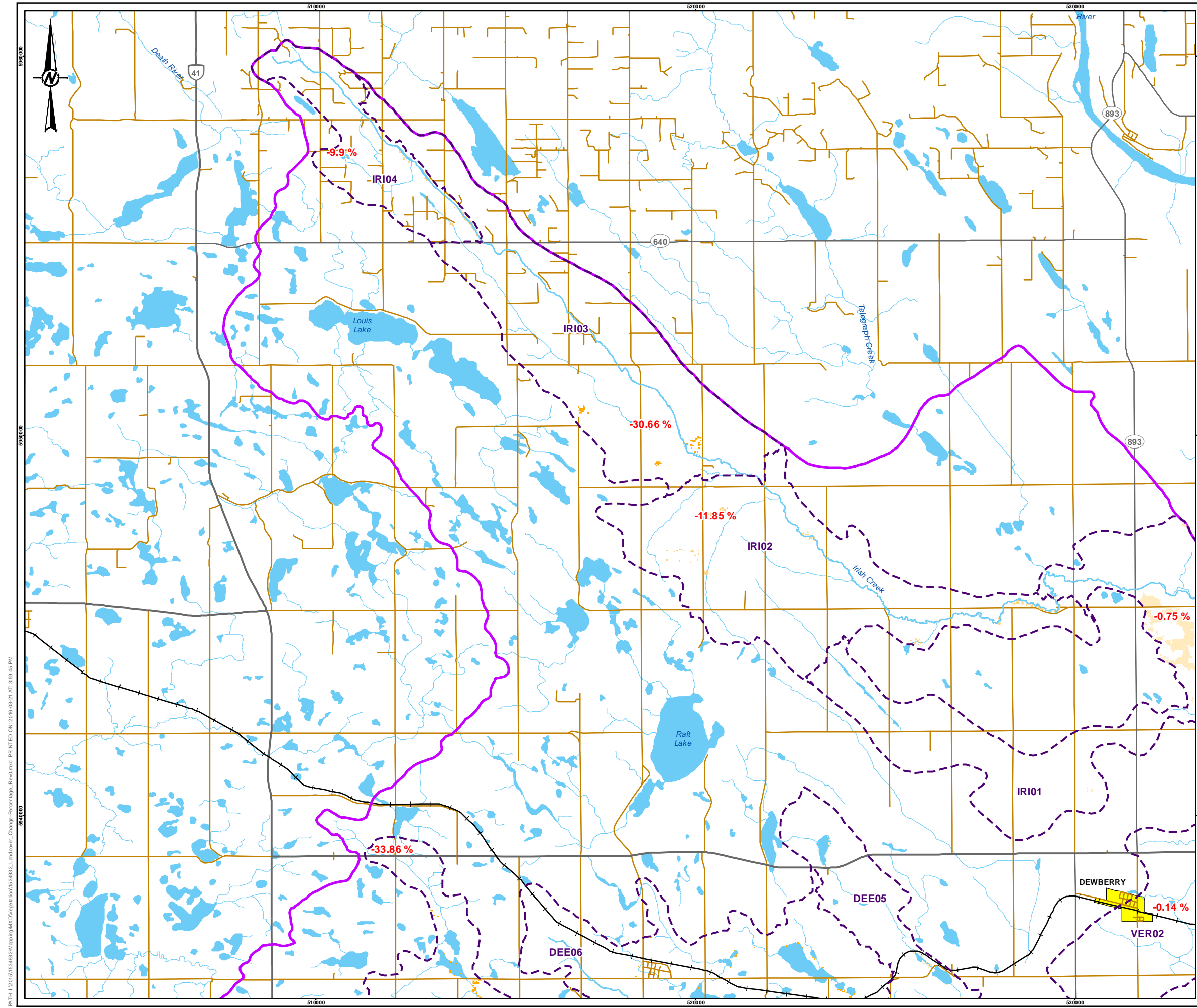
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\KCD\workspace\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:38 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A85 B



**LEGEND**

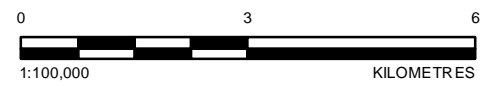
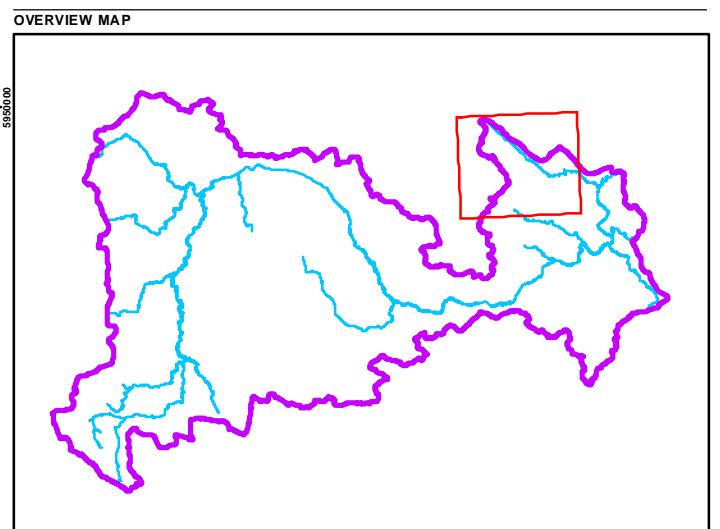
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

	-1 to 0
	0 to 1
	1 to 25
	25 to 50
	50 to 75
	75 to 100
	> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

	< - 100
	-100 to - 75
	-75 to -50
	-50 to -25
	-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT  
**NORTH SASKATCHEWAN WATERSHED ALLIANCE**

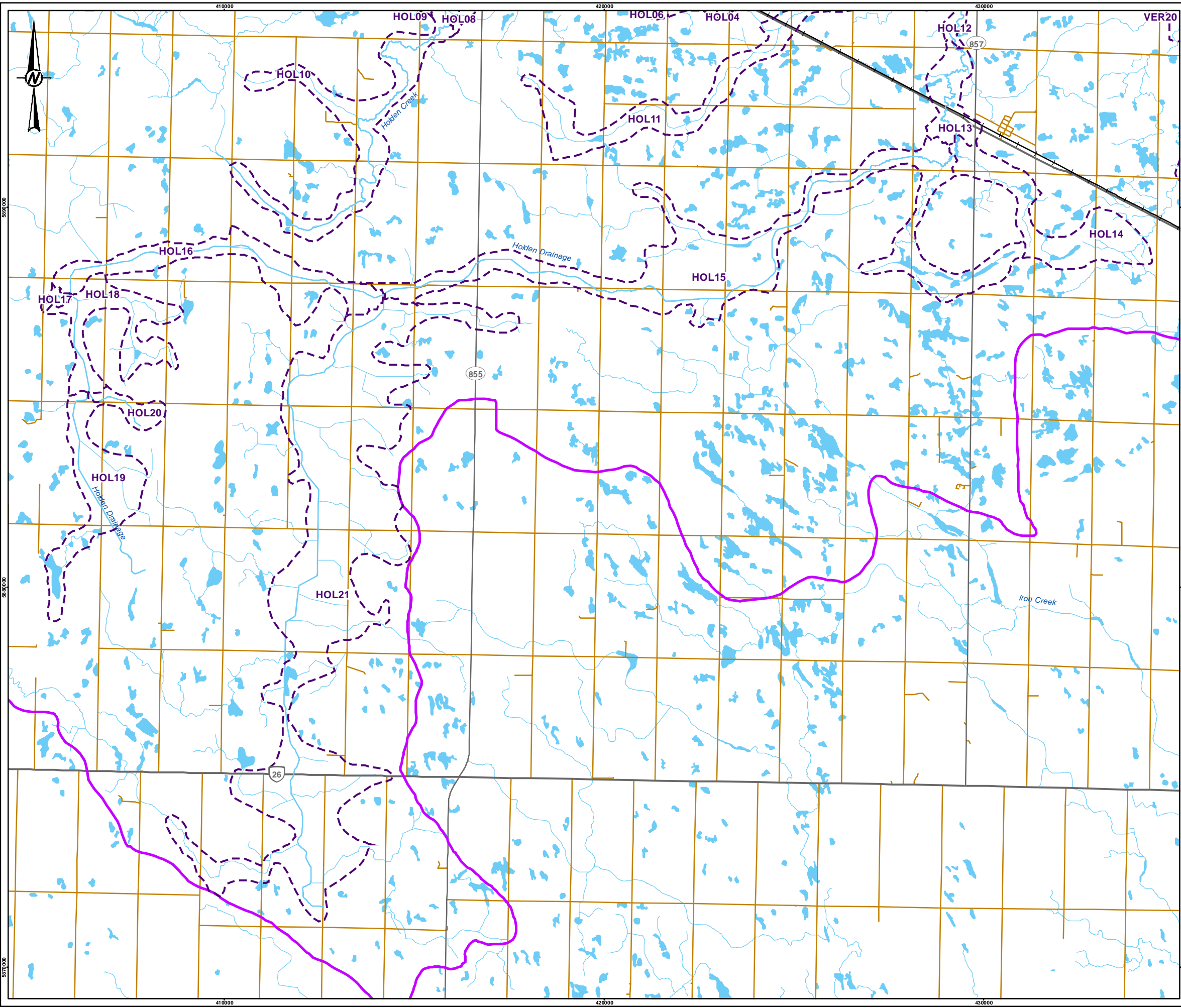
PROJECT  
**AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER**

TITLE  
**LANDCOVER CHANGE 1990 TO 2010 - WETLAND**

CONSULTANT	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Overview.mxd PRINTED ON: 2016-03-21 AT: 3:09:45 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



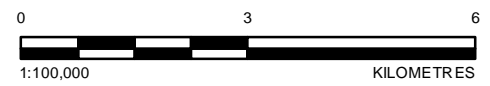
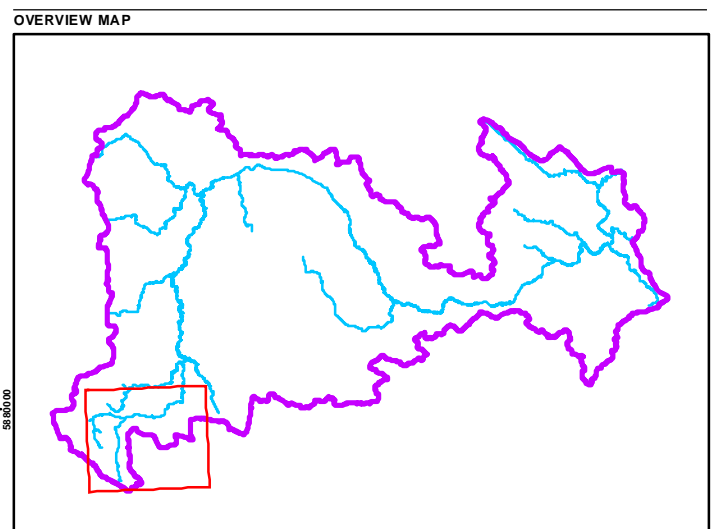
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

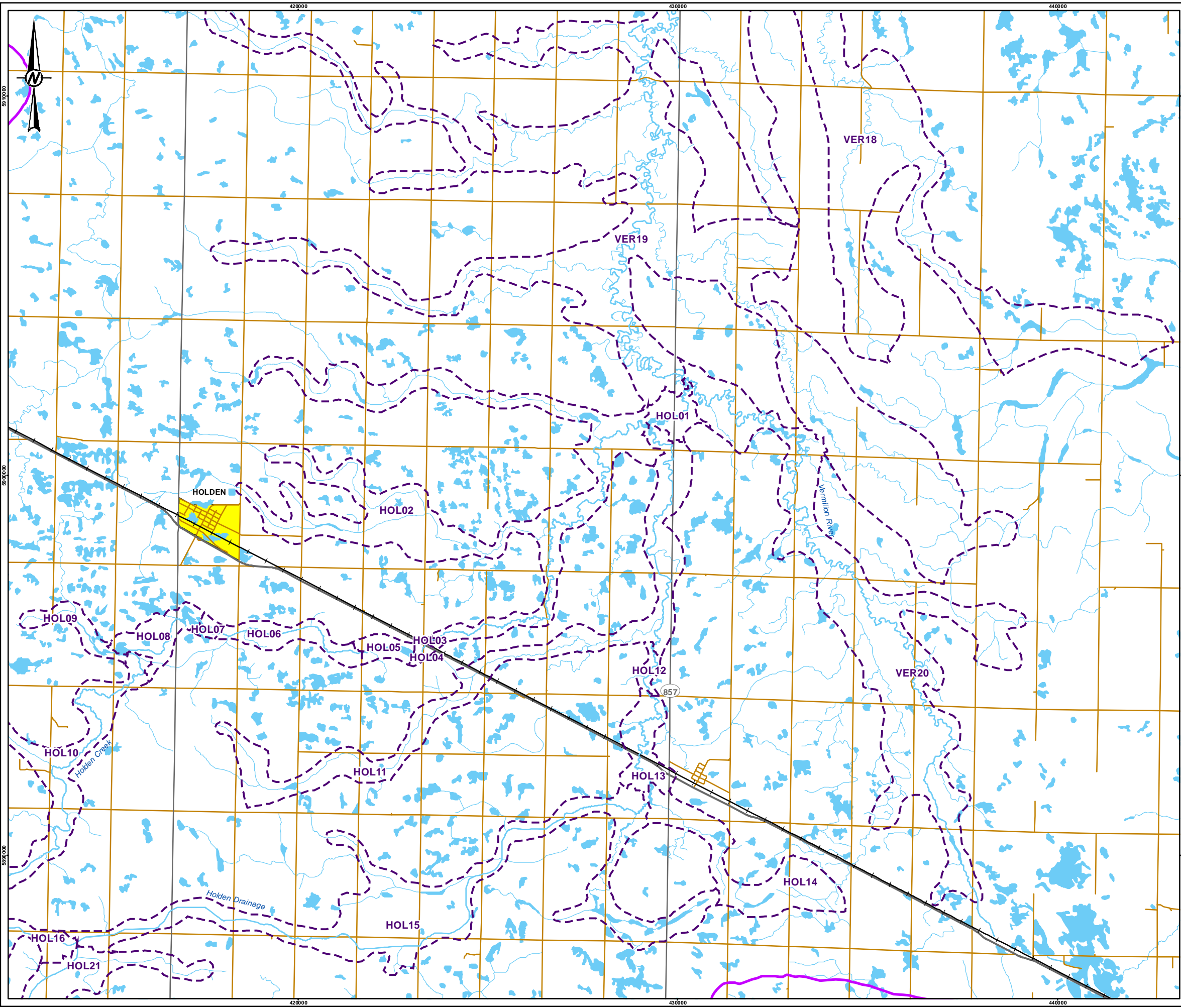
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-a

PATH: I:\01015154932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:59:51 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





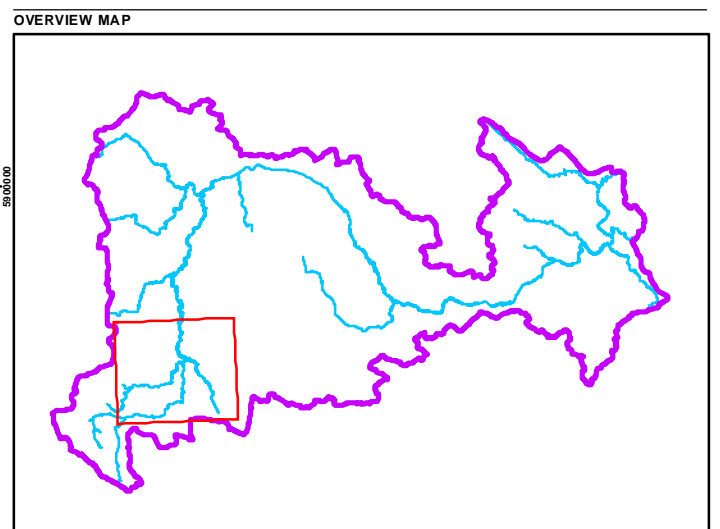
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

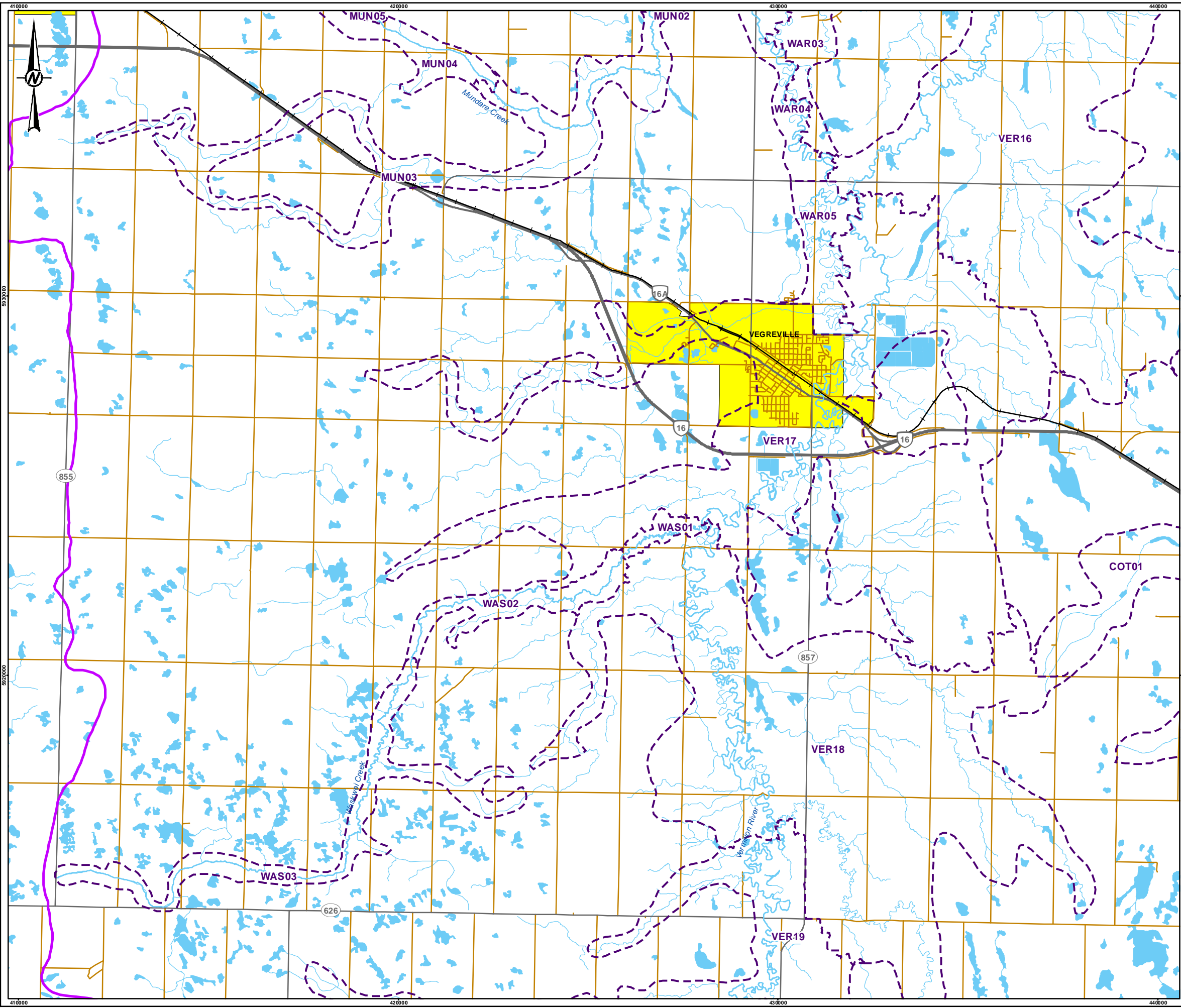
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-b

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 3:50:57 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



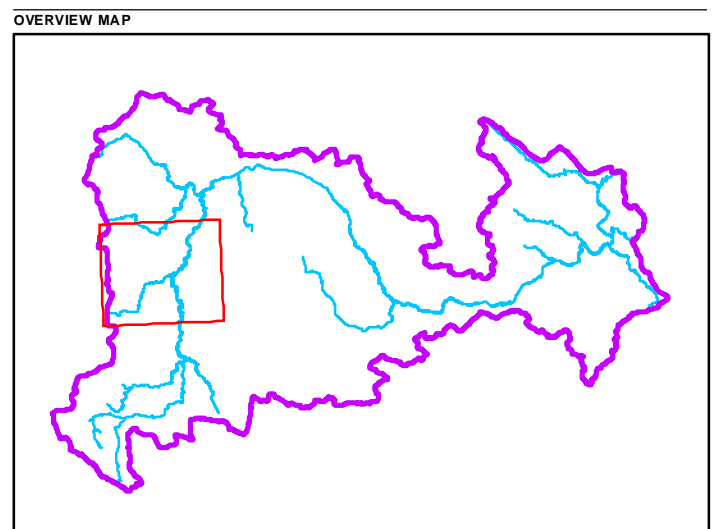
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

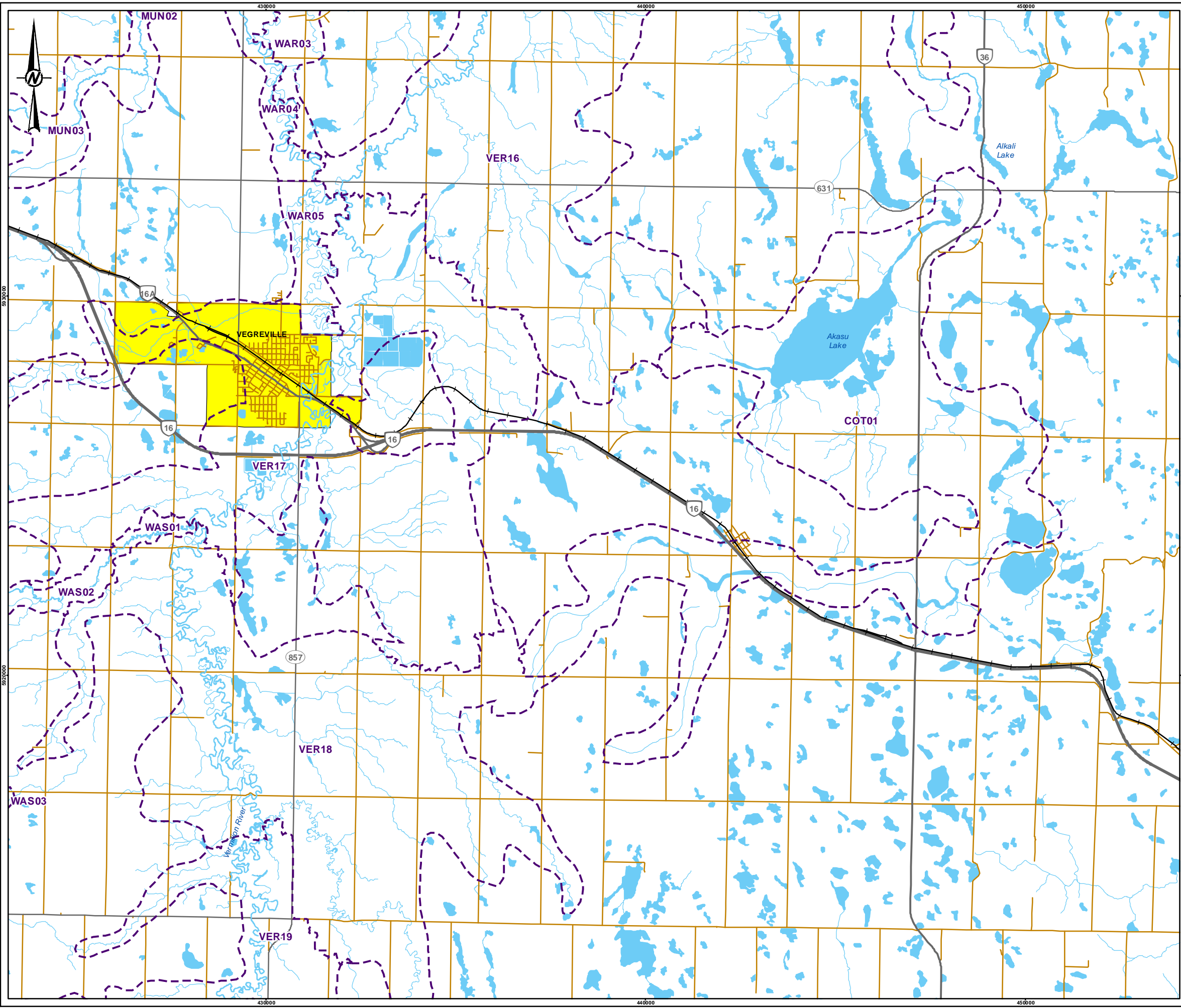
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 4:00:02 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





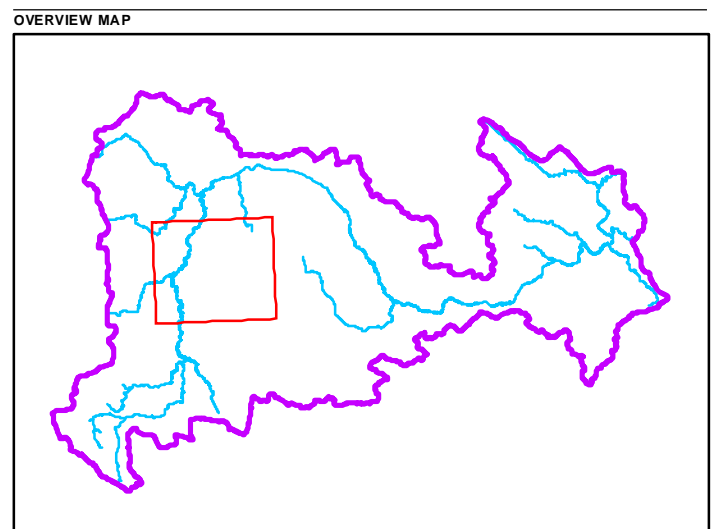
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5%
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

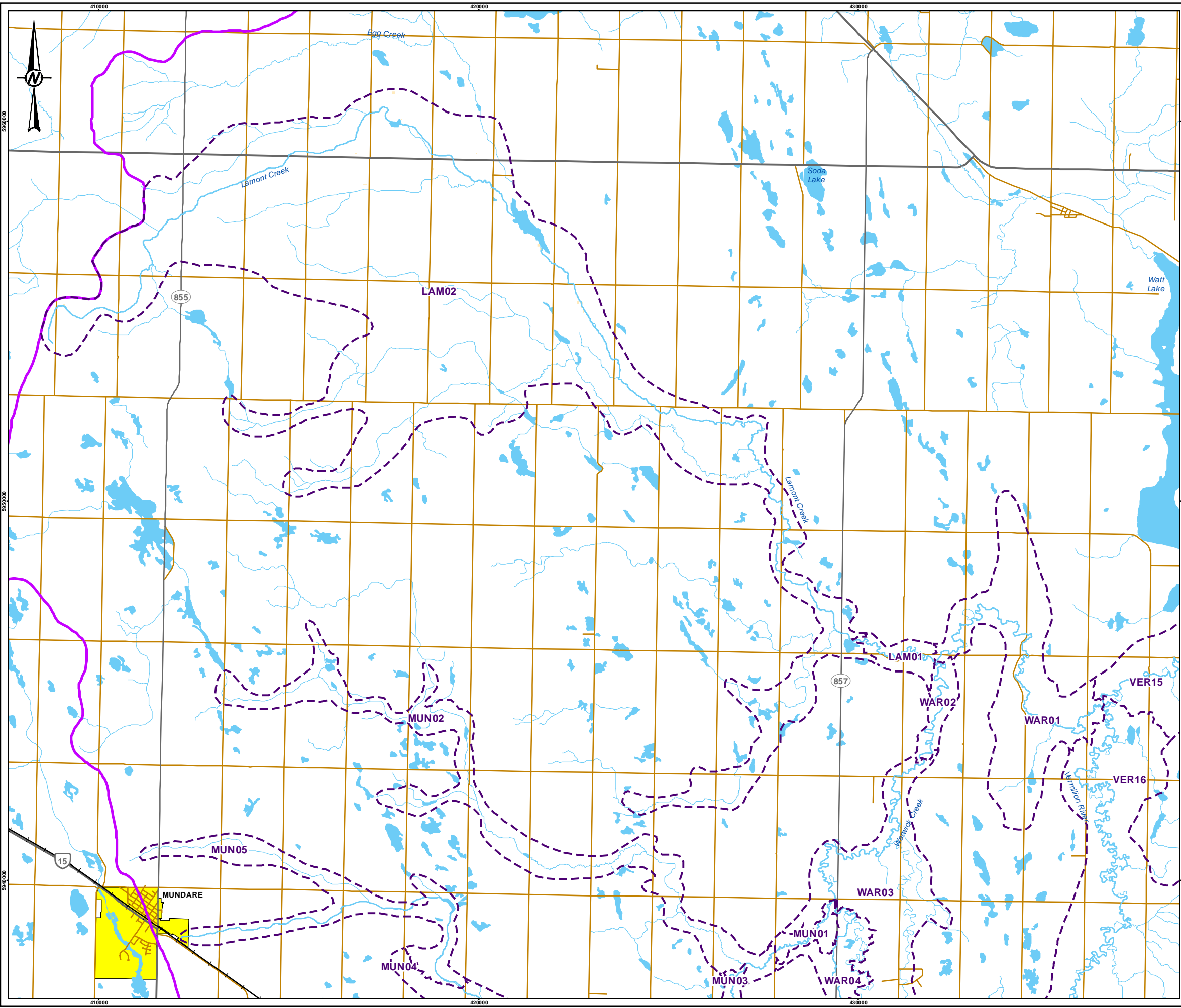
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-d

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 4:00:09 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





**LEGEND**

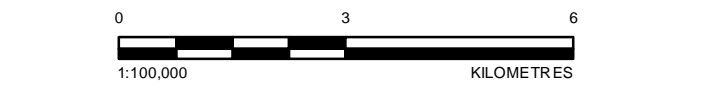
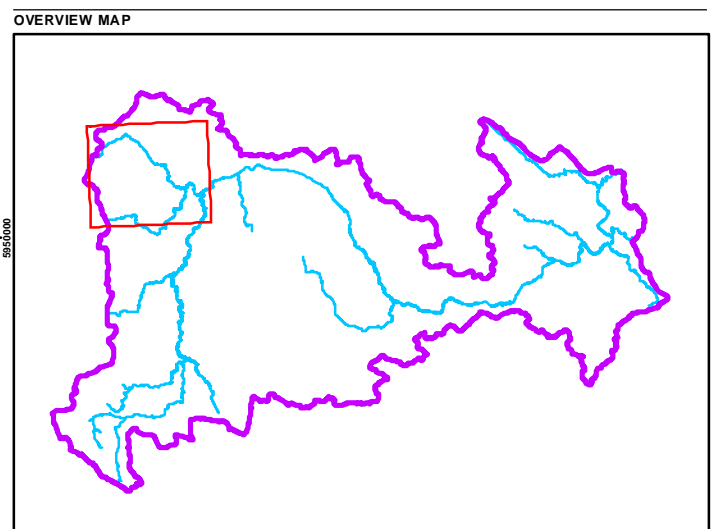
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

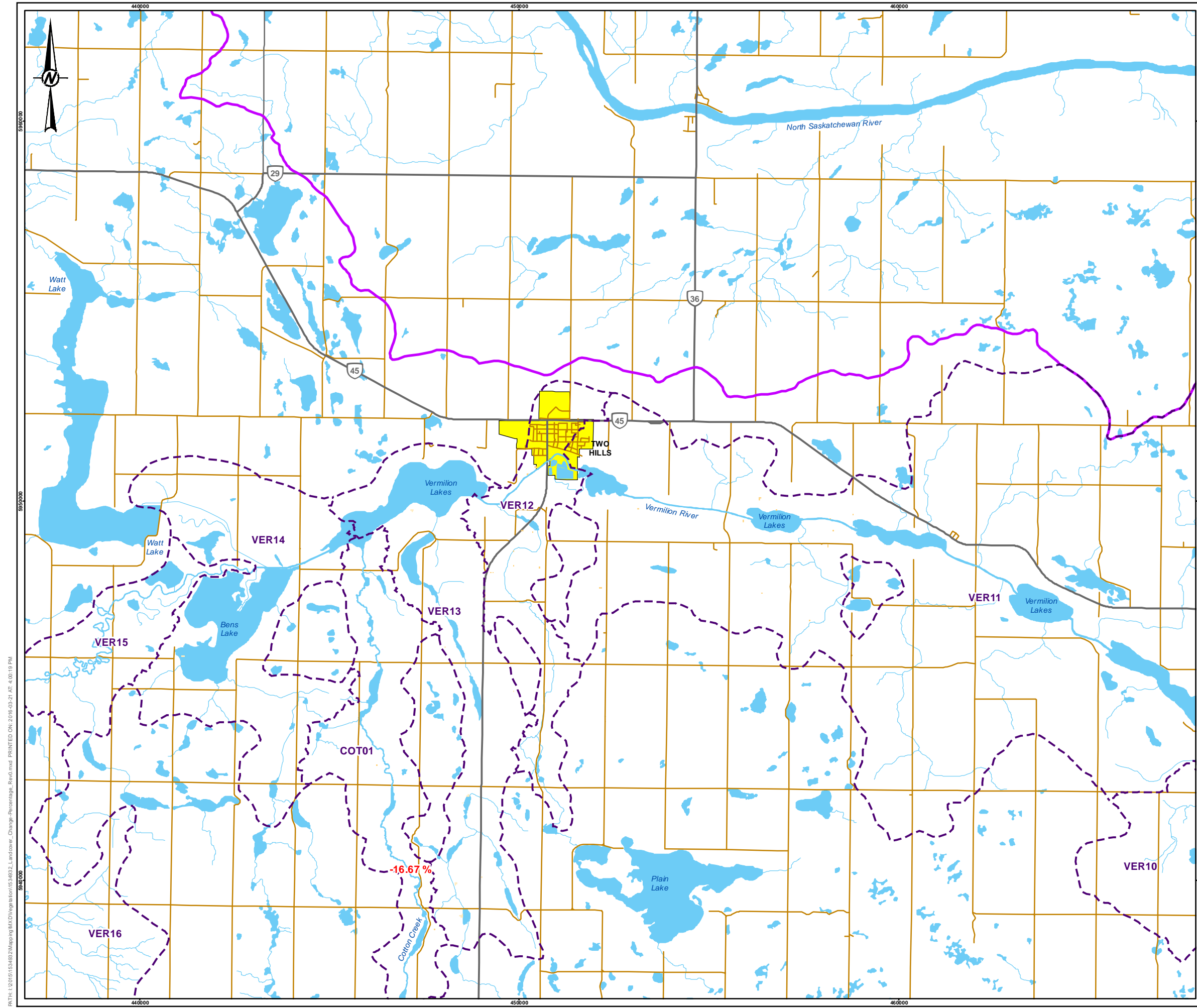
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:00:14 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



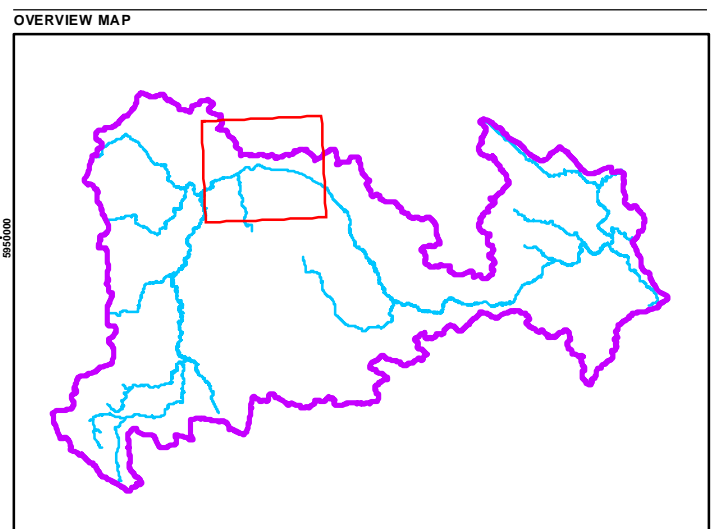
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

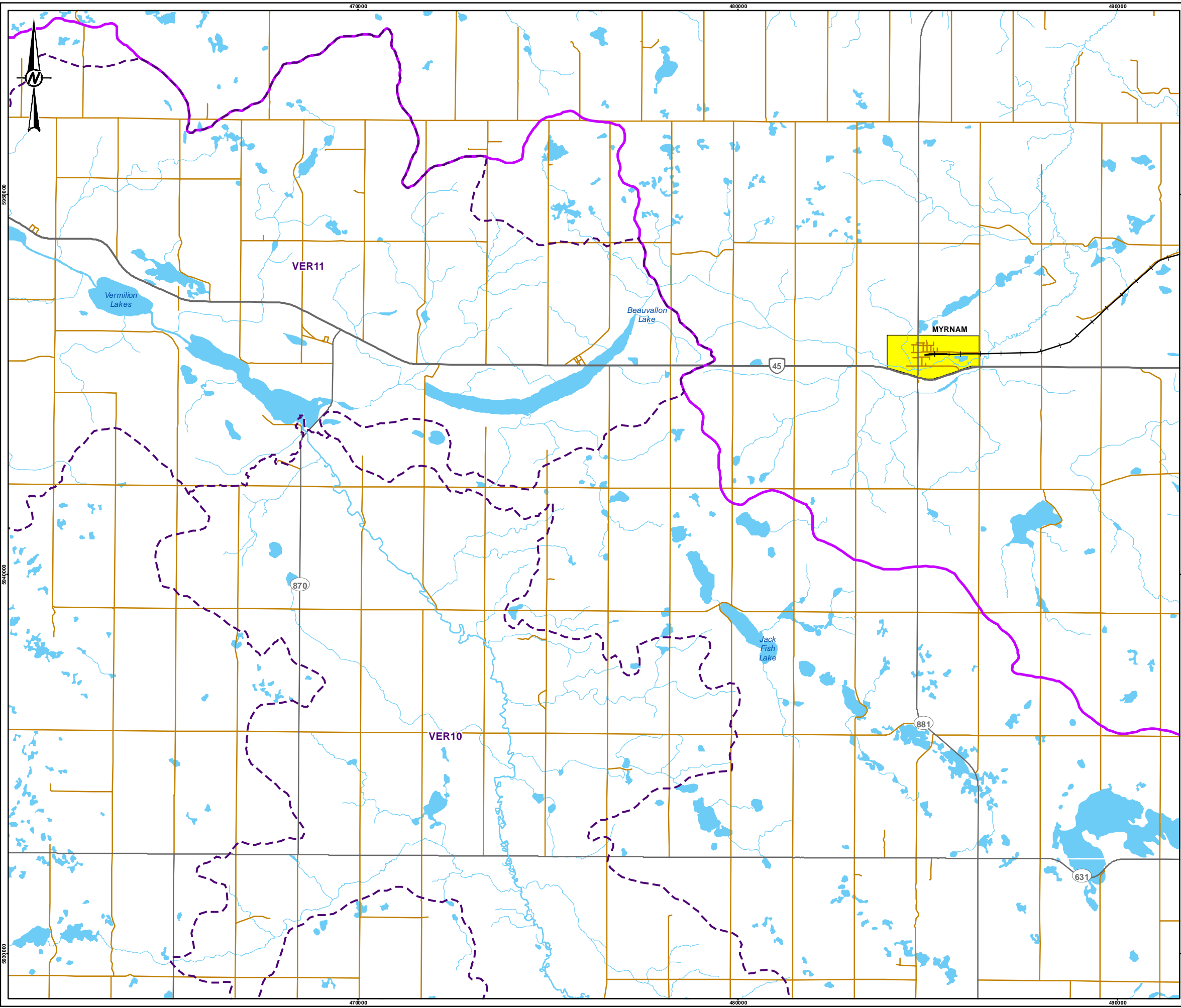
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-f

PATH: I:\2016\1534932\Maping\Map\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:00:19 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A8B 8



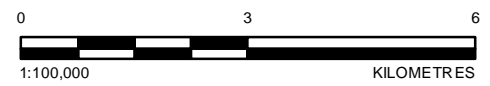
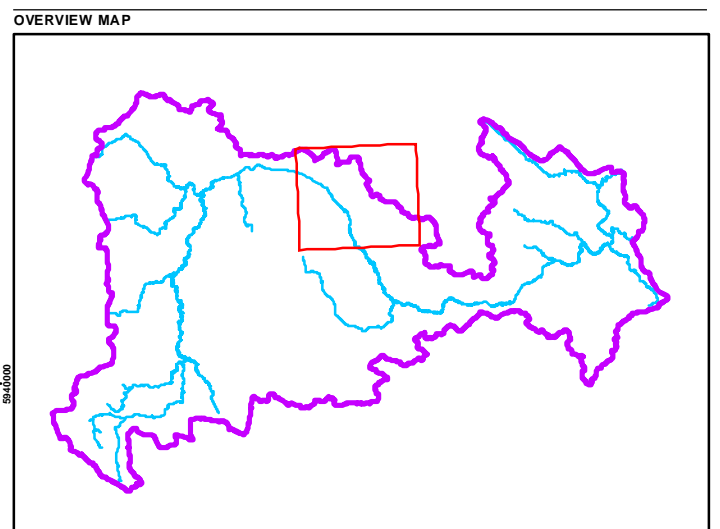
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

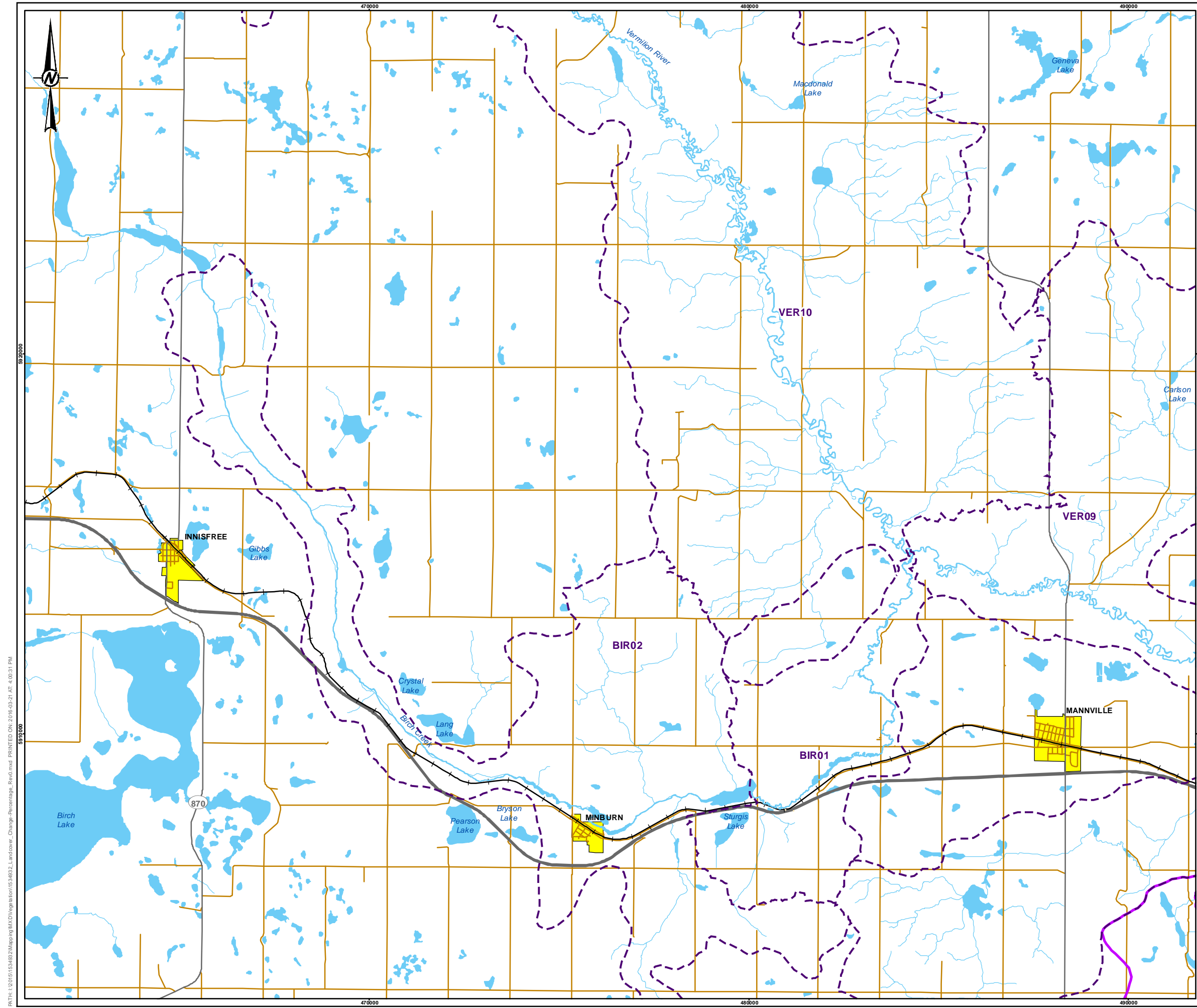
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:02:24 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





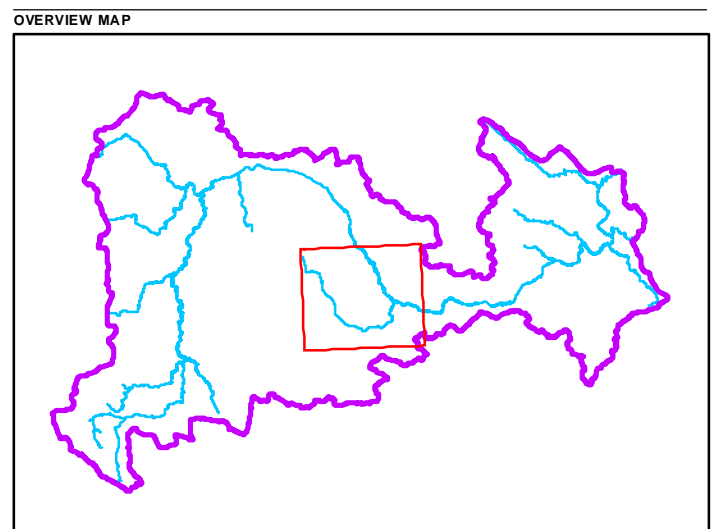
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

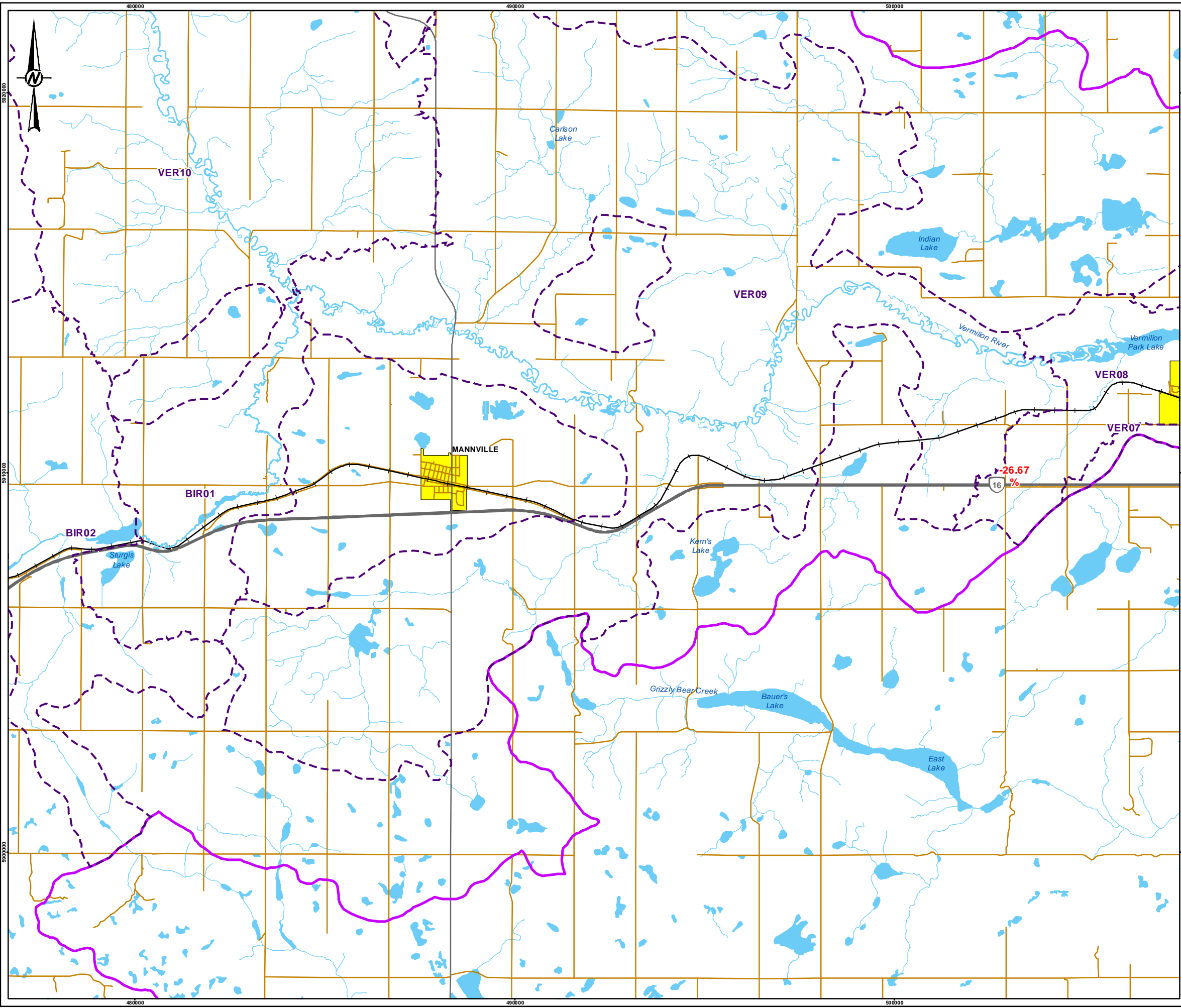
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-h

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:00:31 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B

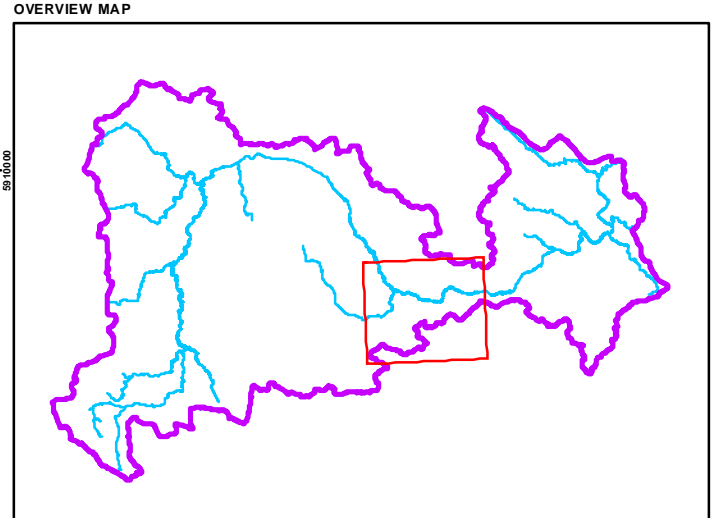


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / -1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

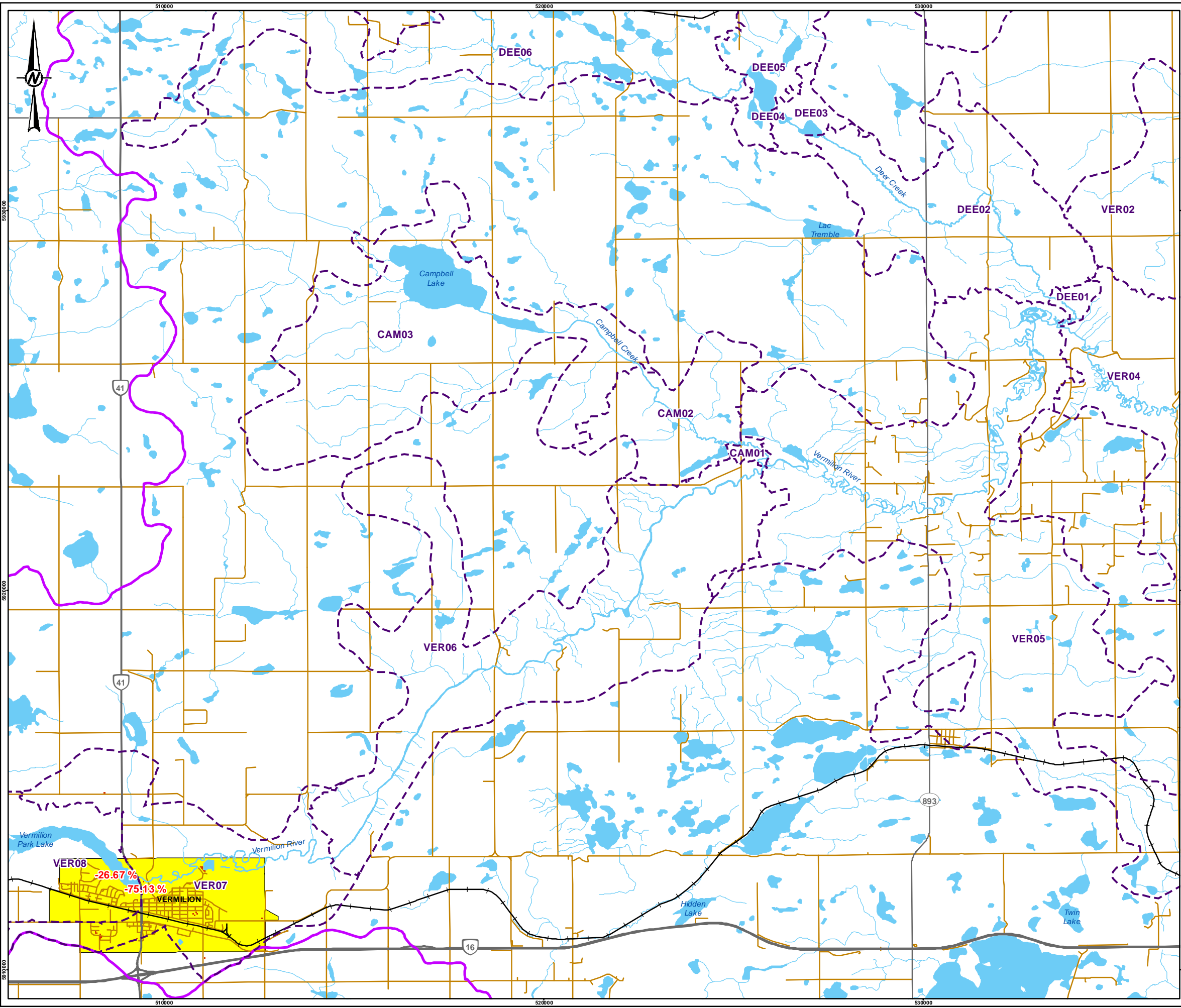
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PATH: I:\2016\1534932\Maping\MXD\fig\B12-i\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:03:37 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

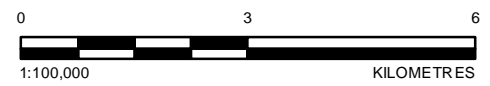
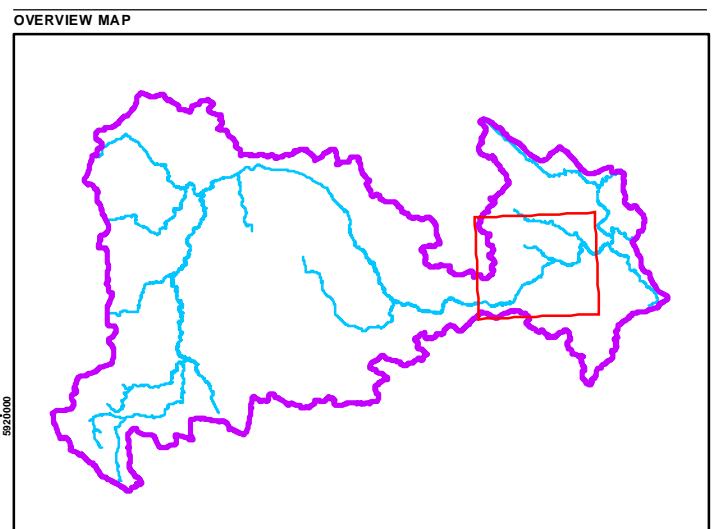
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

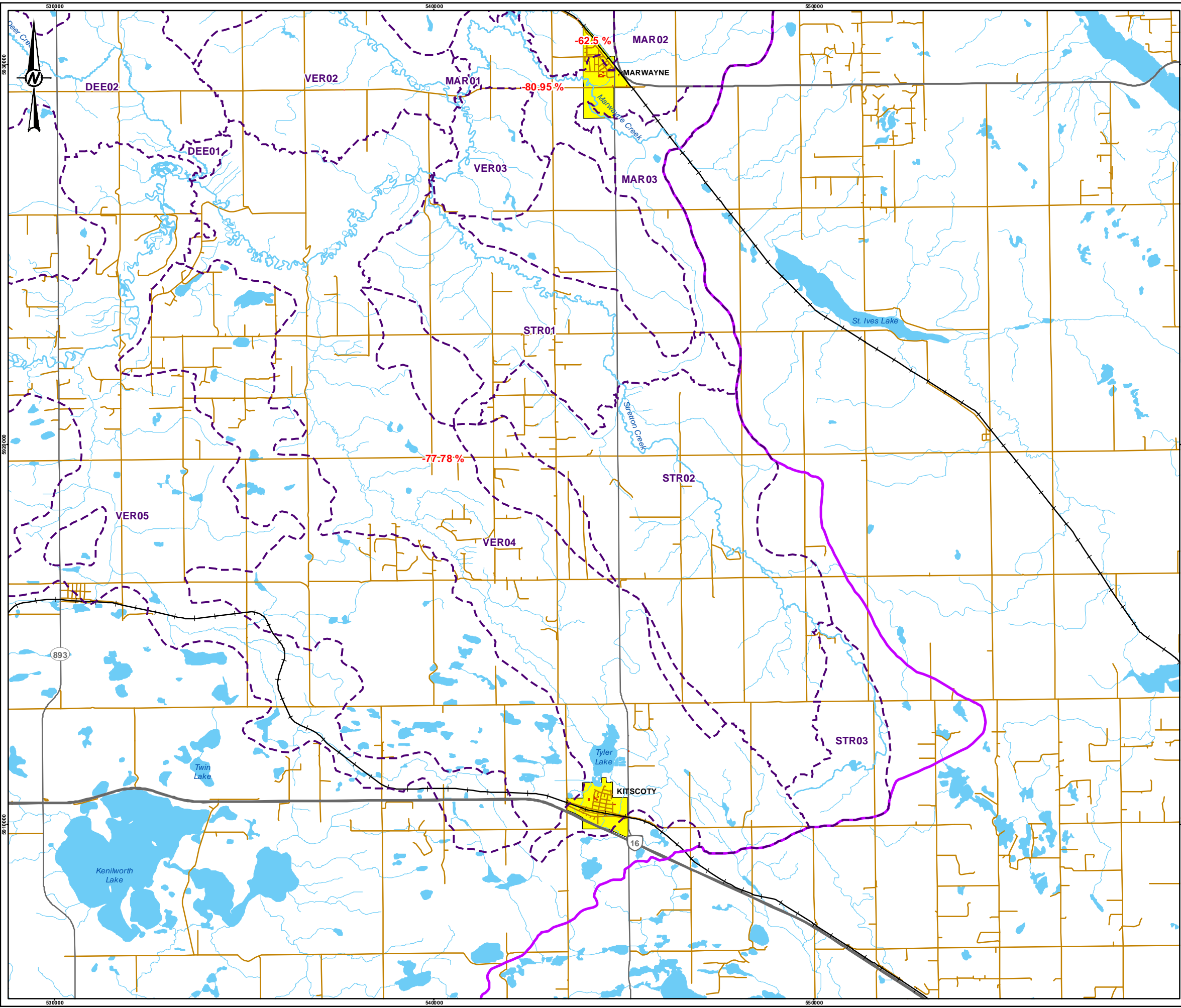
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-j

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:00:43 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



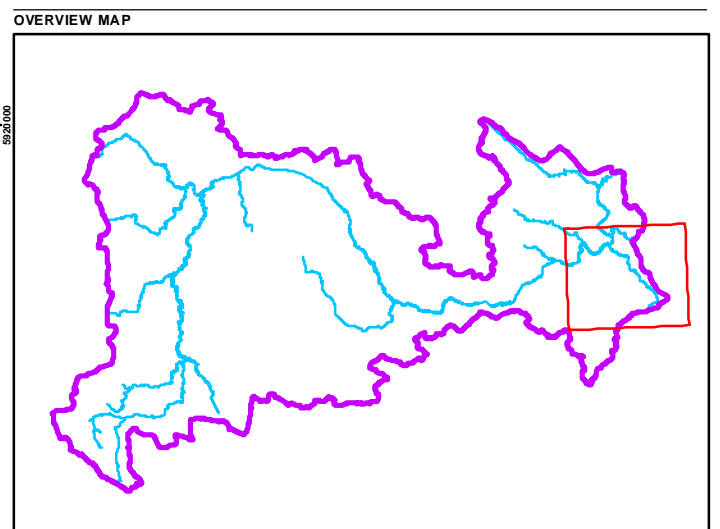


**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1.5% / - 1.5% Landcover Type Change (%)
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

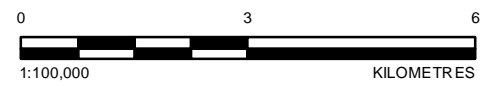
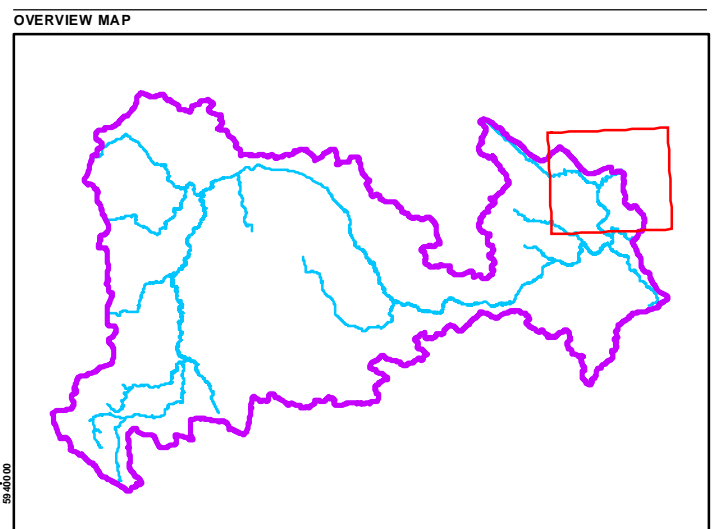
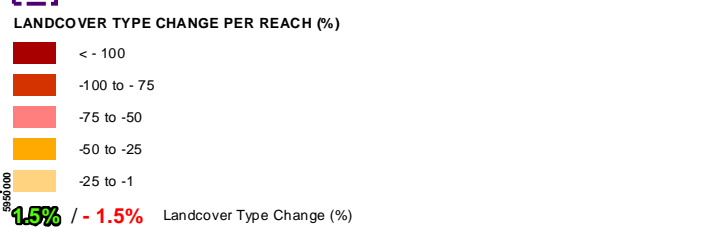
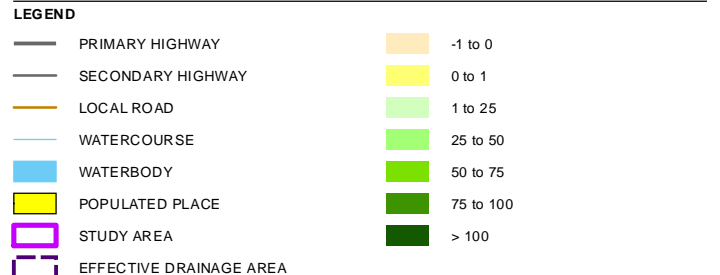
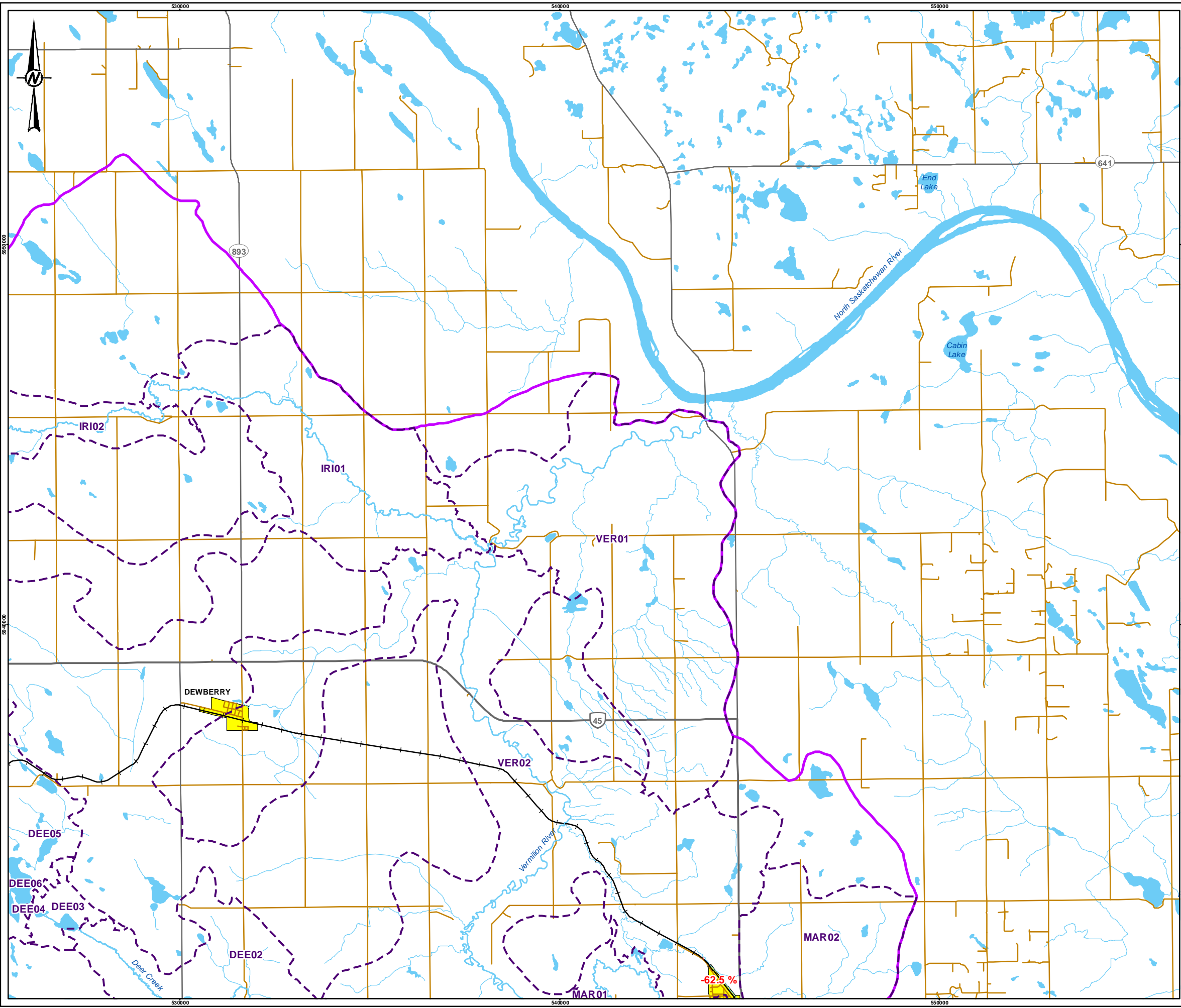
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

CONSULTANT	DATE
	YYYY-MM-DD 2016-03-21
	DESIGNED V.COENEN
	PREPARED P.THIEDE
	REVIEWED P.THIEDE
	APPROVED V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-k

P:\TM\131015\1524922\Maping\Maping\1524932\_Landcover\_Change\_Review\Maping\_Review.mxd PRINTED ON: 2016-03-21 AT: 4:00:49 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

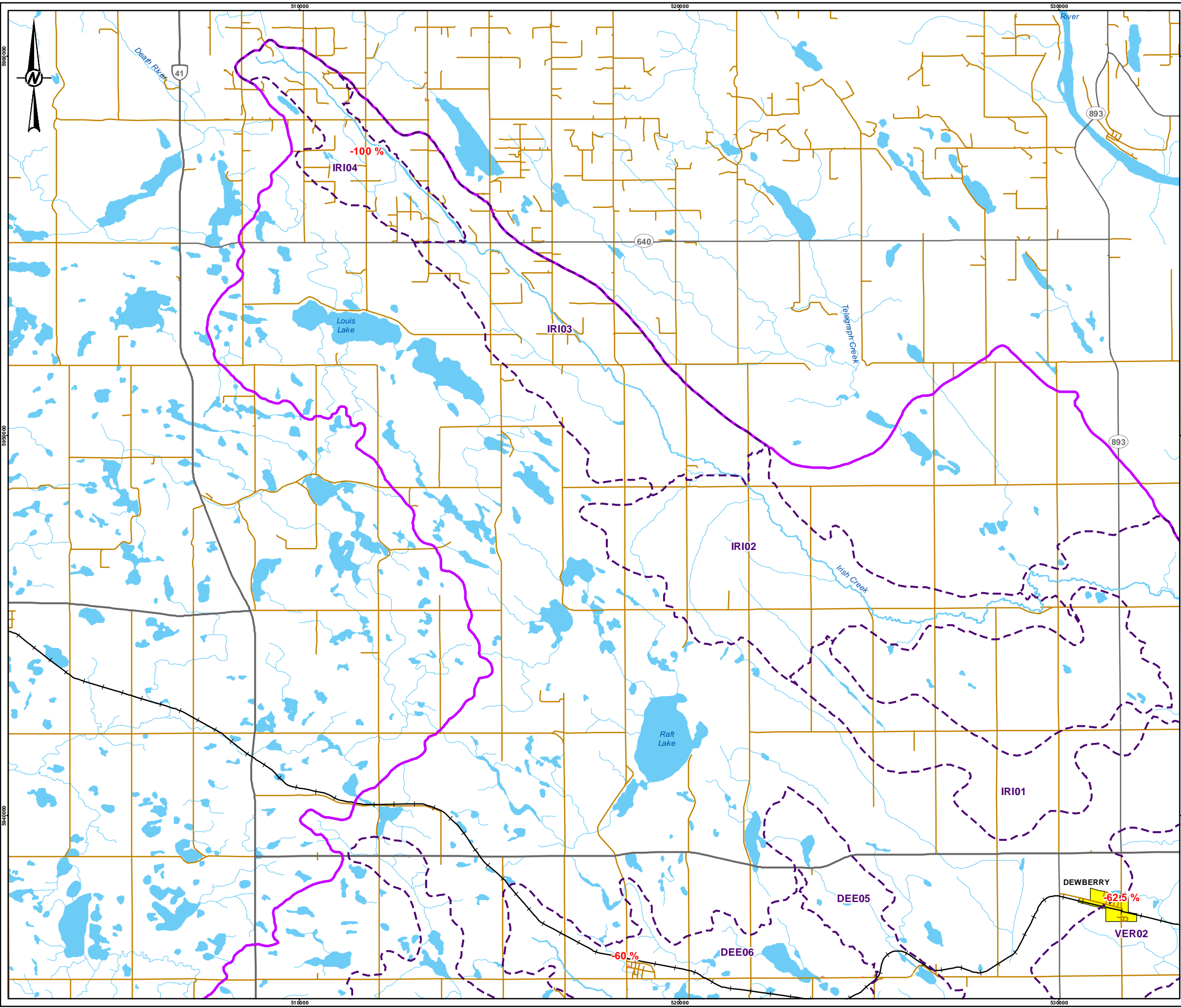
**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:00:54 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

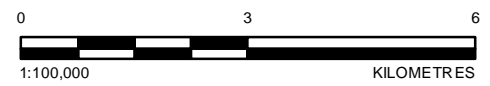
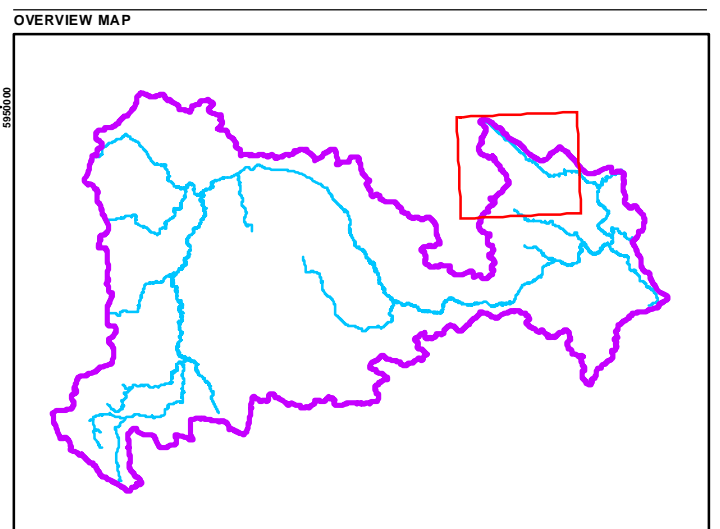
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< - 100
-100 to - 75
-75 to -50
-50 to -25
-25 to -1

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

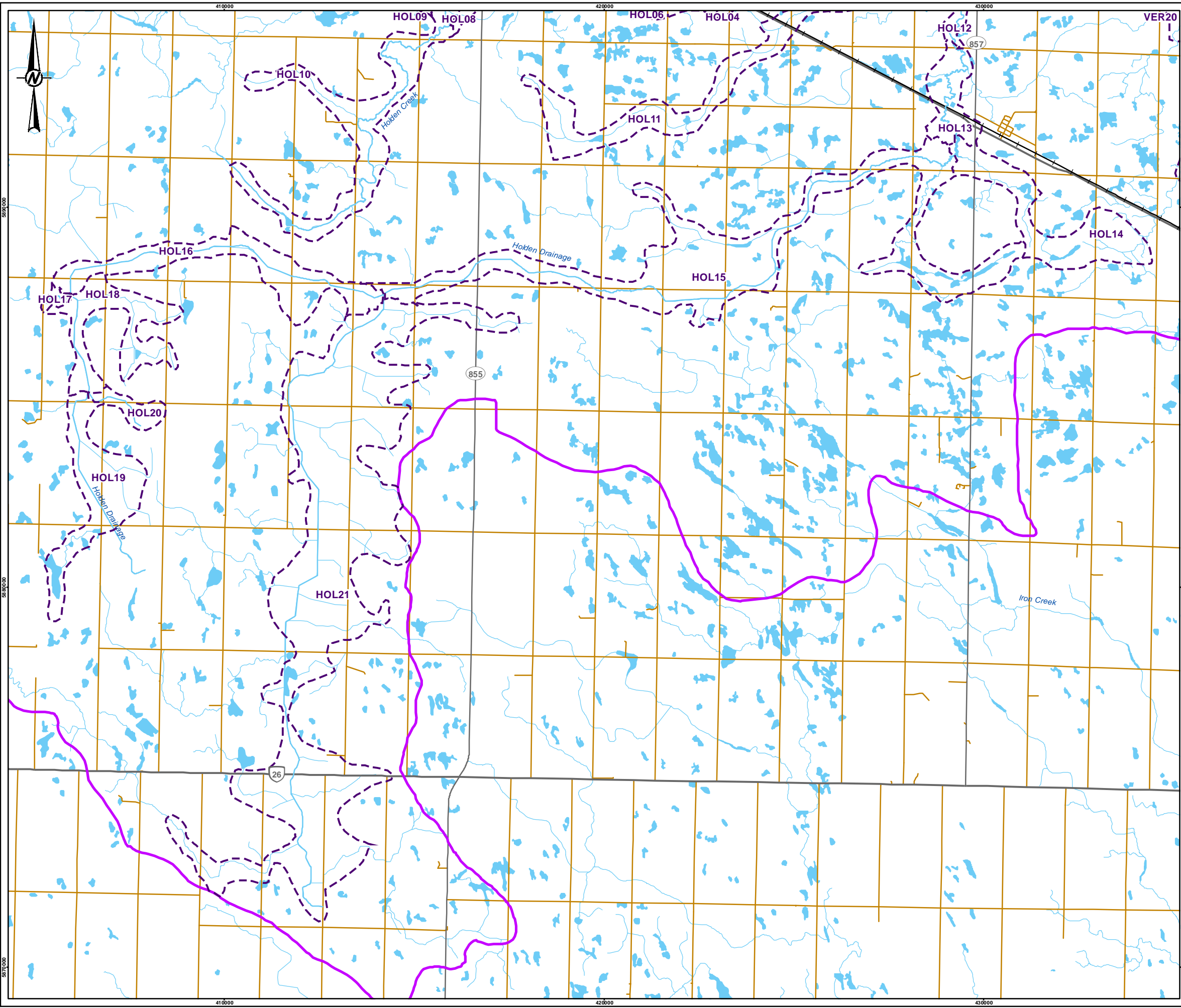
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND HERB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B12-m

PATH: I:\2016\1534932\Maping\Map\CD\fig\atlas\1534932\_Landcover\_Change\_Drwn\Map\_Rev0.mxd PRINTED ON: 2016-03-21 AT: 4:01:00 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





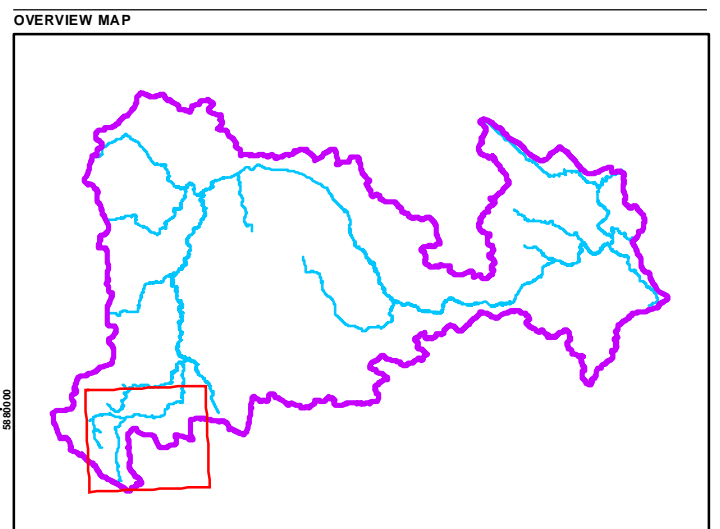
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

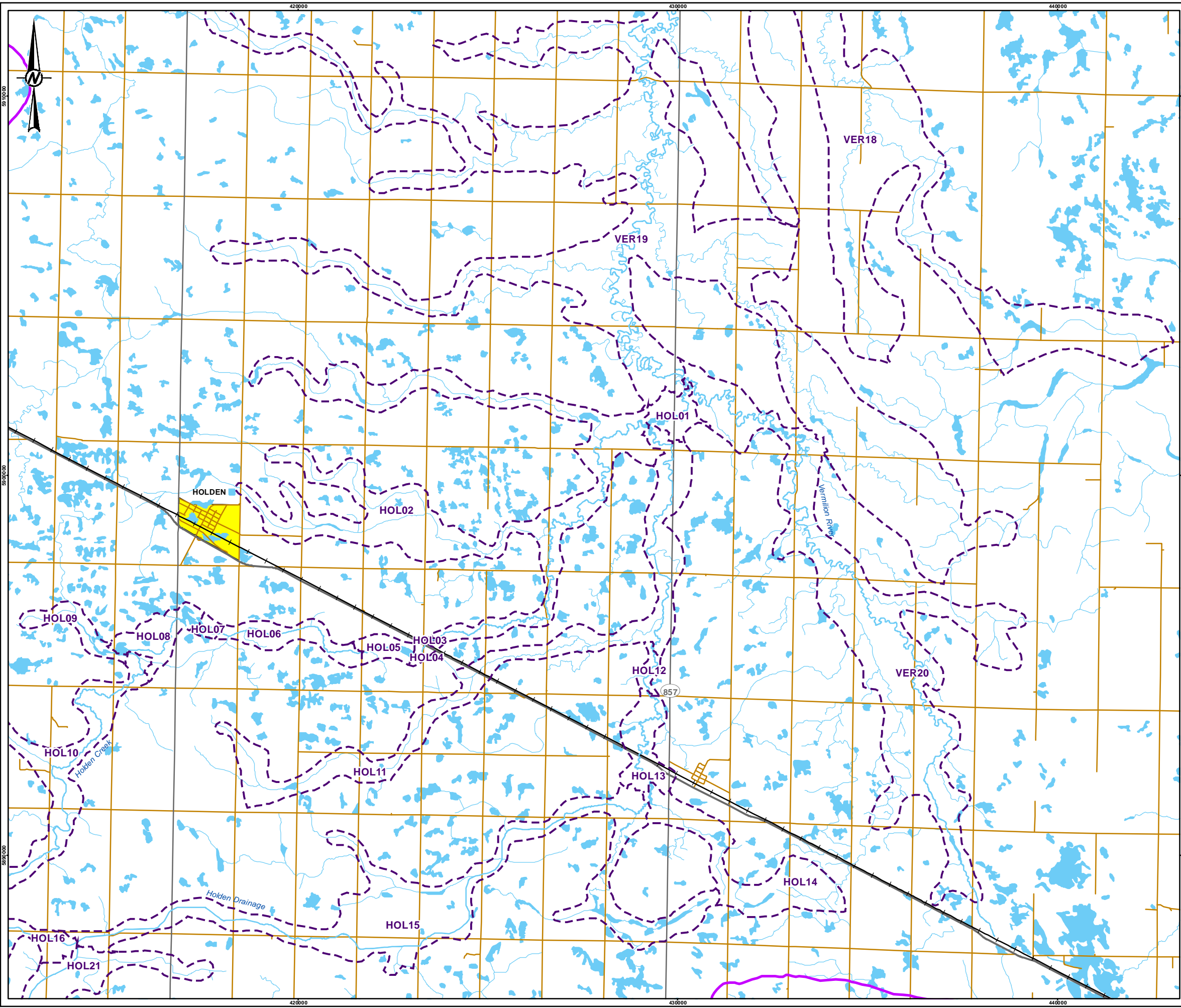
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-a

P:\TM\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:06 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



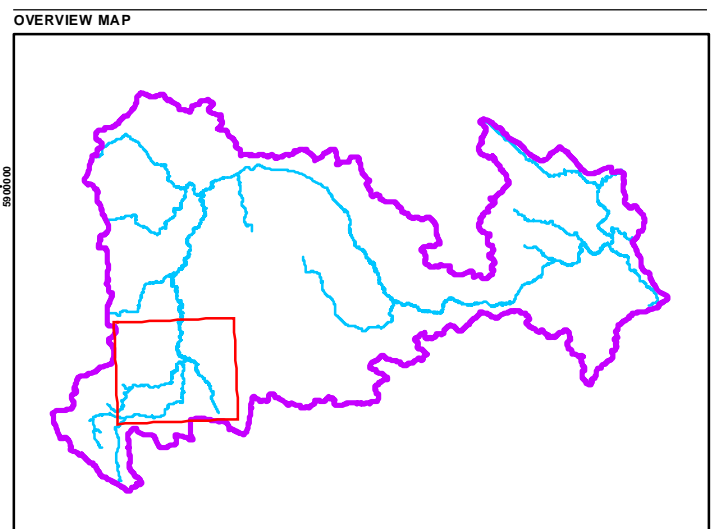
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

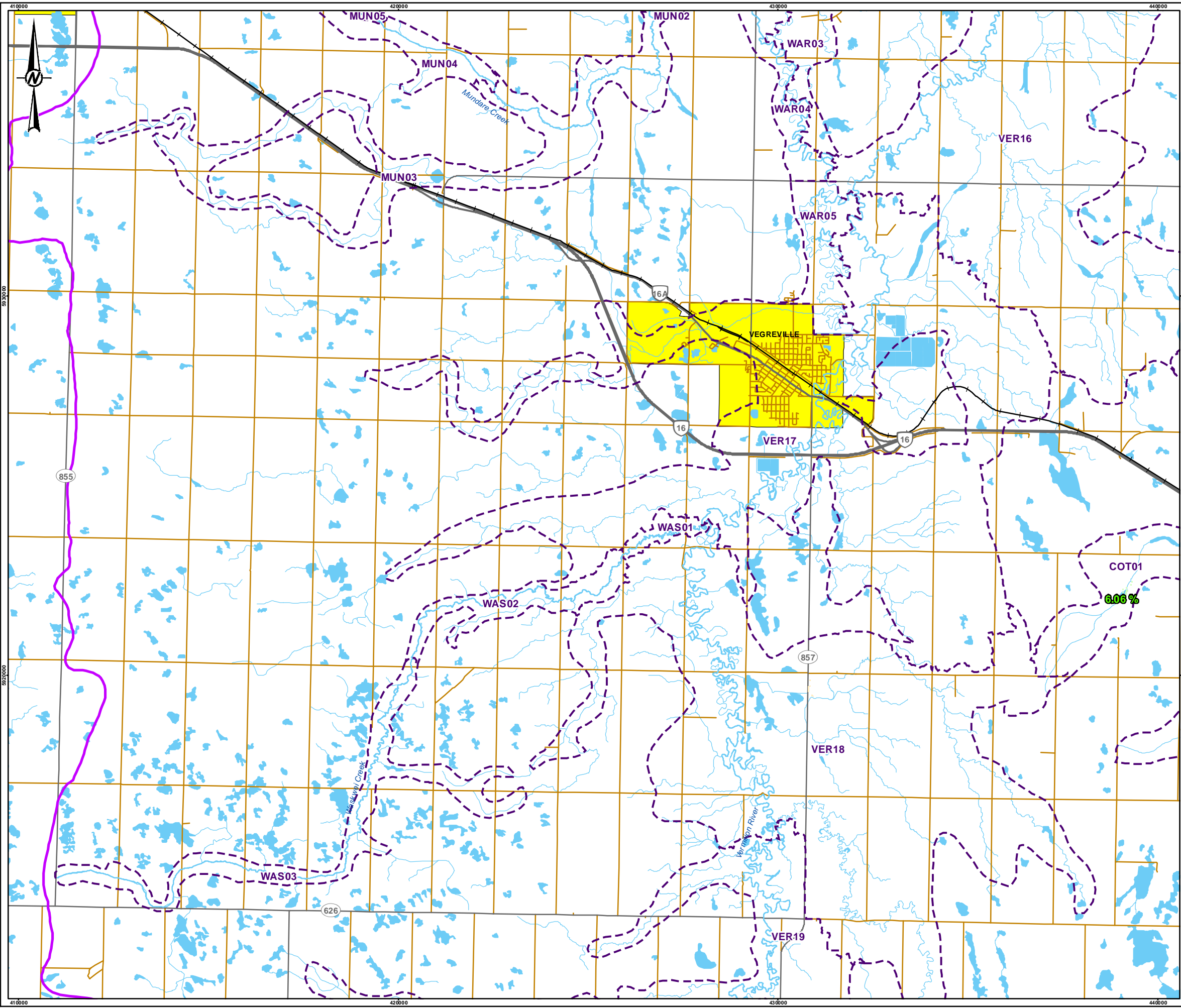
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-b

PATH: I:\0105\1534932\Maping\Map\Output\1534932\_Landcover\_Change\_Phenology\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:12 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8





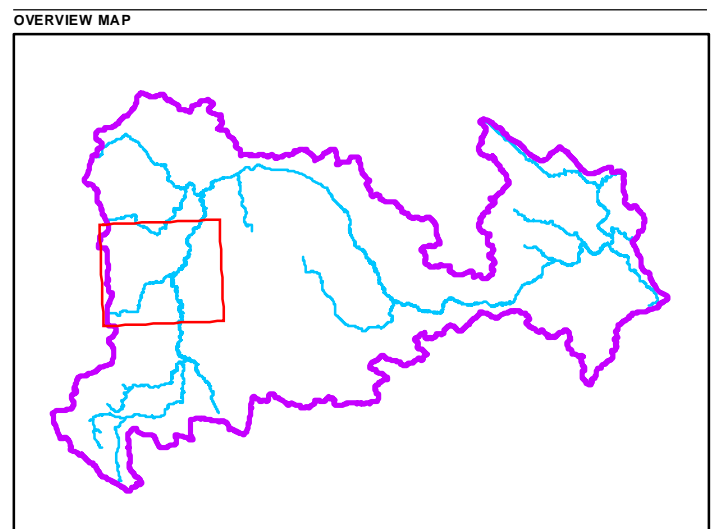
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

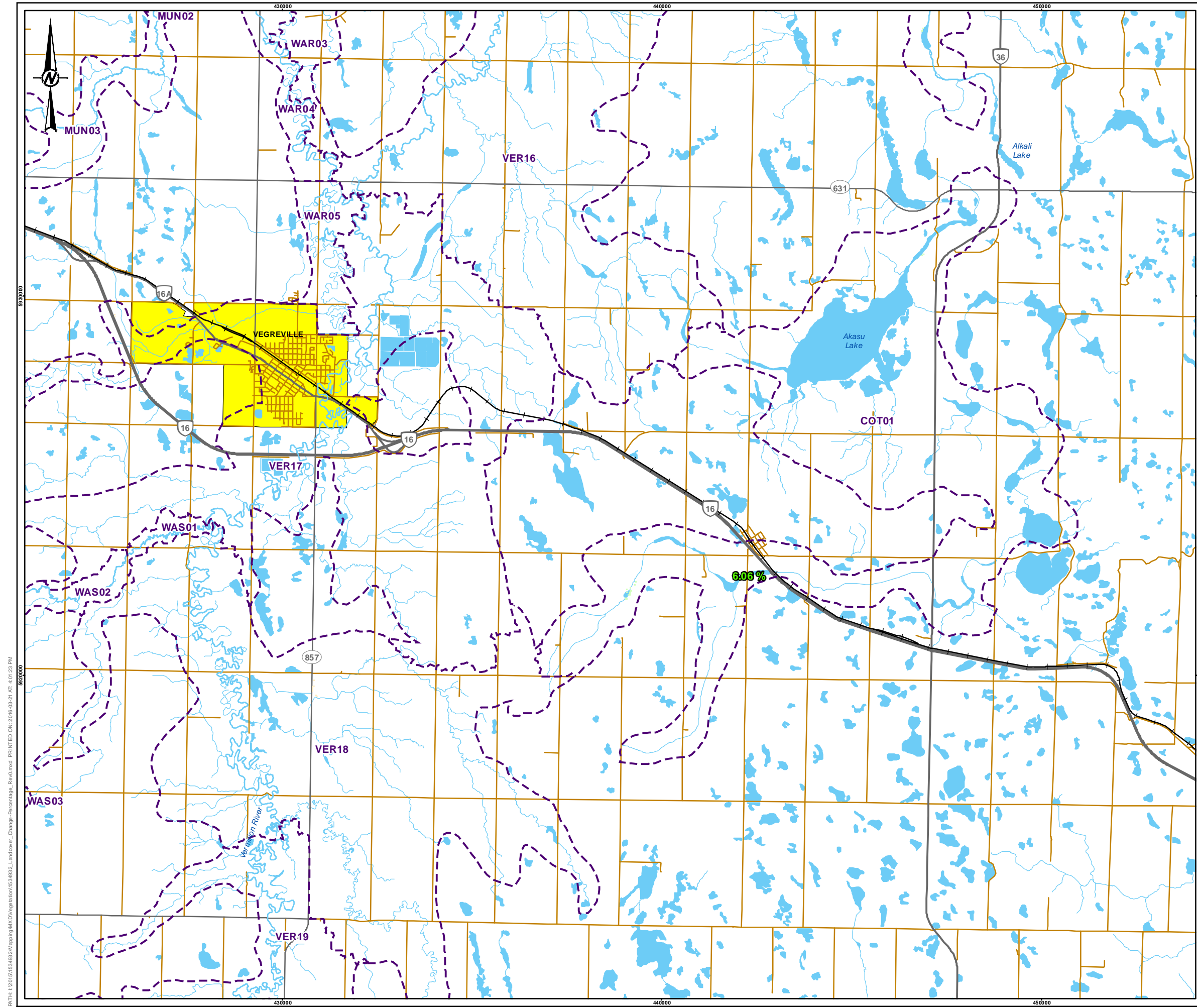
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-c

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Riparian.mxd PRINTED ON: 2016-03-21 AT: 4:01:18 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B





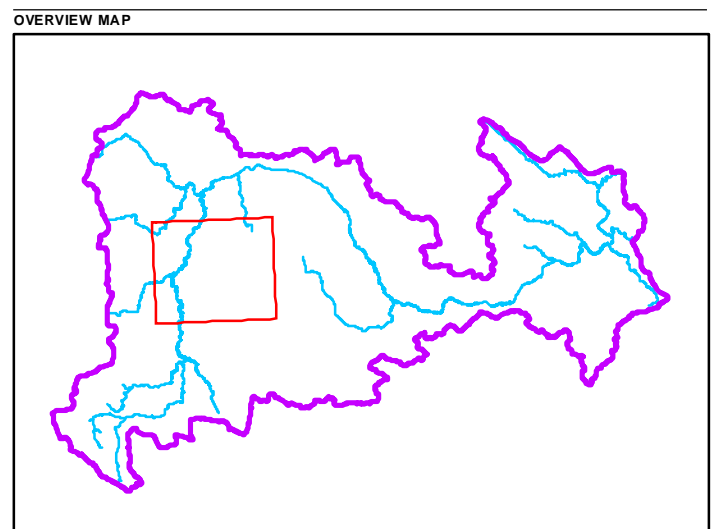
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < -100
- 100 to -75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

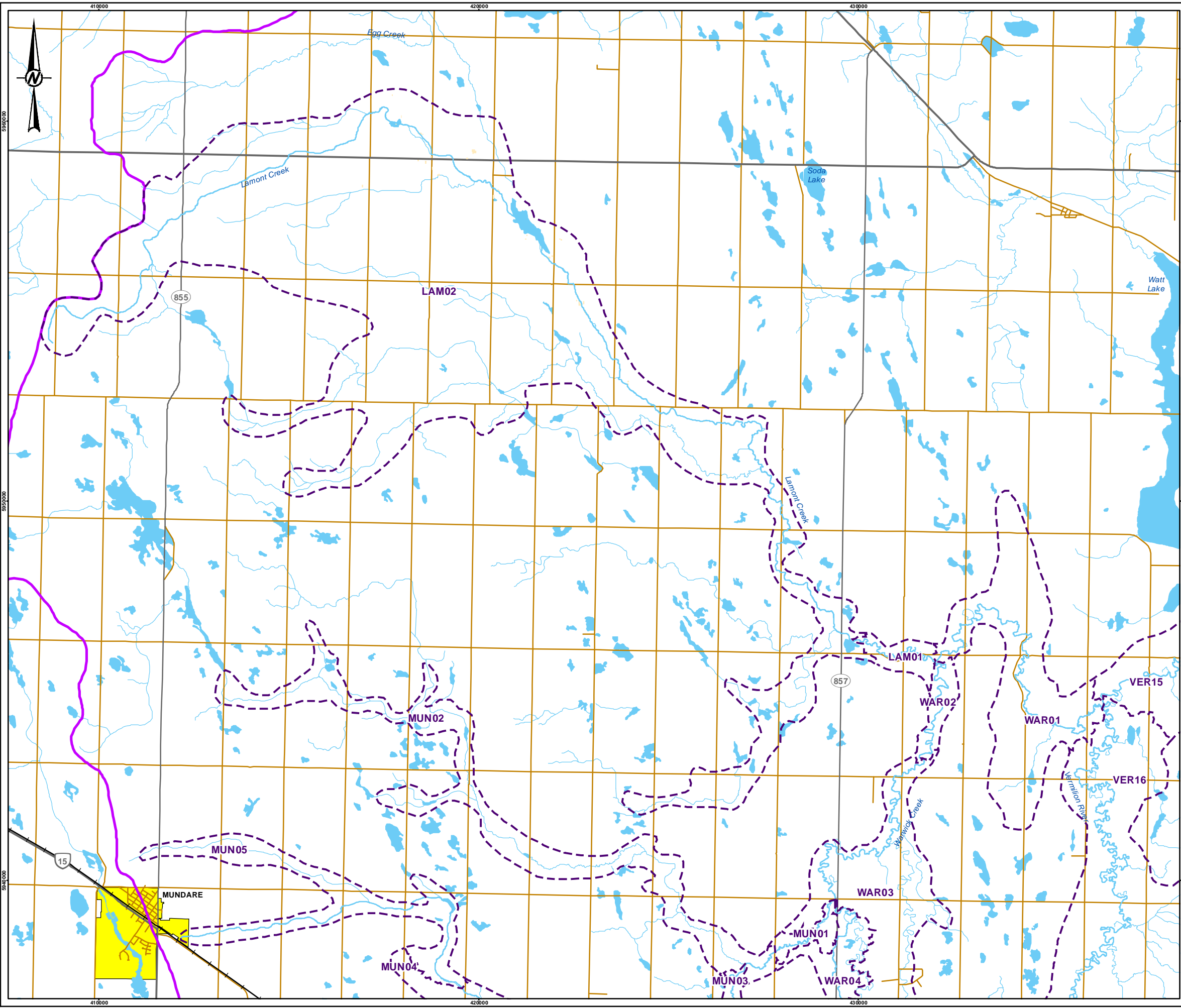
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-d

P:\1534932\Maping\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:23 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8



**LEGEND**

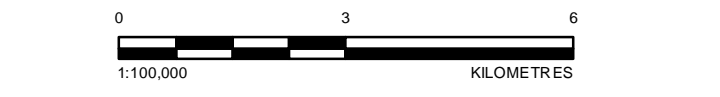
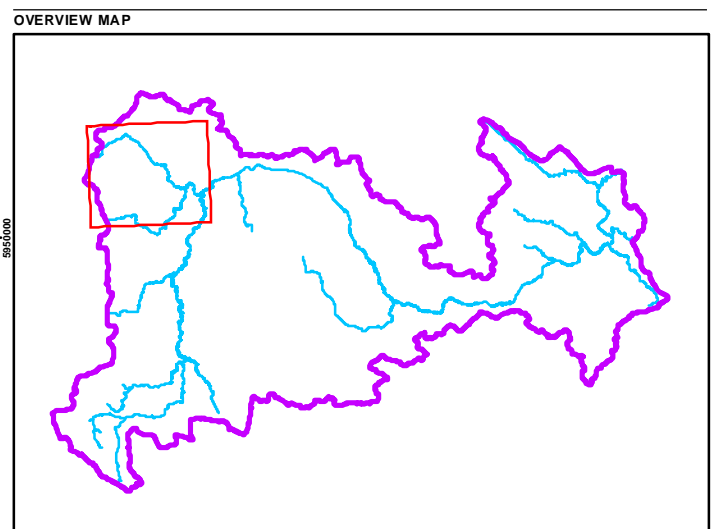
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

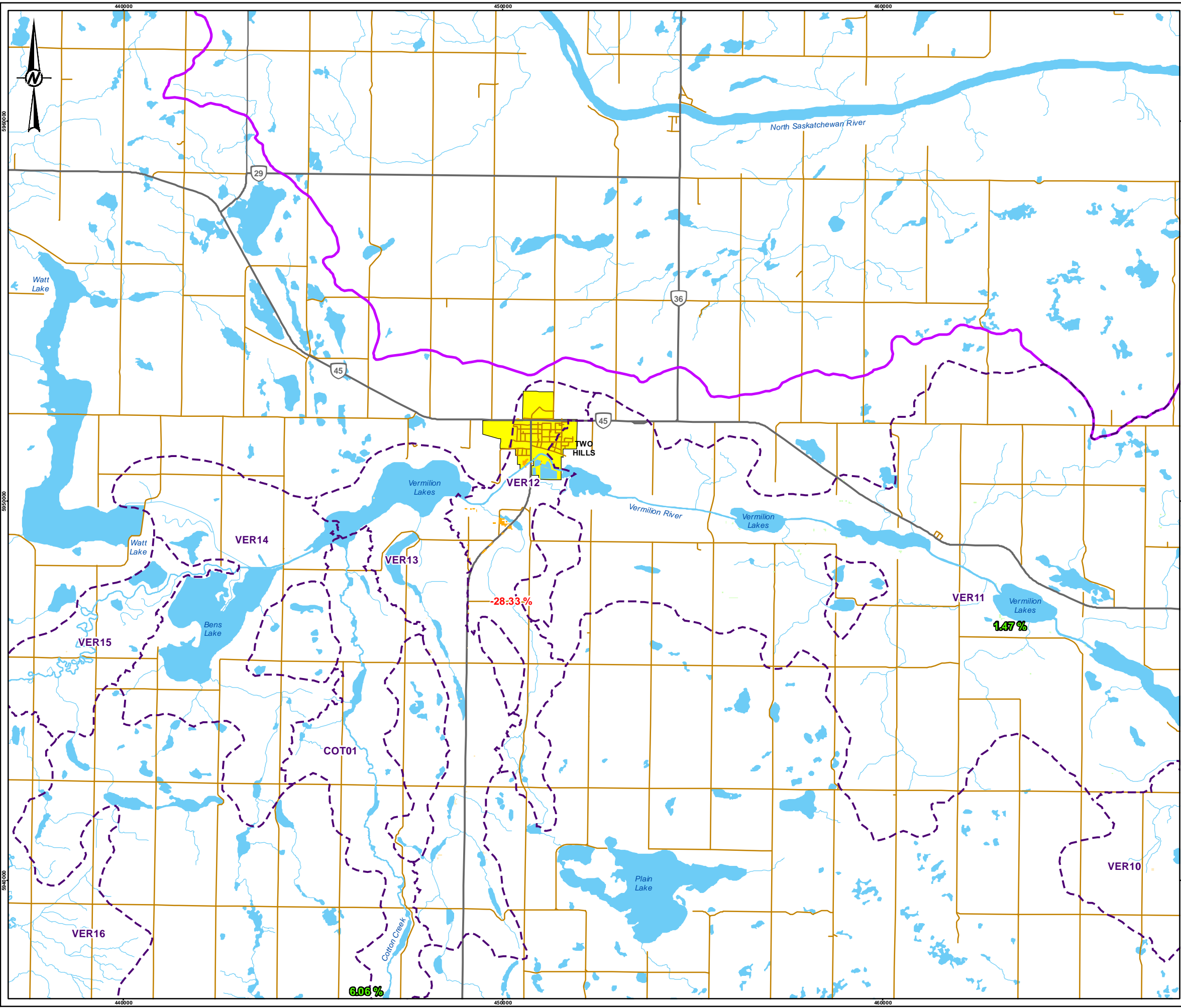
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-e

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:28 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



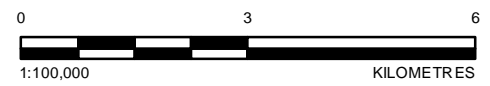
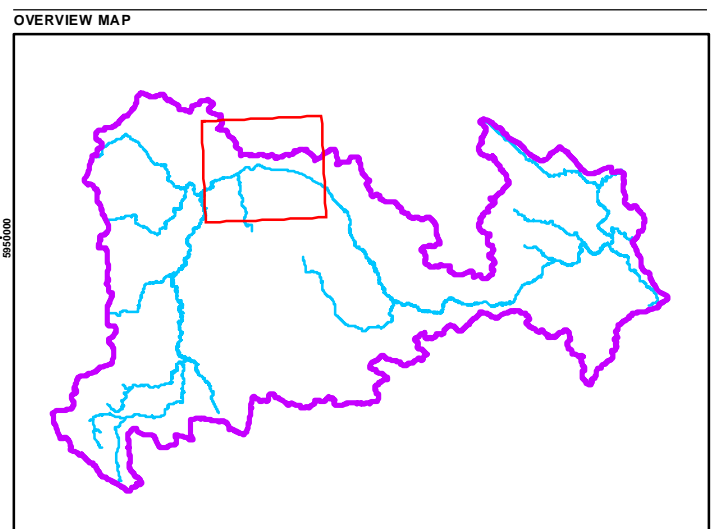
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

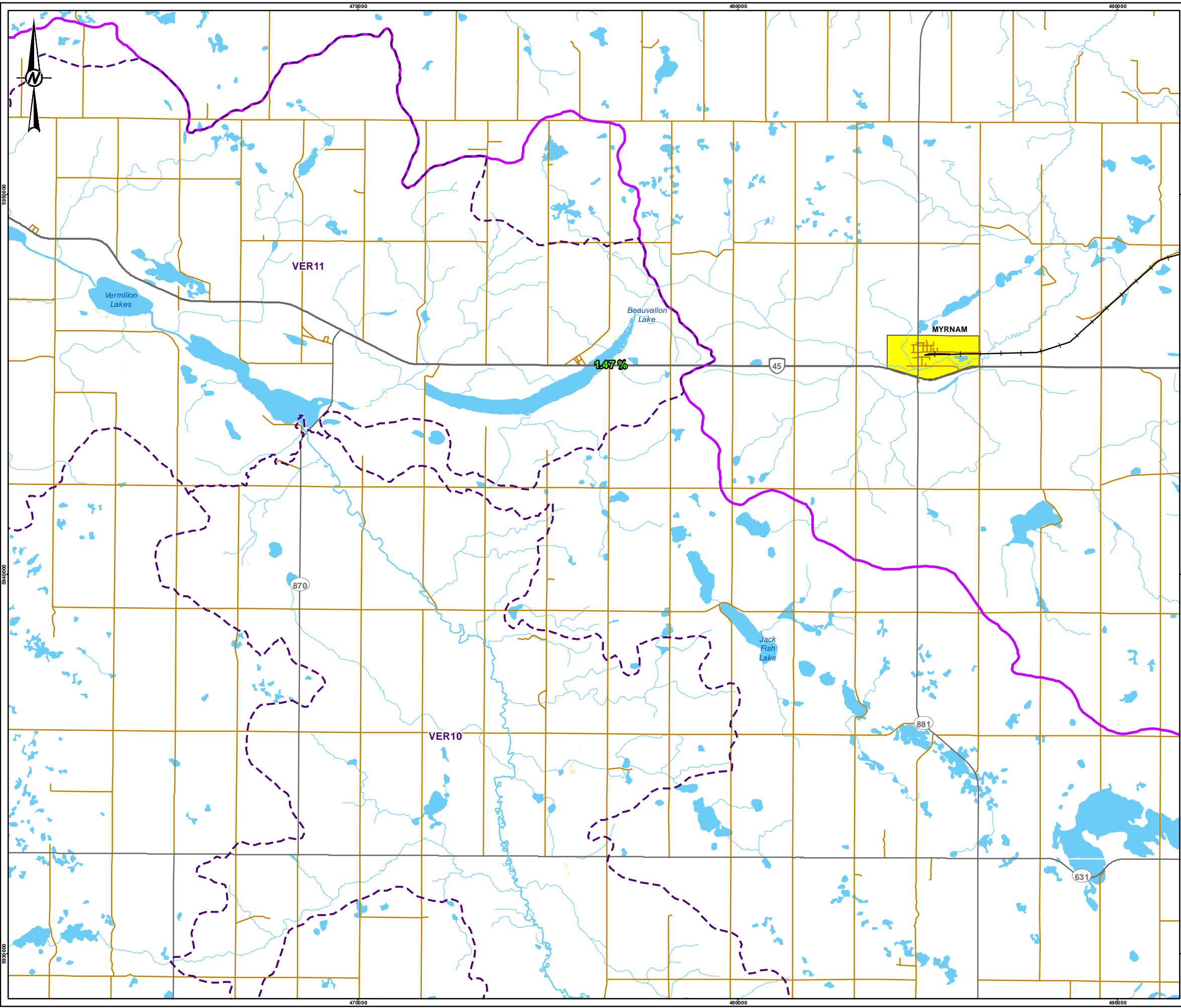
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B13-f**

P:\TM1\131015\1534932\Maping\Maping\1534932\_Landcover\_Change\_Presentation\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:34 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





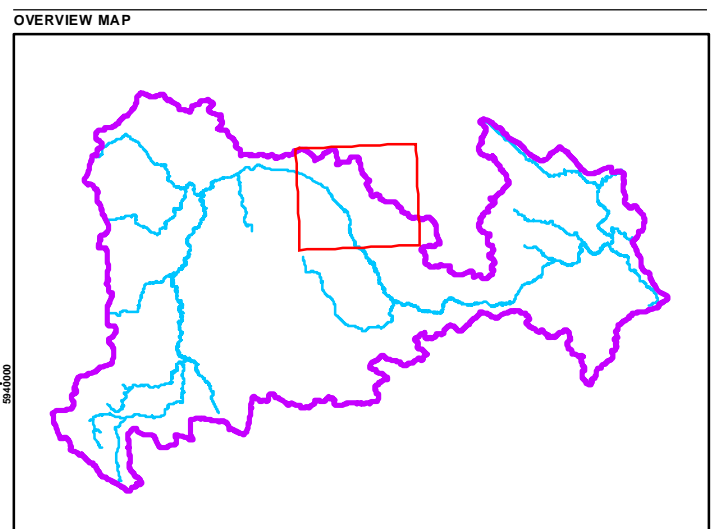
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

1.5% / - 1.5% Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILLION RIVER

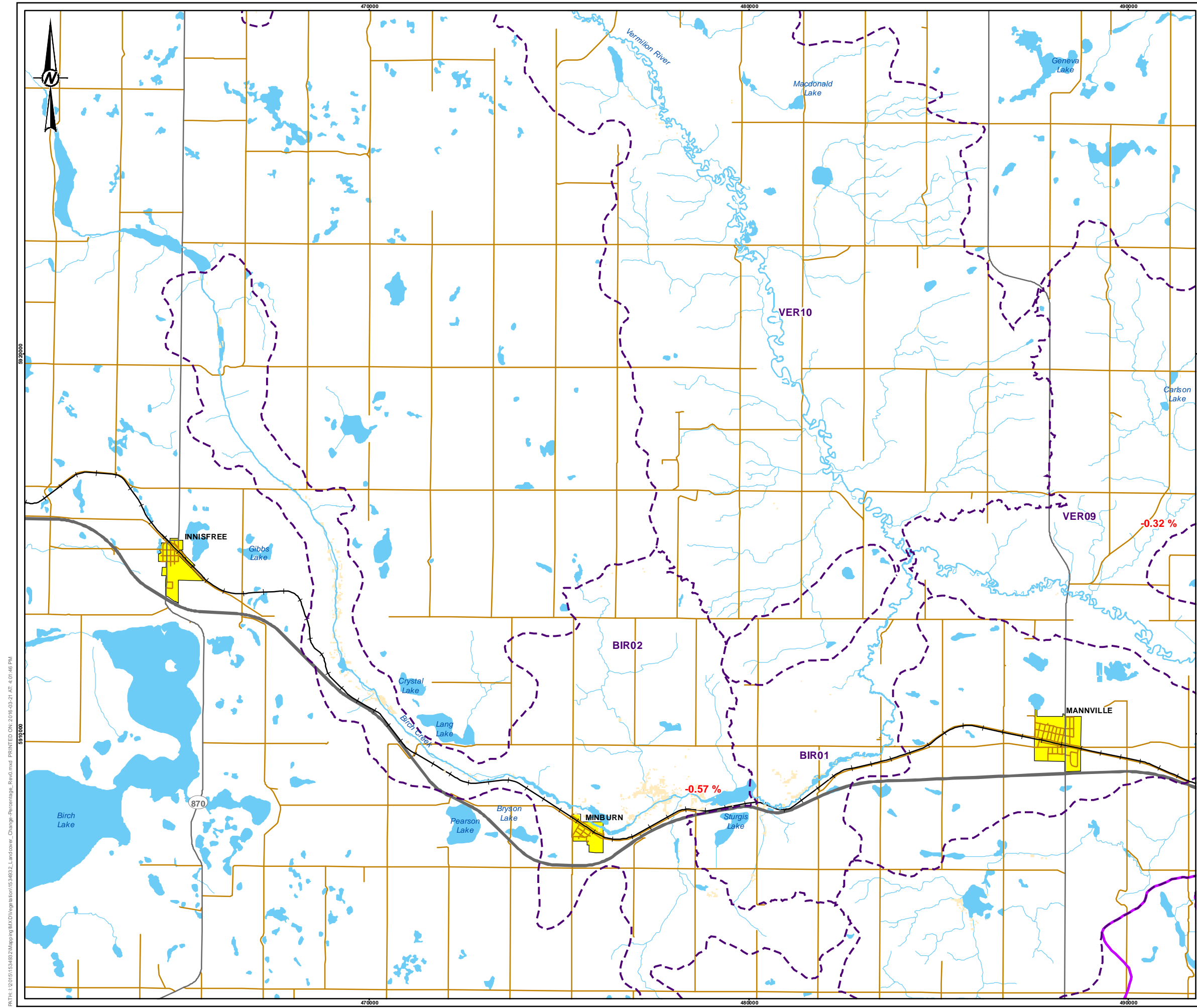
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-g

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:39 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 6



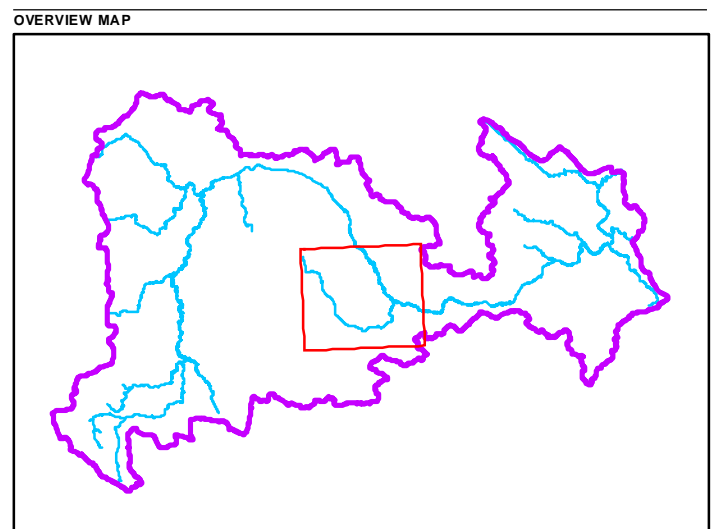
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

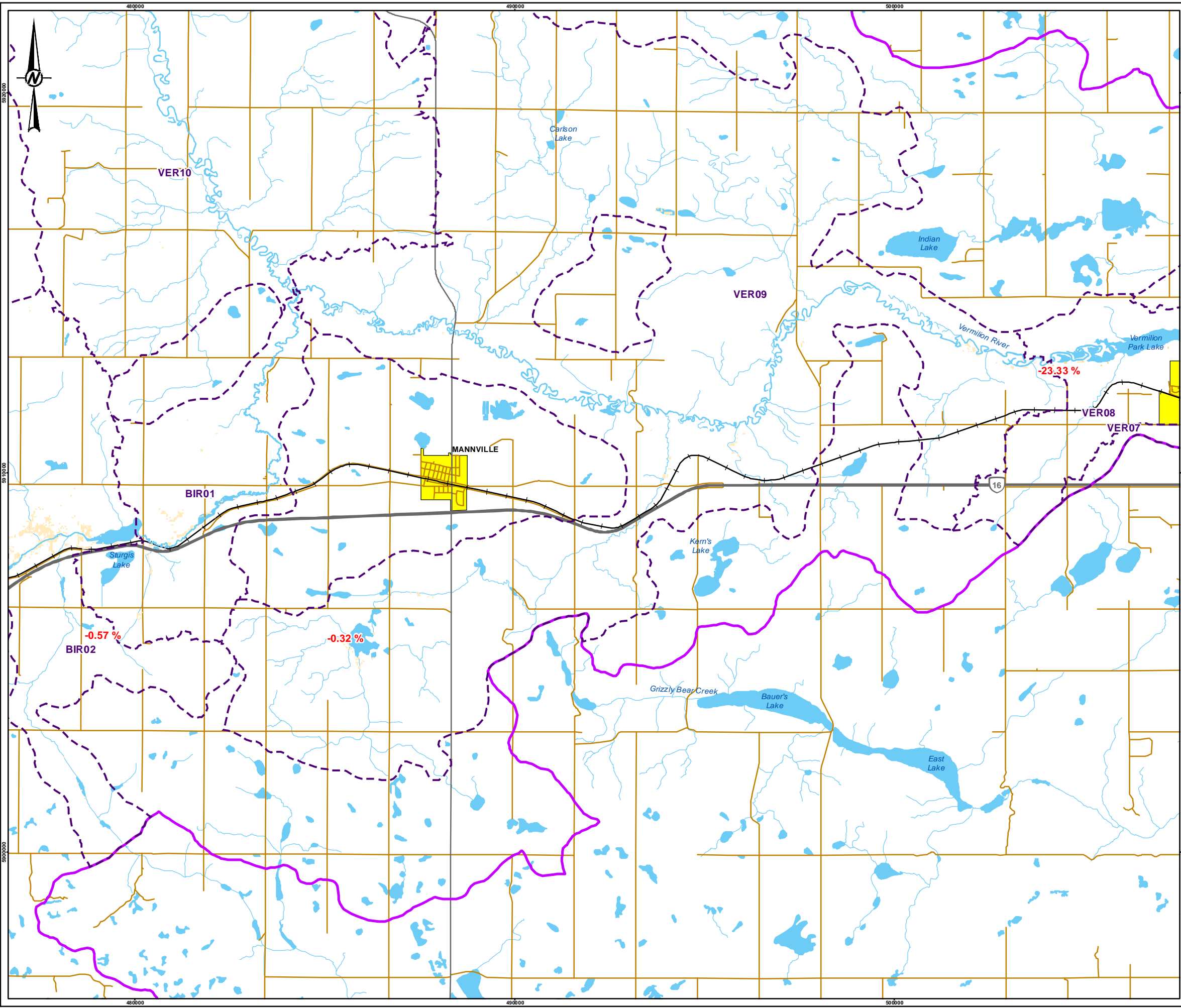
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B13-h**

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:46 PM  
 25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

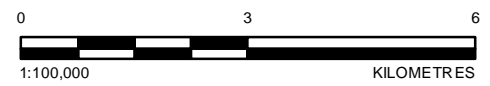
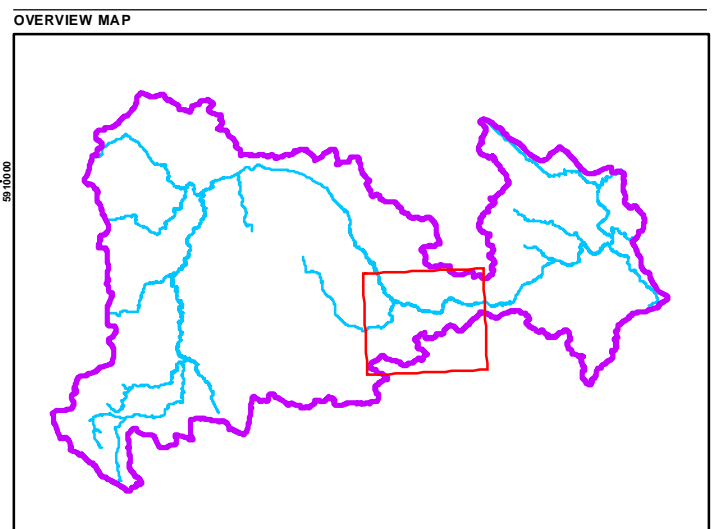
**LANDCOVER TYPE CHANGE PER REACH (%)**

- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1

**1.5% / -1.5%** Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

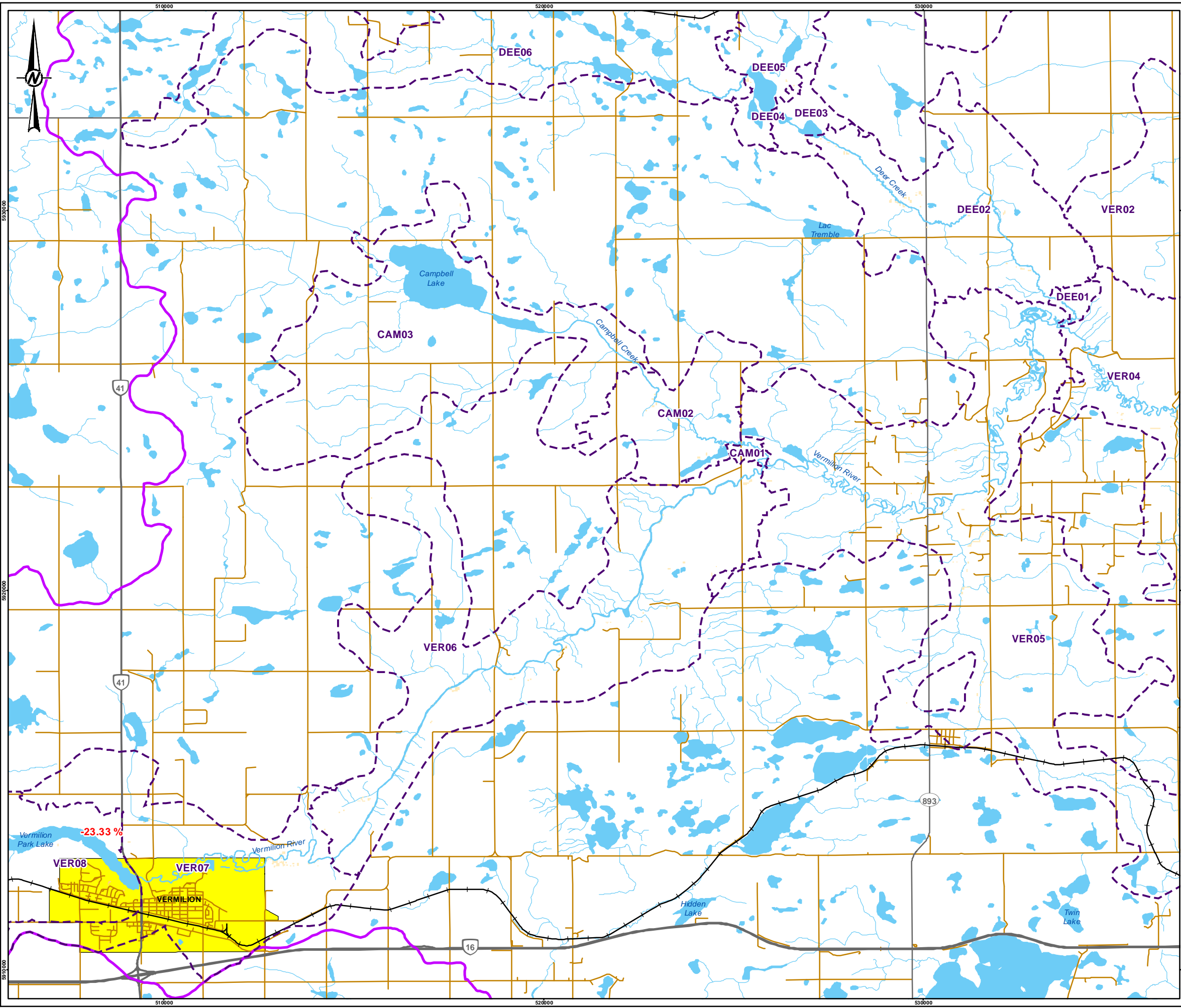
<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-i

PATH: I:\2016\1534932\Maping\MXD\Output\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:53 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





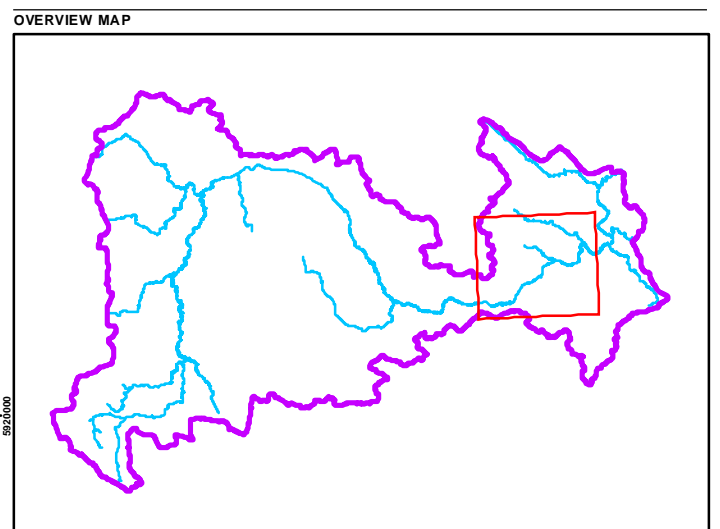
**LEGEND**

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

**LANDCOVER TYPE CHANGE PER REACH (%)**

- < - 100
- 100 to - 75
- 75 to -50
- 50 to -25
- 25 to -1
- 1 to 0
- 0 to 1
- 1 to 25
- 25 to 50
- 50 to 75
- 75 to 100
- > 100

**1.5% / - 1.5%** Landcover Type Change (%)




**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

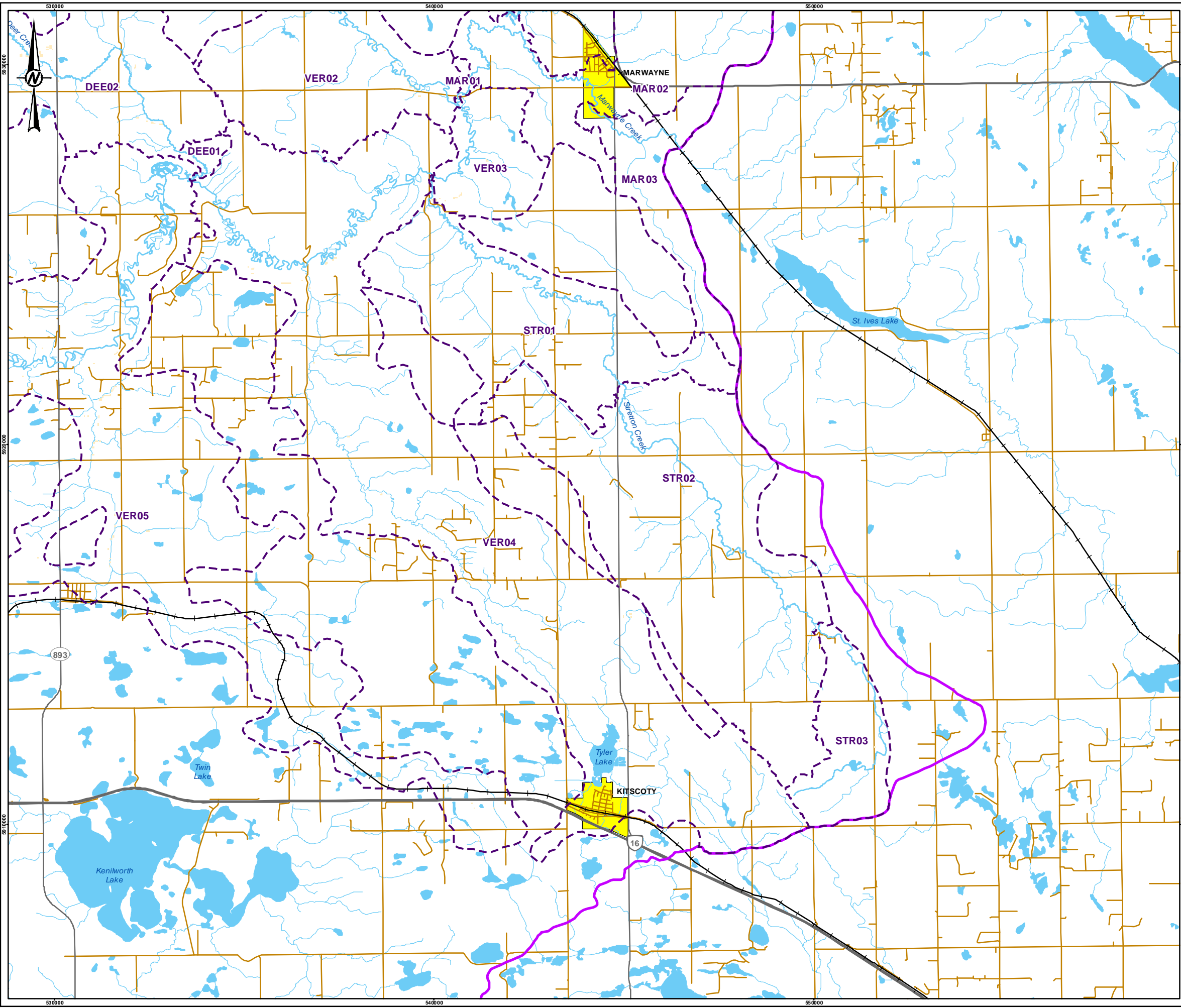
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE **B13-j**

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:01:58 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B



**LEGEND**

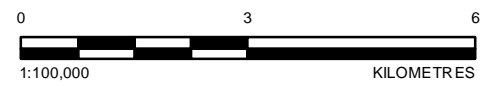
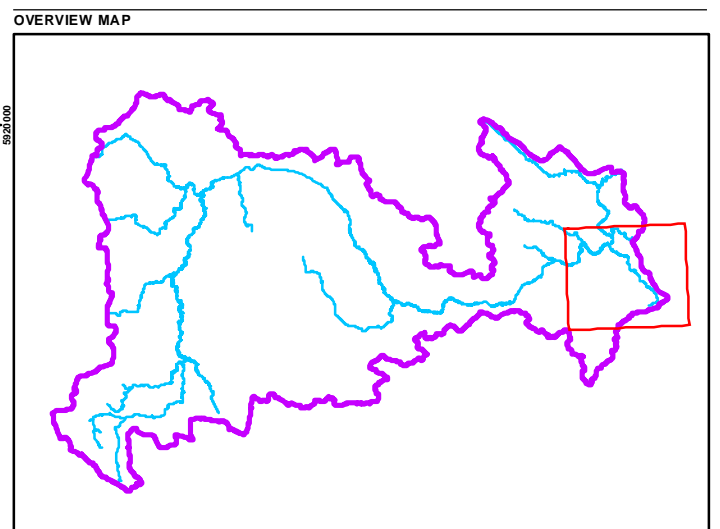
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

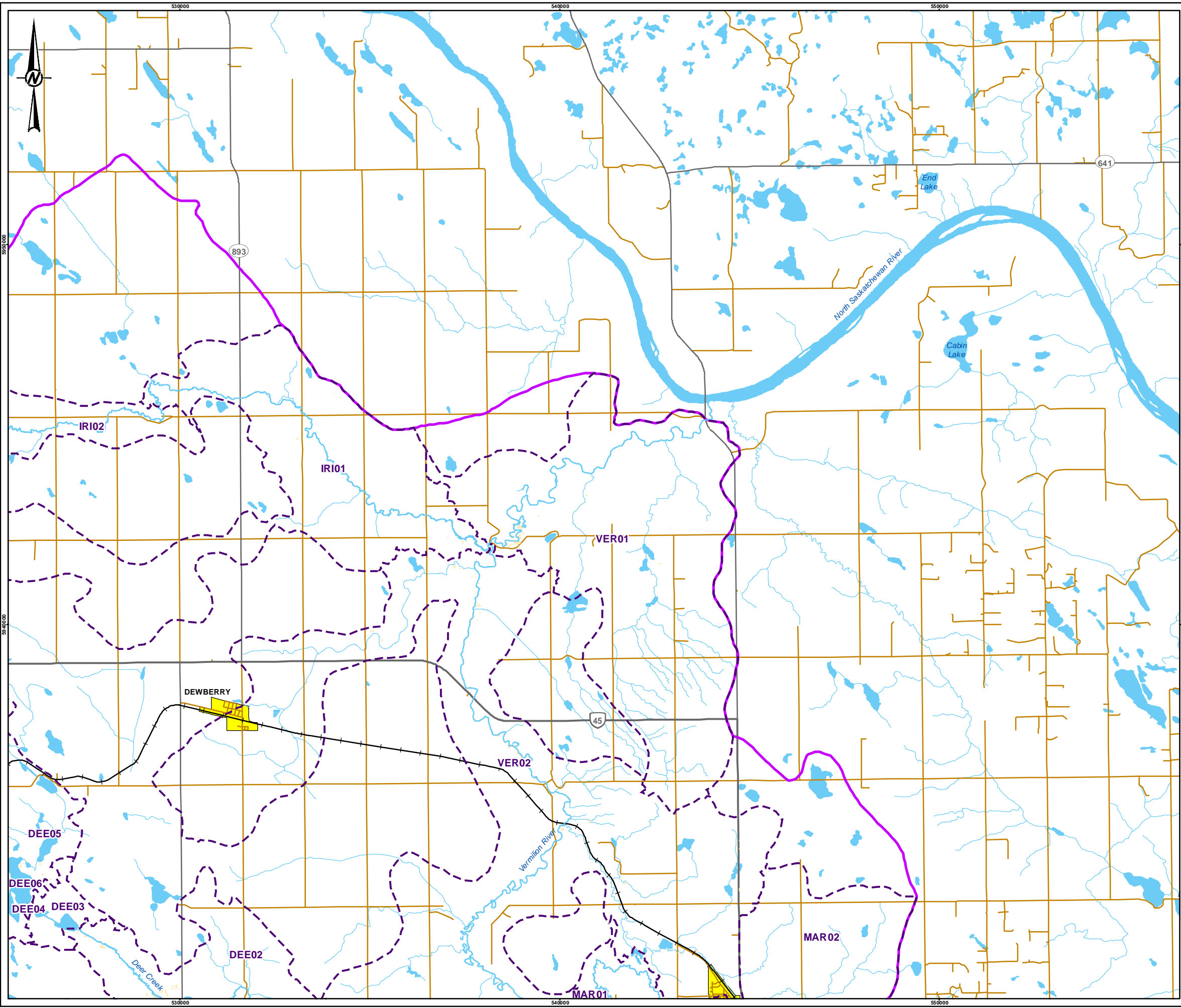
**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE  
 VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-k

P:\1534932\Maping\Maping\1534932\_Landcover\_Change\_Review.mxd PRINTED ON: 2016-03-21 AT: 4:02:03 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A3B 8



**LEGEND**

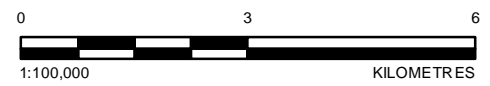
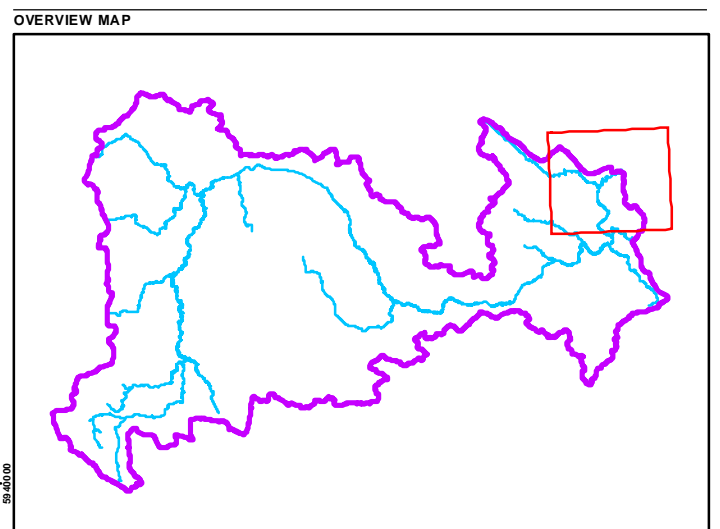
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

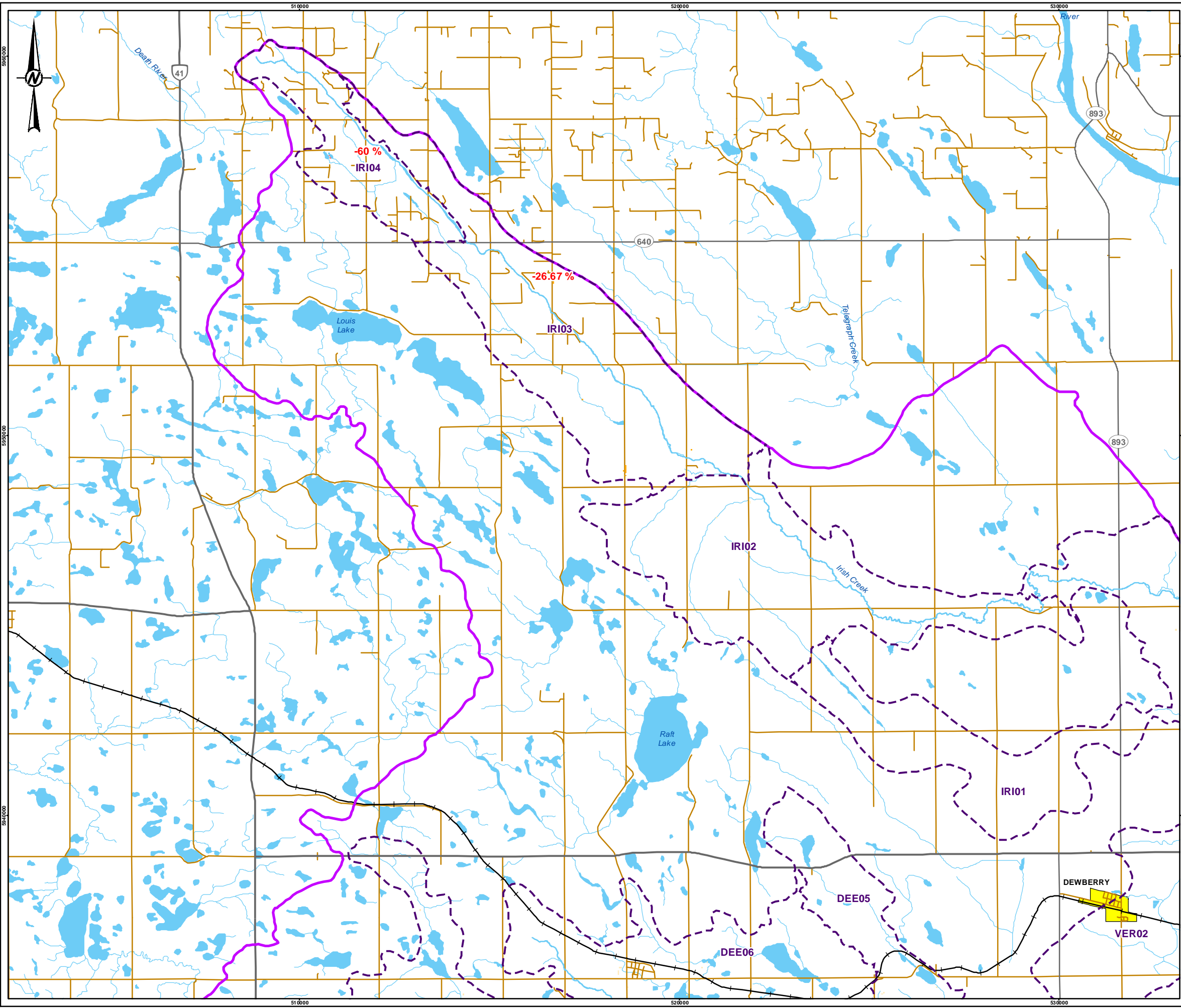
**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-1

PATH: I:\2016\1534932\Maping\Maping\1534932\_Landcover\_Change\_Percentage\_Reach.mxd PRINTED ON: 2016-03-21 AT: 4:02:08 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A4B 8





**LEGEND**

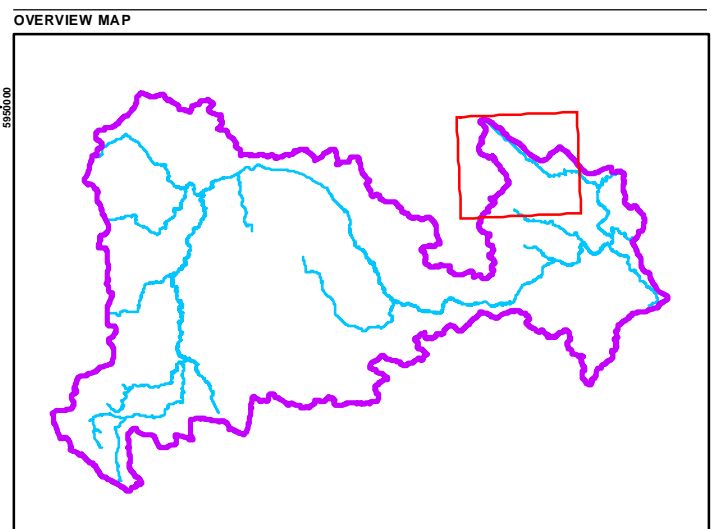
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- POPULATED PLACE
- STUDY AREA
- EFFECTIVE DRAINAGE AREA

-1 to 0
0 to 1
1 to 25
25 to 50
50 to 75
75 to 100
> 100

**LANDCOVER TYPE CHANGE PER REACH (%)**

< -100
-100 to -75
-75 to -50
-50 to -25
-25 to -1
1.5% / -1.5%

Landcover Type Change (%)



**REFERENCE(S)**  
 ALBERTA DIGITAL BASE DATA OBTAINED FROM ATALIS LTD © GOVERNMENT OF ALBERTA 2014.  
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 PROJECTION: UTM ZONE 12 DATUM: NAD 83

**CLIENT**  
 NORTH SASKATCHEWAN WATERSHED ALLIANCE

**PROJECT**  
 AERIAL ASSESSMENT OF THE RIPARIAN AREAS OF THE VERMILION RIVER

**TITLE**  
 LANDCOVER CHANGE 1990 TO 2010 - WETLAND SHRUB

<b>CONSULTANT</b>	YYYY-MM-DD	2016-03-21
	DESIGNED	V.COENEN
	PREPARED	P.THIEDE
	REVIEWED	P.THIEDE
	APPROVED	V.COENEN

PROJECT NO. 1534932 CONTROL REV. A FIGURE B13-m

PATH: I:\2016\1534932\Maping\Map\1534932\_Landcover\_Change\_Overview.aprx Printed on: 2016-03-21 AM 4:02:14 PM  
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS B