

AECOM

Field Crew: CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GSH 2016 Turbine # C144
 Date: Dec 16, 2011 Start time: 11:15 End Time: 11:45
 Weather Conditions: Cloudy, 1°C Field Notes By: CB

Site Location

Goshen Ln, south of South Rd. *only east side investigated
 *west side

UTM Co-ordinates

Easting: 0451895 Northing: 4791020 Description: at stream edge.
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Type of Watercourse

Residential Meadow
 Agriculture Wetland
 Forest Livestock
 Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Other:

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

- Tile drains flowing (east side)

In-Situ Water Quality

Ground Water Indicators

WT (°C): / AT (°C): /
 pH: / Cond (s/cm): /
 Water Clarity: Clear Turbid
 Watercress Bank Seepage
 Iron Staining None
 Bubbling Other

Notes: wg not working, water brown

Stream Morphology

Site Length (m): Bank Stability:

Channel Dimensions				Stable	Slightly unstable	Moderately unstable	Unstable
Mean Wetted Width (m):	<u>5</u>	Mean Bankfull Width (m):	<u>6.5</u>	Left Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mean Wetted Depth (m):	<u>n/a</u>	Mean Bankfull Depth (m):	<u>n/a</u>	Right Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Flow Description: slow flow, mod level

Notes: depth measurements not possible - from edge measured depth of 0.80 m.

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Stream Morphology (continued)

Substrate (<=>)

- Bo - Boulder
- Co - Cobble
- Gr - Gravel
- Sa - Sand
- Si - Silt
- Cl - Clay
- MK - Muck
- DT - Detritus
- Other

Description

Si, Cl

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Notes:

high flow

Habitat

Instream Cover (%)

n/a

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

- could not wade in a water too turbid to do from bank edge

Canopy Cover (% closed cover):

100-90%

30-1%

90-80%

0%

60-30%

Types of Cover (% cover)

Trees _____ Shrubs _____ Man-made structures _____
 Grasses 100 Herbaceous _____ Other _____

Notes:

Obstructions to Fish Passage

No Obstructions

Man-Made

Natural

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

flat mostly w some depression areas

Terrestrial features Present

Yes

 No

Terrestrial Recon Form Filled out

Yes

 No

C144

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Other General Comments Regarding the Study Area:

- stream too deep to wade in
- channelized & uniform throughout site
- debris jams noted throughout - ~~big~~ banks - not blocking flow

Photo log

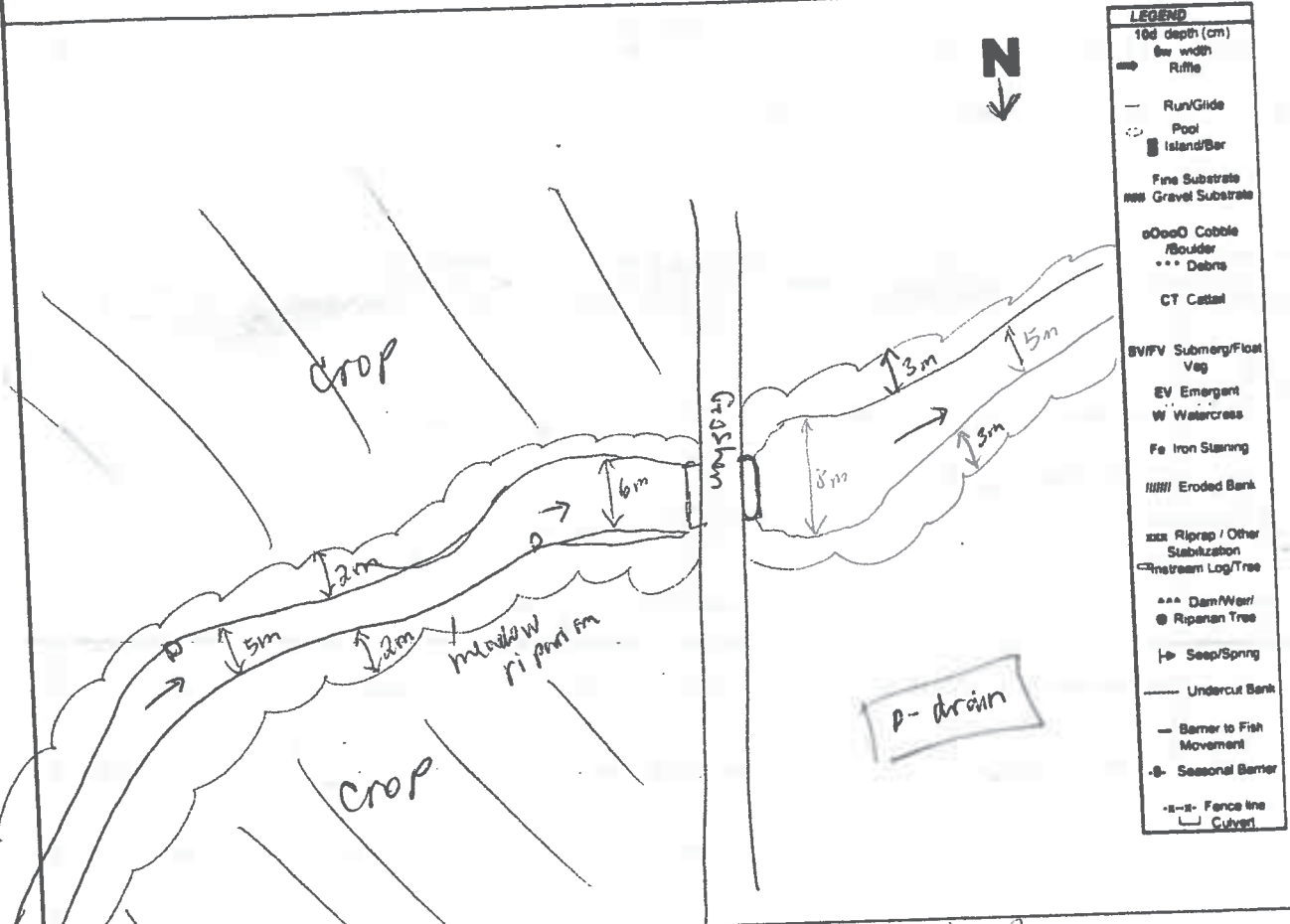
Picture #	Description	Picture #	Description
104	West side		
105	East side		
↓			
113			

C144

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Watercourse Sketch

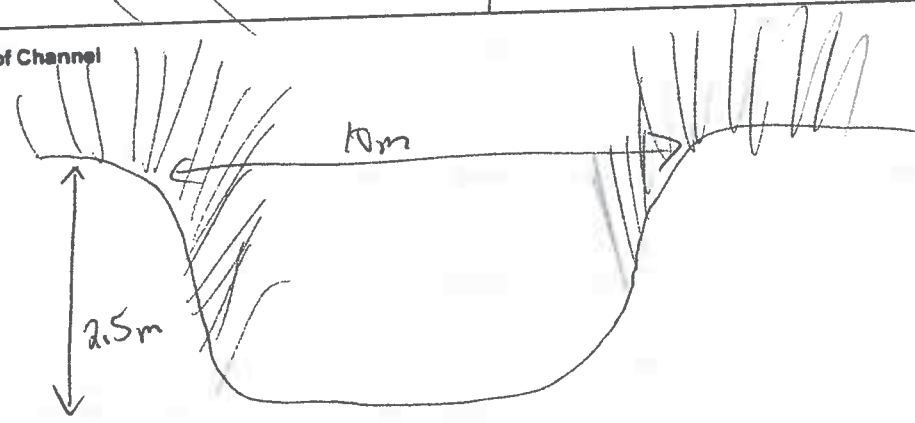
Study Area: Jericho Goshen Bluewater Land Parcel# GSH2016 Turbine # C144



LEGEND

- 100 depth (cm)
- Bar width
- Rifle
- Run/Glide
- Pool
- Island/Bar
- Fine Substrate
- Gravel Substrate
- Cobble/Boulder
- Debris
- Catfall
- SVFV Submerg/Float Veg
- EV Emergent
- W Watercress
- Fe Iron Staining
- Eroded Bank
- Riprap / Other Stabilization
- Instream Log/Tree
- Dam/Weir
- Riparian Tree
- Seep/Spring
- Undercut Bank
- Barrier to Fish Movement
- Seasonal Barrier
- Fence line
- Culvert

Horizontal View of Channel



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Field Crew: Dart + Ferris

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GSH2016 Turbine # C144
 Date: Nov 18, 2011 Start time: 9:30 End Time: 9:48

Weather Conditions: Sunny, 0°C Field Notes By: Dart.

Site Location: C144

UTM Co-ordinates

Easting: 451845 Northing: 4790939 Description: C144
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Residential Meadow
 Agriculture Wetland
 Forest Livestock

Type of Watercourse

Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)
Agriculture land on both sides of creek

In-Situ Water Quality

WT (°C): 3.2 AT (°C): 0°C
 pH: 7.01 Cond (µs/cm): 754
 Water Clarity: Clear Turbid

Ground Water Indicators

Watercress Bank Seepage
 Iron Staining None
 Bubbling Other

Notes:
x No tile drains observed near road

Stream Morphology

Site Length (m): Bank Height: 7.0 Bank width: 15m
 Channel Dimensions
 Mean Wetted Width (m): 7.5 Mean Bankfull Width (m): 8.5
 Mean Wetted Depth (m): ~1.5 Mean Bankfull Depth (m): 2.0
 Bank Stability:

	Stable	Slightly unstable	Moderately unstable	Unstable
Left Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Flow Description:
Flow ~1.5/m flowing NE
@ creek edge, depth = 0.40m
 Notes:
Vegetated banks w grass & shrubs - some trees on top of bank
~3m buffer on north bank & 3m on south, however
@ west/south side of road there is a buffer ~15-20m wide.

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Stream Morphology (continued)

Substrate (<=>)

- Bo - Boulder
- Co - Cobble
- Gr - Gravel
- Sa - Sand
- Si - Silt
- Cl - Clay
- MK - Muck
- DT - Detritus
- Other

Description

Sixci

Notes:

Morphological Structure (%)			
Pool	Riffle	Run	Flat
		50	50

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
						overhanging veg = 20%

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed cover):

- 100-90%
- 90-60%
- 60-30%
- 30-1%
- 0%

Types of Cover (% cover)

- Trees 20
- Grasses 30
- Shrubs 50
- Herbaceous _____
- Man-made structures _____
- Other _____

Notes:

Obstructions to Fish Passage

- No Obstructions
- Natural
- Man-Made

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

land fairly flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

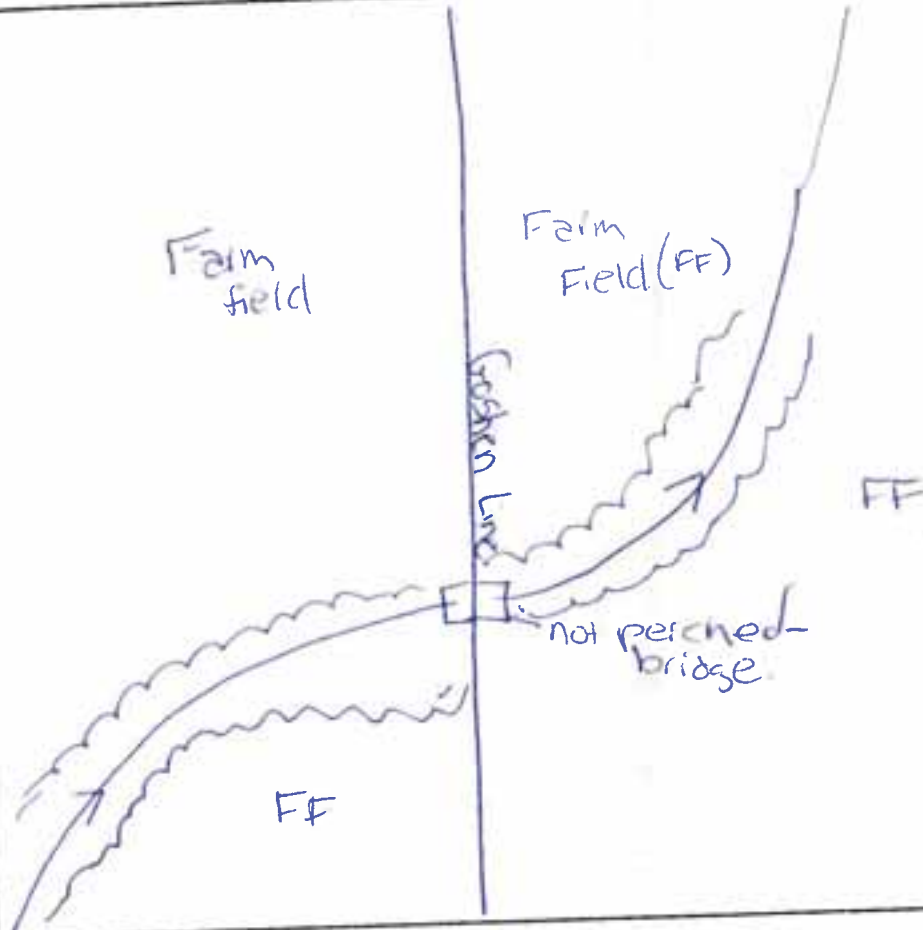
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Watercourse Sketch

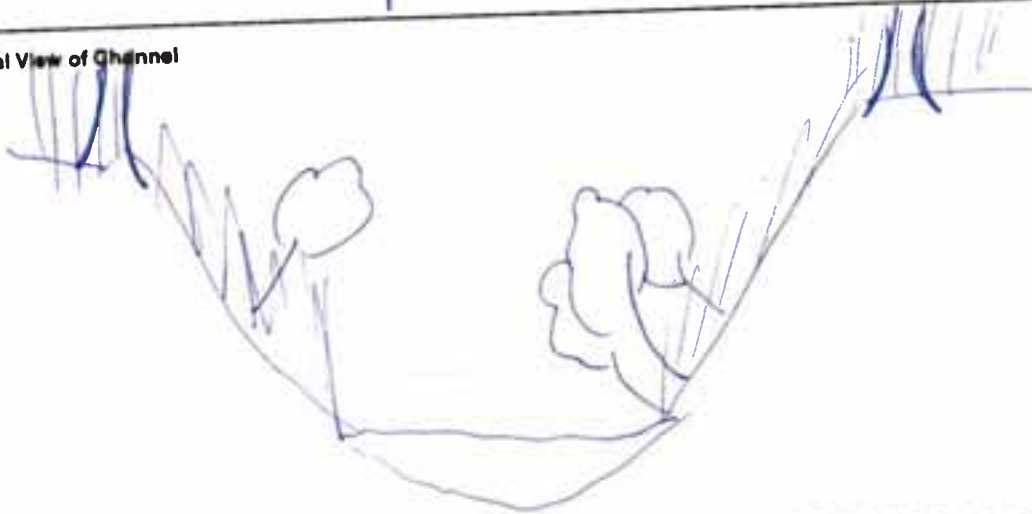
Study Area: Jencho Gosher Bluewater Land Parcel# G54 2016 Turbine # C144

N ↑

LEGEND	
10d depth (cm)	→
Bar width	→
Rifle	→
Run/Glide	—
Pool	○
Island/Bar	■
Fine Substrate	—
Gravel Substrate	—
Cobble/Boulder	oOooO
Debris	***
Catal	CT
Submerg/Float Veg	SVFV
Emergent	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxx
Instream Log/Tree	—
Dam/Weir	***
Riparian Tree	●
Seep/Spring	↳
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	—
Fence line	-x-x-
Culvert	—



Horizontal View of Channel



Property ID: GSA 1012 (C189) Date: Dec 22 / 2011

Property Access: Property Access to 1012 Start Time: 8:55
End Time: 9:02

Field Investigators: SA + TS Weather: cloudy 5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

low lying area present
No water
* Roadside *

Photograph Numbers: 1-5

Property ID: GSH 1012 C189 Date: Dec 9 / 11

Property Access: Roadside Survey Start Time: 10:35
End Time: 10:45

Field Investigators: CB, MO Weather: Light Snow

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

→ full assessment not completed by landowner
contact was not made at the time

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

Roadside Survey
- no depression, swale or channel observed
- agricultural field, ploughed through
- barely flat

Photograph Numbers: 37-40

pics taken from GPS 045 3031
48 00027

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Field Crew: CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1034 Turbine # C208
 Date: Dec 15/11 Start time: 13:50 End Time: 14:15

Weather Conditions: Sunny, 10°C Field Notes By: CB

Site Location

Bronson Line, North of Parkwood.

UTM Co-ordinates

Easting: 0448365 Northing: 4890461 Description: Roadside Culvert
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Residential Meadow
 Agriculture Wetland
 Forest Livestock

Type of Watercourse

Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Other:

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

- tile drain inputs noted coming from AS#1034

In-Situ Water Quality

WT (°C): 7.9 AT (°C): 11°C
 pH: 7.53 Cond (µs/cm): 612
 Water Clarity: Clear Turbid

Ground Water Indicators

Watercress Bank Seepage
 Iron Staining None
 Bubbling Other

throughout site.

Notes: brown

Stream Morphology

Site Length (m): Bank Stability:

Channel Dimensions				Stable	Slightly unstable	Moderately unstable	Unstable
Mean Wetted Width (m):	<u>2</u>	Mean Bankfull Width (m):	<u>3.5</u>	Left Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mean Wetted Depth (m):	<u>0.3</u>	Mean Bankfull Depth (m):	<u>0.45</u>	Right Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Flow Description: high flow, mod velocity

Notes: sl. unstable banks occurring after crossing toward road.

BD
11:44

Stream Morphology (continued)

Substrate (<=>)

- Description**
- Bo - Boulder
 - Co - Cobble
 - Gr - Gravel
 - Sa - Sand
 - Si - Silt
 - Cl - Clay
 - MK - Muck
 - DT - Detritus
 - Other

si > gr > Co, bo > cl > dt

Morphological Structure (%)			
Pool	Riffle	Run	Flat
		100	

Notes:

high flow

Habitat

Instream Cover (%) 50

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
		30	20	20	30 30	

***Aquatic Vegetation Types Present (algae, submergent, emergent etc.)**

Emergent veg + watercress

Canopy Cover (% closed cover):

- 100-90%
- 90-60%
- 60-30%
- 30-1%
- 0%

Types of Cover (% cover)

- Trees 50
- Grasses 50
- Shrubs _____
- Herbaceous _____
- Man-made structures _____
- Other _____

Notes:

Obstructions to Fish Passage

- No Obstructions
- Natural
- Man-Made

Description:

perched culvert at property line (south side)

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

- flat

Terrestrial features Present

Yes No

Terrestrial Recon Form Filled out

Yes No

C208

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Other General Comments Regarding the Study Area:

- wildlife den observed east of crossing
- multiple tile drains flowing into channel - appears to be agri drain

Photo log

Picture #	Description	Picture #	Description
50-67			
50	West side		
51 →	east side		
57, 60	- watercress		
67	punched Culvert		

C208

Watercourse Sketch

Study Area:

Jericho

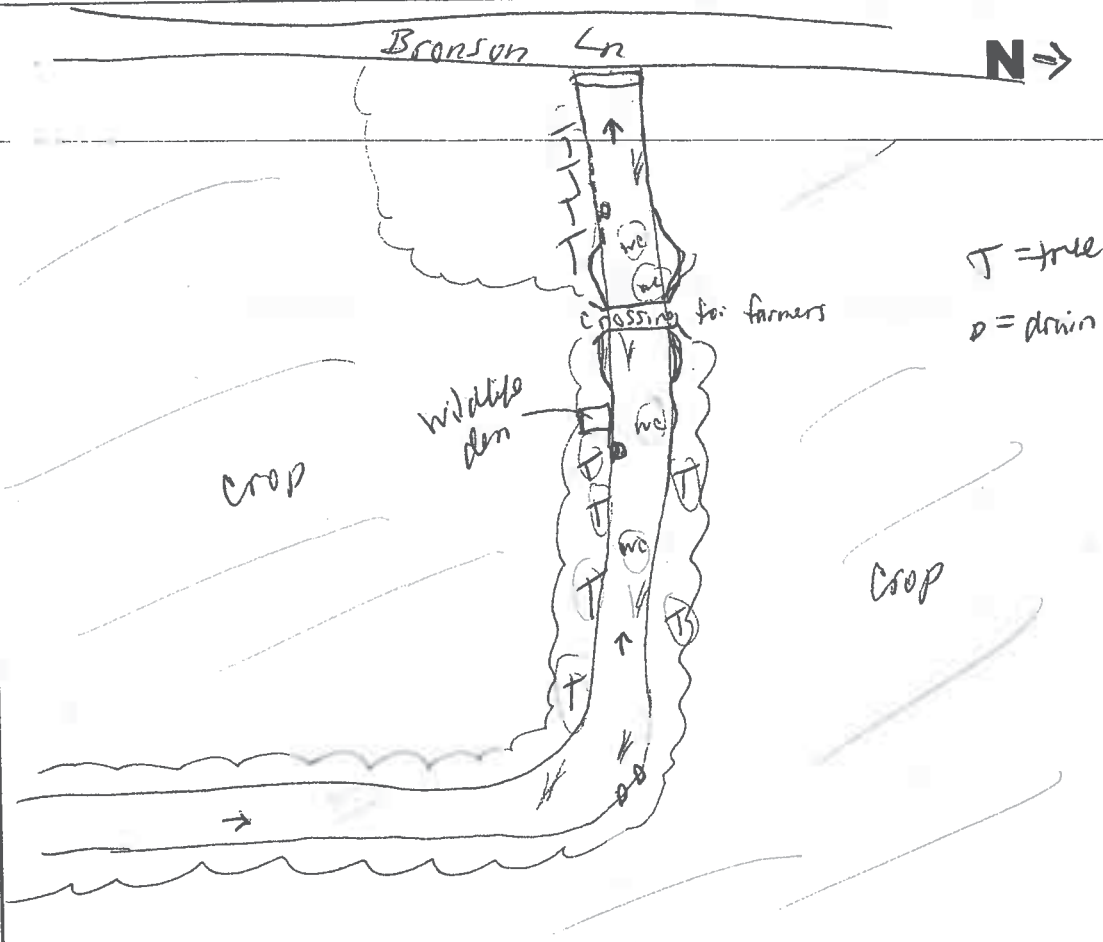
Goshen

Bluewater Land Parcel#

1034

Turbine #

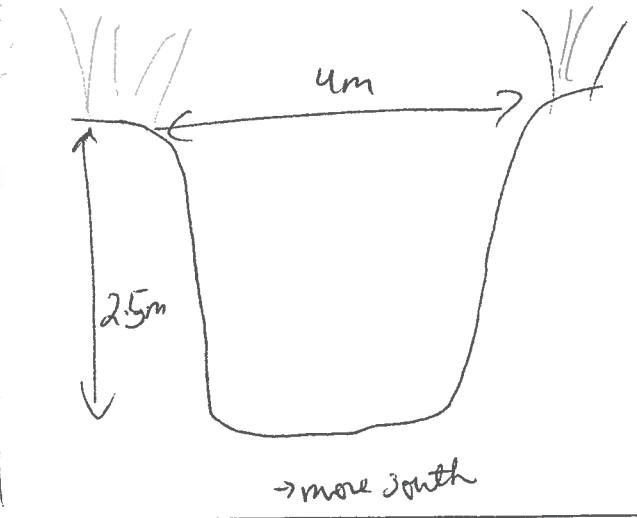
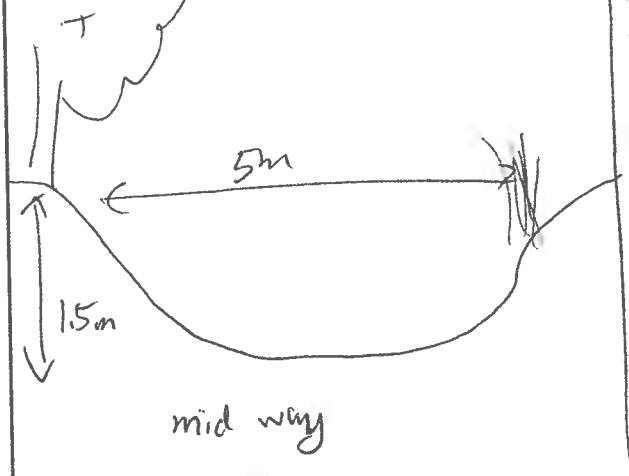
C208



LEGEND	
100 depth (cm)	→
6w width	↔
Riffle	⌈
Run/Glide	⌋
Pool	○
Island/Bar	■
Fine Substrate	·
### Gravel Substrate	###
o○○o Cobble/Boulder	o○○o
*** Debris	***
CT Cattail	CT
SV/FV Submerg/Float Veg	SV/FV
EV Emergent	EV
W Watercress	W
Fe Iron Staining	Fe
Eroded Bank	
xxx Riprap / Other Stabilization	xxx
∩ Instream Log/Tree	∩
^^^ Dam/Weir	^^^
⊙ Riparian Tree	⊙
↳ Seep/Spring	↳
— Undercut Bank	—
— Barrier to Fish Movement	—
-S- Seasonal Barrier	-S-
-x-x- Fence line	-x-x-
⌊ Culvert	⌊

T = tree
D = drain

Horizontal View of Channel



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Field Crew: CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1161/1153/1154 Turbine # C209
 Date: Dec 15/11 Start time: 13:30 End Time: 13:45

Weather Conditions: Cloudy 11°C Field Notes By: CB

Site Location

Bronson Line, South of McDonald. Roadside Survey

UTM Co-ordinates

Easting: 0448311 Northing: 4800846 Description: Road Culvert.
 Easting: _____ Northing: _____ Description: _____
 Easting: _____ Northing: _____ Description: _____
 Easting: _____ Northing: _____ Description: _____

Surrounding Landuse/Pollution Sources

Residential Meadow
 Agriculture Wetland
 Forest Livestock

Type of Watercourse

Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Other: _____

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

no tile inputs observed.

In-Situ Water Quality

WT (°C): 8.00 AT (°C): _____
 pH: 7.93 Cond (µs/cm): 577
 Water Clarity: Clear Turbid

Ground Water Indicators

Watercress Bank Seepage
 Iron Staining None
 Bubbling Other

Notes: brown in color

Stream Morphology

Site Length (m): _____ Bank Stability:

Channel Dimensions				Stable	Slightly unstable	Moderately unstable	Unstable
Mean Wetted Width (m):	<u>1.5</u>	Mean Bankfull Width (m):	<u>2.5</u>	Left Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mean Wetted Depth (m):	<u>n/a</u>	Mean Bankfull Depth (m):	<u>n/a</u>	Right Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Flow Description: velocity - fast, high flow

Notes: St. unstable banks due to forced bends

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Stream Morphology (continued)

Substrate (<=>)

- Bo - Boulder
- Co - Cobble
- Gr - Gravel
- Sa - Sand
- Si - Silt
- Cl - Clay
- MK - Muck
- DT - Detritus
- Other

Description

at Culvert on west side
gr, sa > clay

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Notes:

high flow

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:

***Aquatic Vegetation Types Present (algae, submergent, emergent etc.)**

→ could not assess - water too turbid + no access

Canopy Cover (% closed cover):

- 100-90%
- 90-80%
- 60-30%
- 30-1%
- 0%

Types of Cover (% cover)

- Trees 10
- Grasses 90
- Shrubs _____
- Herbaceous _____
- Man-made structures _____
- Other _____

Notes:

Obstructions to Fish Passage

- No Obstructions Natural
- Man-Made

Description:

Culvert not pined

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

-flat

Terrestrial features Present

Yes No

Terrestrial Recon Form Filled out

Yes No

C209

Other General Comments Regarding the Study Area:

- Roadsides Survey Conducted
- dense veg cover instream seen on west side
mod " " " east side

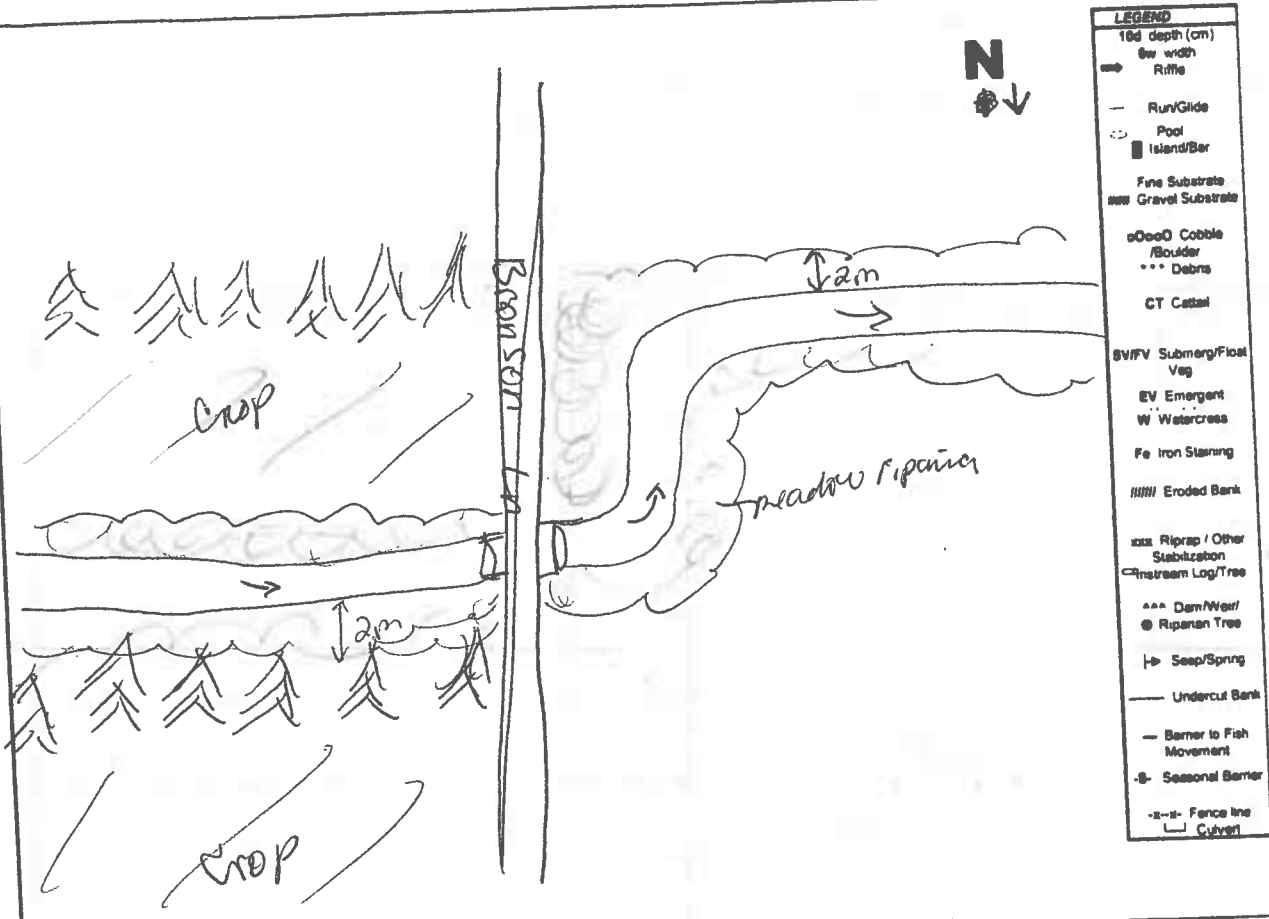
Picture #		Photo log	
Picture #	Description	Picture #	Description
43	west culvert		
44	" source		
45	"		
46	"		
47	East side		
48	" culvert		

C209

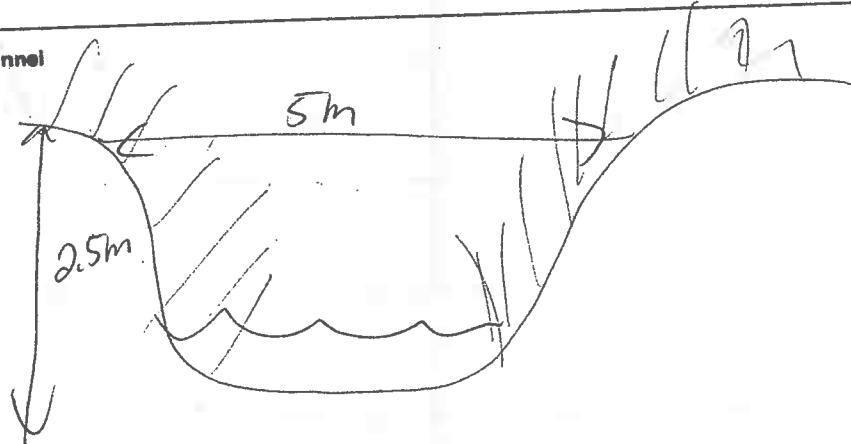
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Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 1161/1153/1154 Turbine # C209



Horizontal View of Channel



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Field Crew: *CB, TJS*

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# *1170, 1038* ~~Tributary#~~ *C 210*
 Date: *Dec 15 / 11* Start time: *10:30* End Time: *10:37*

Weather Conditions: *Cloudy, 10C* Field Notes By: *CB*

Site Location

*Branson Line, north of Pepper Rd. * See notes on next page.*

UTM Co-ordinates

Easting: *0497901* Northing: *4803940* Description: *valley of road.*
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Type of Watercourse

- | | | | |
|--------------------------------------|---|---------------------------------------|--|
| Residential <input type="checkbox"/> | Meadow <input type="checkbox"/> | Intermittent <input type="checkbox"/> | Channelized <input type="checkbox"/> |
| Agriculture <input type="checkbox"/> | Wetland <input checked="" type="checkbox"/> | Permanent <input type="checkbox"/> | Natural Channel <input type="checkbox"/> |
| Forest <input type="checkbox"/> | Livestock <input type="checkbox"/> | Ephemeral <input type="checkbox"/> | |

Other:

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

-tile drained land

In-Situ Water Quality

Ground Water Indicators

WT (°C):	AT(°C):	Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
pH:	Cond (s/cm):	Iron Staining <input type="checkbox"/>	None <input type="checkbox"/>
Water Clarity: Clear <input type="checkbox"/>	Turbid <input type="checkbox"/>	Bubbling <input type="checkbox"/>	Other <input type="checkbox"/>

Notes:

Stream Morphology

Site Length (m):	Bank Stability:															
Channel Dimensions	<table border="0"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Mean Wetted Width (m):</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Mean Wetted Depth (m):</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Stable	Slightly unstable	Moderately unstable	Unstable	Mean Wetted Width (m):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mean Wetted Depth (m):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable												
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<table border="0"> <tr> <td>Mean Bankfull Width (m):</td> <td></td> </tr> <tr> <td>Mean Bankfull Depth (m):</td> <td></td> </tr> </table>	Mean Bankfull Width (m):		Mean Bankfull Depth (m):		<table border="0"> <tr> <td>Left Bank</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	Left Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mean Bankfull Width (m):																
Mean Bankfull Depth (m):																
Left Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Right Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												

Flow Description:

no channel in field

Notes:

AECOM

Stream Morphology (continued)

Substrate (<=>)

- Description**
- Bo - Boulder
 - Co - Cobble
 - Gr - Gravel
 - Sa - Sand
 - Si - Silt
 - Cl - Clay
 - MK - Muck
 - DT - Detritus
 - Other

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed cover):

- 100-90%
- 90-80%
- 80-30%
- 30-1%
- 0%

Types of Cover (% cover)

- Trees _____
- Grasses _____
- Shrubs _____
- Herbaceous _____
- Man-made structures _____
- Other _____

Notes:

Obstructions to Fish Passage

- No Obstructions
- Natural
- Man-Made

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

Terrestrial features Present

Yes No

Terrestrial Recon Form Filled out

Yes No

C210

Other General Comments Regarding the Study Area:

~~no~~
 - no channel observed - appears to have been ploughed through. ~~no~~ Corn field has been planted
 - culvert observed at roadside and tile drain input noted as well - flowi
 ∴ Stream appears to be tile drained.
 → Stream also buried on west side.

Photo log

Picture #	Description	Picture #	Description
1	Culvert on west side of road		
2	Plussed Photo		
3	Tile drain into culvert on East side of road		
4	overview - East side		
5	" on west side		

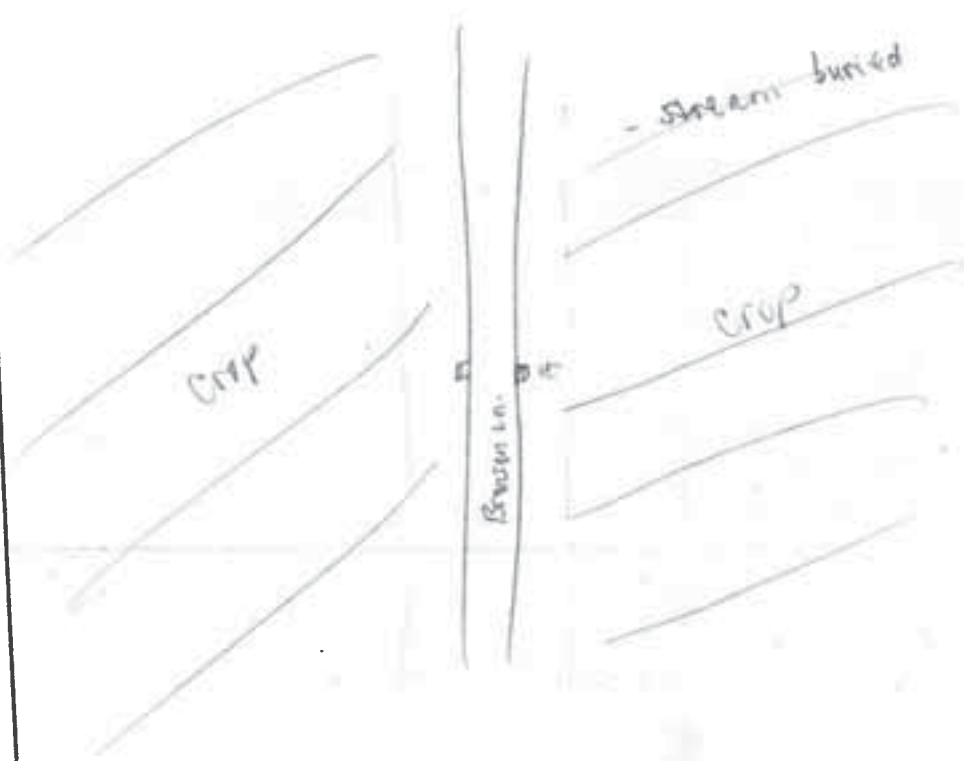
AECOM

Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 1170, 1038 Turbine # C210



LEGEND	
100	depth (cm)
800	bar width
→	Riffle
—	Run/Glide
○	Pool
■	Island/Bar
—	Fine Substrate
---	Gravel Substrate
oOooO	Cobble/Boulder
***	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
—	Instream Log/Tree
▲▲	Dam/Weir
●	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-B-	Seasonal Barrier
-x-x-	Fence line
└┐	Culvert



Horizontal View of Channel



Graspen.
Property ID: 2138 (C211) Date: Dec 15 / 11
Property Access: No Access Start Time: 14:25
End Time: 14:35

Field Investigators: OB, TS Weather: Cloudy, 10°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

*Babylon Line
South of
Dashwood.*

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

Roadside survey.

*Crop agricultural field → feature ploughed
through*

Photograph Numbers: 68, 69.

Property ID: GSH 1362 (A1414) Date: Jan 13, 2012
CA12
Property Access: yes Start Time: 10:15
End Time: 10:25

Field Investigators: CB Weather: Snow, -5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

- field ploughed through

Photograph Numbers: _____

Property ID: GSH 1461 (A115) Date: Jan 13, 2012
(C213)
Property Access: yes Start Time: 11:00
End Time: 11:10

Field Investigators: CR Weather: Snow, -5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

- grassed depression most likely
used for access.

Photograph Numbers: _____

Property ID: GSH 2028 (AH 20) Date: Jan 13, 2012
(C214)
Property Access: yes Start Time: 13:00
End Time: 13:15

Field Investigators: CB Weather: Snow, -5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

- field ploughed through

Photograph Numbers: _____

Property ID: GSH 1033 (AH 22) Date: Jan 13, 2012
(215)
Property Access: yes Start Time: 14:00
End Time: 14:15

Field Investigators: CB Weather: snow, -5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

- no feature
- field ploughed through

Photograph Numbers: _____

Property ID: GSH 1526 (A1+23) Date: Jan 13, 2012
(C216)
Property Access: yes Start Time: 15:00
End Time: 15:15

Field Investigators: CB Weather: Snow, -7°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

- field ploughed through

Photograph Numbers: _____

Property ID: GS47053 (A1119) C217 Date: Jan 13, 2018
Property Access: yes Start Time: 11:30
End Time: 11:40

Field Investigators: C. Boros Weather: Snow, -5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

Photograph Numbers: _____

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 2341541 Site ID: 001
 Date: April 18/12 Start time: 16:30 End Time: 17:00
 Weather Conditions: Sunny 15°C Field Crew: C. Barros, J. L. MRS
 Field Notes By: C. Barros

Site Location

Grand Bend Line, Crediton Rd corner

UTM Coordinates (consultation page if necessary)

Easting: <u>0411082</u>	Northing: <u>4792114</u>	Description: <u>west end - access bridge</u>
Easting:	Northing:	Description:
Easting:	Northing:	Description:
Easting:	Northing:	Description:

Surrounding Land Use

Type of Watercourse

Residential <input checked="" type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other <input type="checkbox"/>			

Description: road adjacent

Description: appears to be recently dug

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)
tile drain

Is any portion of the water body underground or not as mapped? Y/N
 If Yes describe:

GPS Coordinate: Easting - Northing - Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-situ Water Quality

Ground Water and Seepage Indicators

WT (°C): <u>8.1</u>	AT (°C): <u>15</u>	Watercress <input type="checkbox"/> Bank Seepage <input type="checkbox"/> Iron Staining <input type="checkbox"/> None <input checked="" type="checkbox"/> Bubbling <input type="checkbox"/> <input type="checkbox"/> Other <input type="checkbox"/> <input type="checkbox"/>
pH: <u>7.54</u>	Cond (µs/cm): <u>1776</u>	
D.O. (mg/L) <u>18.5</u>		
Water Clarity: <u>Clear</u> <input checked="" type="checkbox"/> Turbid <input type="checkbox"/>		Details:
Water Colour: <u>clear</u>		
Notes:		

Water Bodies Assessment Field Collection Form

Stream Morphology																		
Site Length (m): <u>200m</u>		Bank Stability:																
Channel Dimensions		<table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>			Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable														
Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														
Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														
Mean Wetted Width (m): <u>0.75</u>	Mean Wetted Depth (m): <u>0.05</u>	Description: <u>may have been recently dug</u>																
Mean Bankfull Width (m): <u>1.5</u>	Mean Bankfull Depth (m): <u>0.6</u>																	
Mean Top of Bank Width (m): <u>5m</u>	Mean Top of Bank Depth (m): <u>3m</u>																	
Flow Description: (high or low flow conditions, stagnant, etc) <u>v. low flow, stagnant in some areas</u>																		
Habitat																		
Substrate (<= >)		Morphological Structure (%)																
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Debris		<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td></td> <td></td> <td></td> <td><u>100</u></td> </tr> </table>		Pool	Riffle	Run	Flat				<u>100</u>							
Pool	Riffle	Run	Flat															
			<u>100</u>															
Description <u>gr, sa >> cl, si</u>		Notes:																
Instream Cover (%)																		
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks												
<u>/</u>	<u>/</u>	<u>/</u>	<u>10</u>	<u>20</u>	<u>/</u>	Average Depth: (% Cover) <u>/</u>												
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																		
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <u>algae > emergent veg - grasses blooms</u>																		
Canopy Cover (% closed cover):				Types of Cover (% cover)														
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees	Shrubs	Man-made structures												
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses <u>100</u>	Herbaceous	Other												
60-30%	<input checked="" type="checkbox"/>																	
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																		
Notes: (vegetation species, types of structures) <u>Pine, cedar, oak, maple</u>																		
Riparian Vegetation																		
Width of riparian vegetation: <u>3m</u>																		
Description of vegetation community surrounding 30 m from watercourse: <u>trees, grass</u>																		
Obstructions to Fish Passage																		
No Obstructions	<input checked="" type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input type="checkbox"/>											
Description of Barrier:																		
Height of Barrier (m) <u>/</u>																		
GPS Coordinates: <u>/</u>																		

Water Bodies Assessment Field Collection Form

AECOM

APR 18/12 Date: GSH 1541

Land Parcel/Site ID: 001

Page 3 of 4

Other General Comments Regarding the Study Area:

- Watercourse is a straight channelized feature, low canopy and instream cover.

Additional UTM Coordinates:

Picture #	Description	Picture #	Description
1	overview - looking west to Grand Bend Gully		
2	- looking west		
3-	* looking east		

Water Bodies Assessment Field Collection Form

Study Area:

Jericho

Goshen

Bluewater

Land Parcel# 641 041

Site ID

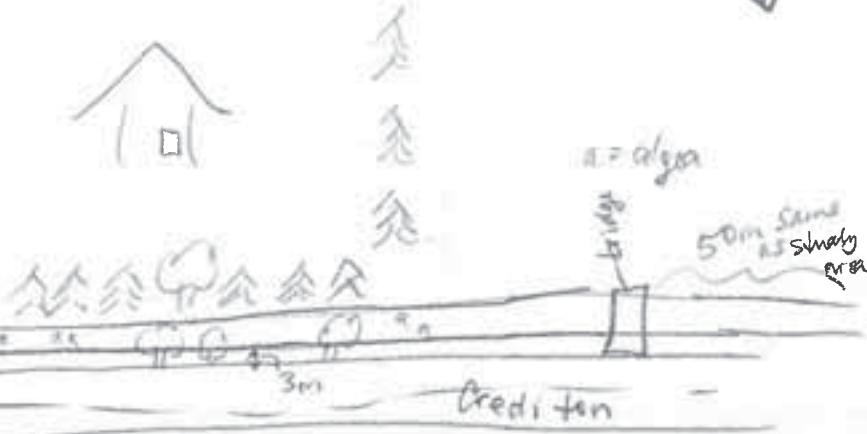
007

Watercourse does not cross
around Bend Line

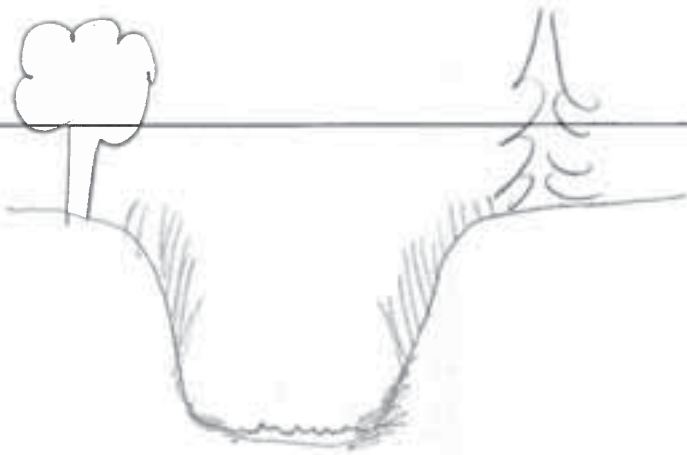
Grand Bend Line



LEGEND	
→	10d depth (cm) 6w width Rifle
⇄	Run/Glide
○	Pool
■	Island/Bar
■	Fine Substrate
##	Gravel Substrate
oOoO	Cobble/Boulder
...	Debris
CT	Cattail
SW/FV	Submerg/Floater Veg
EV	Emergent Vegetation
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
⊞	Instream Log/Tree
AAA	Dam/Weir/ Obstruction
⊙	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence line
⌊	Culvert



Horizontal View of Channel



Initial QA/QC By: BMS

Date: 04/19/2012

Technical QA/QC By: Sawkin

Date: May 3/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GJA1066/004 Site ID: 004
 Date: April 18/12 Start time: 14:25 End Time: 15:53
 Weather Conditions: Sunny, 12°C Field Crew: C. Boris, S. Lohos
 Field Notes By: C. Boris

Site Location

South Rd, west of Bronson, east 1/2 Blackbush Ln

UTM Co-ordinates (consult on page 1 if necessary)

Eastings: <u>0448230</u>	Northing: <u>4791034</u>	Description: <u>start - at dam</u>
Eastings: <u>0447884</u>	Northing: <u>4791130</u>	Description: <u>wq station</u>
Eastings: <u>0447668</u>	Northing: <u>4791192</u>	Description: <u>end Blackbush Ln</u>
Eastings:	Northing:	Description:

Surrounding Landuse

Type of Watercourse

Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other <input type="checkbox"/>			
Description: <u>old corn field</u>		Description: <u>no natural meander</u>	

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

yes tile drains present + flowing

Is any portion of the water body underground or not as mapped? Y / N

If Yes describe:

GPS Coordinate: Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

Exposed Water and Seepage Indicators

WT (°C): <u>14.5</u>	AT (°C): <u>15°C</u>	Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
pH: <u>8.52</u>	Cond (µs/cm): <u>392</u>	Iron Staining <input type="checkbox"/>	None <input checked="" type="checkbox"/>
D.O. (mg/L): <u>12.7</u>		Bubbling <input type="checkbox"/>	
Water Clarity: Clear <input checked="" type="checkbox"/> Turbid <input type="checkbox"/>		Other <input type="checkbox"/>	

Details:

Water Colour: none

Notes:

Water Bodies Assessment Field Collection Form

Stream Morphology																				
Site Length (m): 700m			Bank Stability:																	
Channel Dimensions			<table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>				Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable																
Left Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Mean Wetted Width (m): 2.5 0.5	Mean Wetted Depth (m): 0.5 0.15		Description: erosion may be a result of human impacts, soil type + not necessarily natural meander																	
Mean Bankfull Width (m): 3 3	Mean Bankfull Depth (m): 0.6 0.6																			
Mean Top of Bank Width (m): 6 6	Mean Top of Bank Depth (m): 2.5 2.5																			
Flow Description: (high or low flow conditions, stagnant, etc) slow flow in run areas																				
Habitat																				
Substrate (<=>)			Morphological Structure (%)																	
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus			<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td>30</td> <td>5</td> <td></td> <td>65</td> </tr> </table>			Pool	Riffle	Run	Flat	30	5		65							
Pool	Riffle	Run	Flat																	
30	5		65																	
Description: <1>> sa, si > gr, co > bo			Notes: but no natural meander																	
Instream Cover (%) 20																				
Other plant debris	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks														
20	20	15	5	40		Average Depth: (% Cover) 10														
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) submergent algae																				
Canopy Cover (% closed cover):			Types of Cover (% cover)																	
100-90% <input type="checkbox"/>	30-1% <input type="checkbox"/>	Trees 10	Shrubs 20	Man-made structures																
90-60% <input checked="" type="checkbox"/>	0% <input type="checkbox"/>	Grasses 10	Herbaceous	Other																
60-30% <input type="checkbox"/>																				
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																				
Notes: (vegetation species, types of structures) dogwood, alder, hawthorn																				
Riparian Vegetation																				
Width of riparian vegetation: < 0.5 m																				
Description of vegetation community surrounding 30 m from watercourse: grass.																				
Obstructions to Fish Passage																				
No Obstructions <input type="checkbox"/>	Man-Made <input type="checkbox"/>	Natural <input checked="" type="checkbox"/>	Low Flow Barrier <input type="checkbox"/>																	
Description of Barrier: woody + veg jam -> may not be permanent																				
Height of Barrier (m)			GPS Coordinates:																	

Water Bodies Assessment Field Collection Form

AECOM

Date: April 18 / 12

Land Parcel/Site ID: GSH K66/1074
D04

Page 3 of 4

Other General Comments Regarding the Study Area:

- pond behind dam ~ 250m x 50m, turbid green water, water flowing over weir
- fish observed
- tadpole + frog observed.
- pool areas appear to occur after tile drain input

Additional UTM Coordinates:

Picture #	Description	Picture #	Description
1-2	dam, + lake on North Side		
3	South of dam to road		
4	dam		
5	inlet to pond		
6	North side of culvert		
7-12	roadside		
13	branch north		
14-17	↓		
18-20	veg build up dam		
21-27	west branch		
28-31	last 4 pics Blackberry Culvert		

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Study Area:

Jericho

Goshen

Bluewater

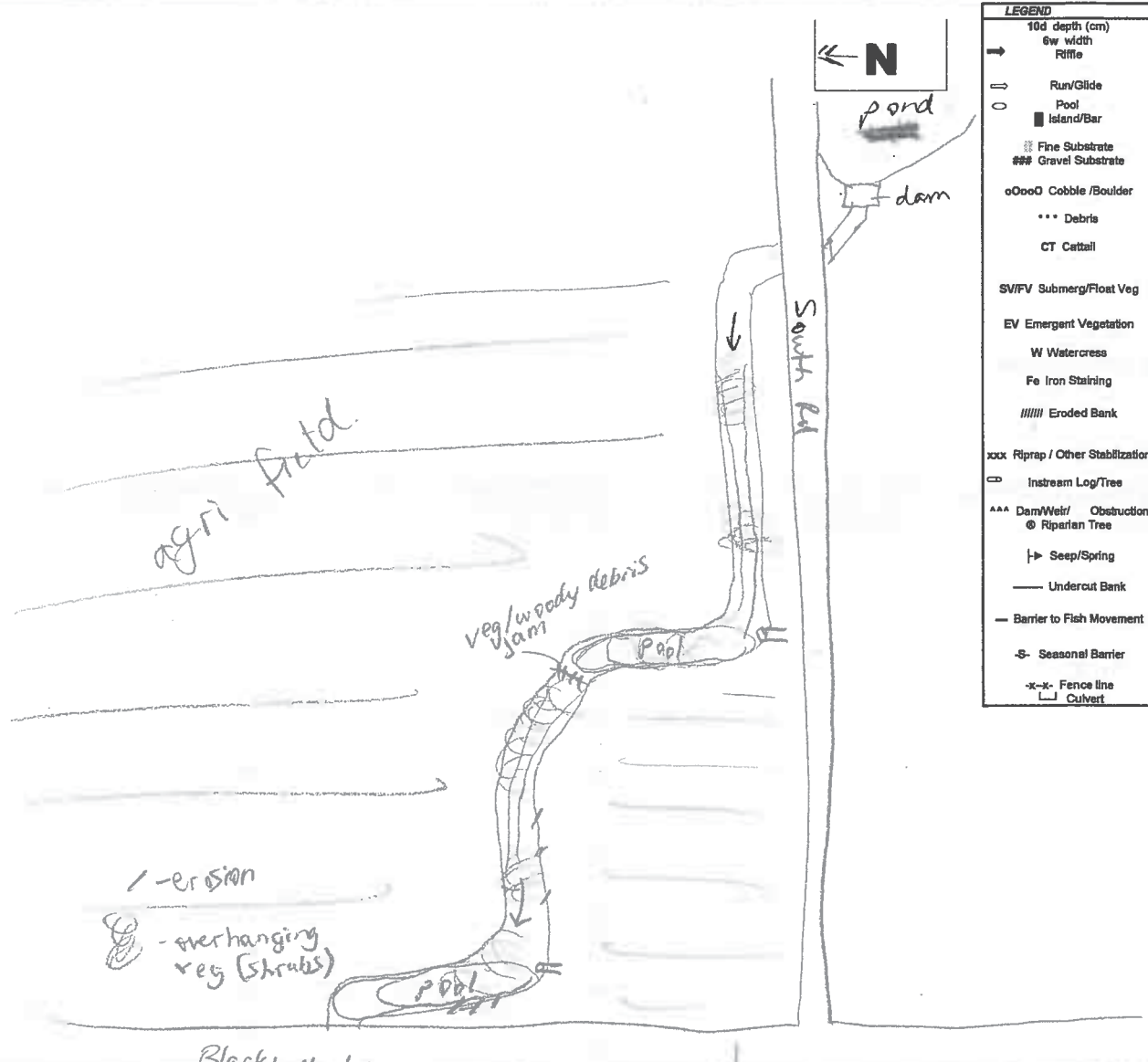
Land Parcel#

0914066/1024

Site ID

D04

LEGEND	
→	10d depth (cm) 6w width Rifle
⇄	Run/Glide
○	Pool
■	Island/Bar
⋯	Fine Substrate
##	Gravel Substrate
oOoO	Cobble / Boulder
***	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent Vegetation
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
⊓	Instream Log/Tree
AAA	Dam/Weir / Obstruction
⊙	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
-S-	Seasonal Barrier
-x-x-	Fence line
⌊	Culvert



Horizontal View of Channel



Initial QA/QC By: AMS

Date: 04/19/2012

Technical QA/QC By: Sullivan

Date: May 3/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1606 Site ID: DOS
 Date: May 11/12 Start time: 10:10 End Time: 10:20
 Weather Conditions: Sunny, 9°C Field Crew: C. Boros, J. Epp
 Field Notes By: C. Boros

Site Location

Corbett Line north of Creditor Rd MSA roadside

UTM Co-ordinates (continue on page 3 if necessary)

Easting: 443135 Northing: 4792437 Description: DOS-GOSH/1606
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse

Residential Meadow
 Agriculture Wetland
 Forest Livestock
 Other

Type of Watercourse

Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Description:

deciduous

Description:

water at time of investigation channel cattail choked.

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

roadside ditch- no connection to watercourse on southside of road

Is any portion of the water body underground or not as mapped? Y / N
 If Yes describe:

GPS Coordinate: Easting - Northing - Description-

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

In-Situ Water Quality

WT (°C): AT(°C):
 pH: Cond (s/cm):
 D.O. (mg/L)
 Water Clarity: Clear Turbid

none taken

Water Colour:

Notes:

Ground Water and Seepage Indicators

Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other

Details:

none observed from road

Water Bodies Assessment Field Collection Form

Stream Morphology			
Site Length (m): ~ 20m		Bank Stability:	
Channel Dimensions		Stable	Slightly unstable
Mean Wetted Width (m): 0.5	Mean Wetted Depth (m): < 0.20	Moderately unstable	Unstable
Mean Bankfull Width (m): -	Mean Bankfull Depth (m): -	Left Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>
Mean Top of Bank Width (m): -	Mean Top of Bank Depth (m): -	Right Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>
Description:			

Flow Description: (high or low flow conditions, stagnant, etc)
low flow conditions → could not see flow

Substrate (< = >)		Habitat												
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus	Description could not see	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="4">Morphological Structure (%)</th> </tr> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> Notes: choked @ cattails	Morphological Structure (%)				Pool	Riffle	Run	Flat				
Morphological Structure (%)														
Pool	Riffle	Run	Flat											

Instream Cover (%)						
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks
				95		Average Depth: (% Cover)

Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%
 *Aquatic Vegetation Species Present (algae, submergent, emergent etc.)
Cattails & grasses

Canopy Cover (% closed cover):			Types of Cover (% cover)		
100-90% <input type="checkbox"/>	30-1% <input checked="" type="checkbox"/>		Trees _____	Shrubs _____	Man-made structures _____
90-60% <input type="checkbox"/>	0% <input type="checkbox"/>		Grasses _____	Herbaceous _____	Other _____
60-30% <input type="checkbox"/>					

Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%
 Notes: (vegetation species, types of structures)

Riparian Vegetation

Width and Description of riparian vegetation:
 LB cultural meadow
 RB
 Overhanging Vegetation Present Y / (N) % Overhanging Vegetation:
 Description of Overhanging Vegetation:

Obstructions to Fish Passage

None Observed Man-Made Natural Low Flow Barrier

Description of Barrier: low water level & choked channel

Height of Barrier (m) GPS Coordinates:

Water Bodies Assessment Field Collection Form

AECOM

Date: May 11/12

Land Parcel/Site ID:

DOS
GSH1606

Page 3 of 4

Other General Comments Regarding the Study Area:

(SN)
-channel comes down through forest runs along roadside for 10m then heads back into forest in NW direction
-cattail choked

Additional UTM Coordinates:

Photo log

Picture #	Description	Picture #	Description
56-58			

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

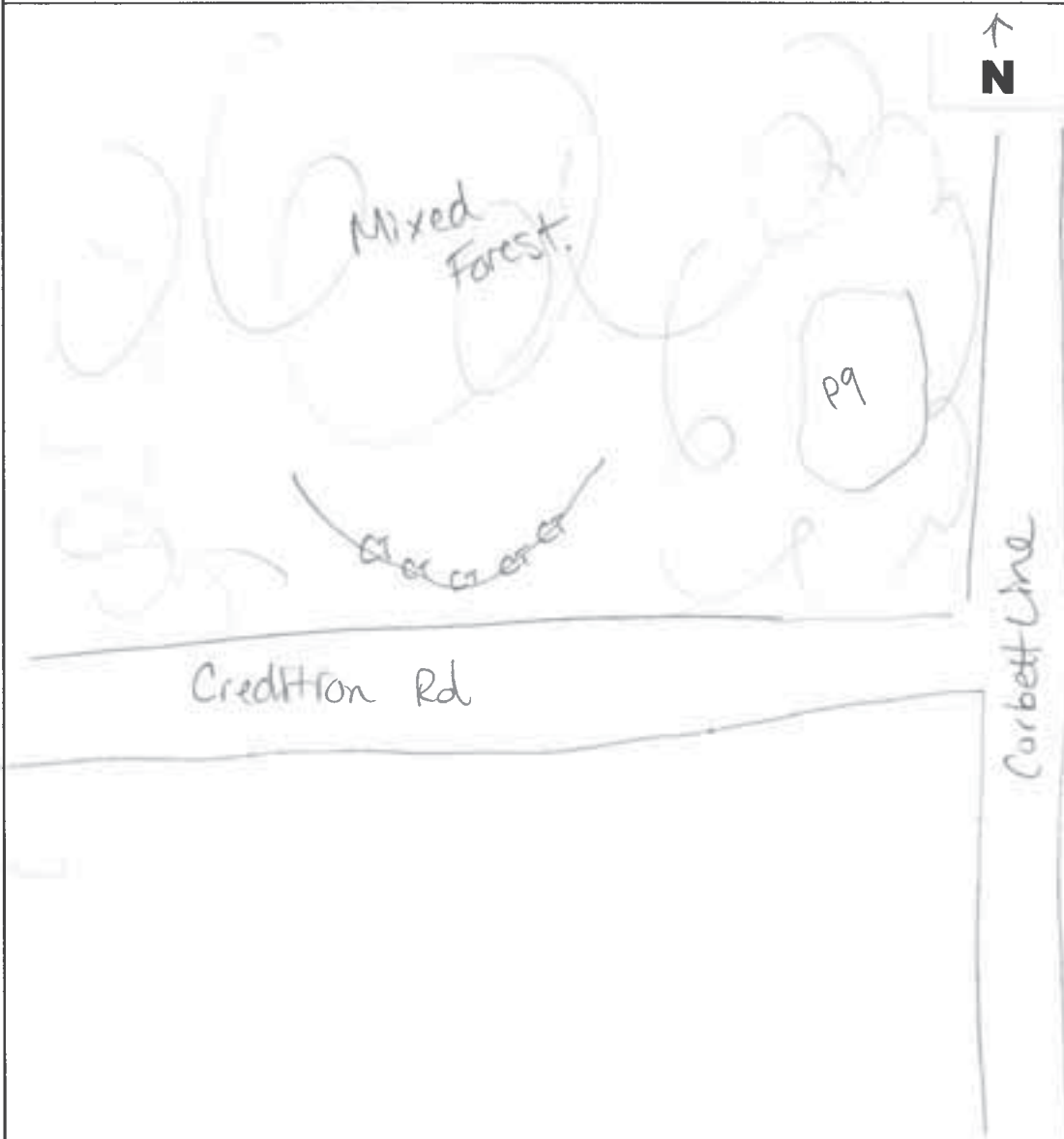
Bluewater

Land Parcel#

1606

Site ID

D05



LEGEND	
10d depth (cm)	→
6w width	→
Riffle	→
Run/Glide	→
Pool	○
Island/Bar	■
Fine Substrate	—
Grave Substrate	###
Cobble/Boulder	o o o o
Debris	***
Cattail	CT
SV/FV Submerg/Float Veg	SV/FV
Emergent Vegetation	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxx
Instream Log/Tree	⊃
Dam/Weir / Obstruction	AAA
Riparian Tree	⊗
Seep/Spring	↳
In undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-x-x-
Culvert	⌈

CT-cattails

Horizontal View of Channel



CT-cattails

Initial QA/QC By: Bentley

Date: Aug. 2, 2012

Technical QA/QC By: [Signature]

Date: Aug 2/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 2160/2161 Site ID: D07
 Date: May 10 / 12 Start time: 10:25 End Time: 12:10
 Weather Conditions: Sunny, 19°C Field Crew: C. Boros, J. EPP
 Field Notes By: C. Boros

Site Location

Goshen Line, South of Crediton Rd.

UTM Co-ordinates (continue on page 3 if necessary)

Easting: <u>451772</u>	Northing: <u>4793223</u>	Description: <u>D07 Start</u>
Easting: <u>452310</u>	Northing: <u>4793497</u>	Description: <u>D07 end</u>
Easting: _____	Northing: _____	Description: _____
Easting: _____	Northing: _____	Description: _____

Surrounding Landuse Residential <input type="checkbox"/> Meadow <input type="checkbox"/> Agriculture <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Forest <input type="checkbox"/> Livestock <input type="checkbox"/> Other _____ Description: <u>Crop fields</u>		Type of Watercourse Intermittent <input type="checkbox"/> Channelized <input checked="" type="checkbox"/> Permanent <input checked="" type="checkbox"/> Natural Channel <input type="checkbox"/> Ephemeral <input type="checkbox"/> _____ Description: <u>Starting to naturally</u>	
--	--	--	--

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)
tile drains observed - one flowing

Is any portion of the water body underground or not as mapped? **Y/N** (N)
 If Yes describe:

GPS Coordinate: Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

WT (°C): <u>15°C</u>	AT (°C): _____
pH: _____	Cond (s/cm): _____
D.O. (mg/L) _____	
Water Clarity: Clear <input checked="" type="checkbox"/> Turbid <input type="checkbox"/>	
Water Colour: <u>n/a</u>	
Notes: <u>wg meter not working</u>	

Ground Water and Seepage Indicators

Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
Iron Staining <input type="checkbox"/>	None <input checked="" type="checkbox"/>
Bubbling <input type="checkbox"/>	_____ <input type="checkbox"/>
Other <input type="checkbox"/>	_____ <input type="checkbox"/>
Details: _____	

Water Bodies Assessment Field Collection Form

Stream Morphology															
Site Length (m): <i>~400 m</i>		Bank Stability:													
Channel Dimensions		<table style="width: 100%; text-align: center;"> <tr> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank <input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank <input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stable	Slightly unstable	Moderately unstable	Unstable												
Left Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Right Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Mean Wetted Width (m): <i>1</i>	Mean Wetted Depth (m): <i>0.19</i>	Description: <i>slumping and some erosion</i>													
Mean Bankfull Width (m): <i>2</i>	Mean Bankfull Depth (m): <i>0.5</i>														
Mean Top of Bank Width (m): <i>5</i>	Mean Top of Bank Depth (m): <i>2</i>														
Flow Description: (high or low flow conditions, stagnant, etc) <i>moderate flow</i> <i>Banks well vegetated</i>															
Habitat															
Substrate (<=>)		Morphological Structure (%)													
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus	Description <i>gr=sa > si=cl/mk > bo</i>	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td><i>18</i></td> <td><i>2</i></td> <td><i>10</i></td> <td><i>70</i></td> </tr> </table>	Pool	Riffle	Run	Flat	<i>18</i>	<i>2</i>	<i>10</i>	<i>70</i>	Notes: <i>slight meandering</i>				
Pool	Riffle	Run	Flat												
<i>18</i>	<i>2</i>	<i>10</i>	<i>70</i>												
Instream Cover (%) <i>70</i>															
veg / Other <i>Small woody debris</i>	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks									
<i>4</i>	<i>1</i>	<i>2</i>	<i>/</i>	<i>60</i>	<i>/</i>	Average Depth: <i>0.10m</i> (% Cover) <i>3</i>									
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%															
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <i>filamentous algae, attached algae >>> grasses</i>															
Canopy Cover (% closed cover):				Types of Cover (% cover)											
100-90% <input type="checkbox"/>	30-1% <input checked="" type="checkbox"/>	Trees <i>50</i>	Shrubs <i>50</i>	Man-made structures											
90-60% <input type="checkbox"/>	0% <input type="checkbox"/>	Grasses _____	Herbaceous _____	Other _____											
60-30% <input type="checkbox"/>															
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%															
Notes: (vegetation species, types of structures) <i>willow</i>															
Riparian Vegetation															
Width of riparian vegetation: <i>2.5m - garlic mustard, grasses, herbaceous</i>															
Description of vegetation community surrounding 30 m from watercourse: <i>Crop agri fields</i>															
Obstructions to Fish Passage															
No Obstructions <input type="checkbox"/>	Man-Made <input type="checkbox"/>	Natural <input type="checkbox"/>	Low Flow Barrier <input checked="" type="checkbox"/>												
Description of Barrier: <i>debris jam may cause barrier in low flow</i>															
Height of Barrier (m)				GPS Coordinates: <i>007 barrier 0451811 4793228</i>											

Water Bodies Assessment Field Collection Form

AECOM

Date: May 10/12

Land Parcel/Site ID: D07
2160 / 2161

Page 3 of 4

Other General Comments Regarding the Study Area:

- schools of fish observed (minnow > cyprinids), darters observed at T-convergence
↳ fish noted up + down/s of potential low flow barrier
- Heron observed, frog observed
- watercourse is a channelized feature that is naturalizing, v.v. slight meandering, instream cover moderate (algae), canopy cover v. low, substrate gr, sa

Additional UTM Coordinates:

Photo log

Picture #	Description	Picture #	Description
1-2	overview of convergence	17	tile drain
3	looking up/s (N) at convergence	18	overview - channel
4	Looking down/s (S) at convergence	19	- past study area
5	study area stream		
6-	substrate		
7	debris jam		
8	substrate		
9-12	Channel overview		
13	trough		
14	just before bend		
15	at bend		
16	just after bend		

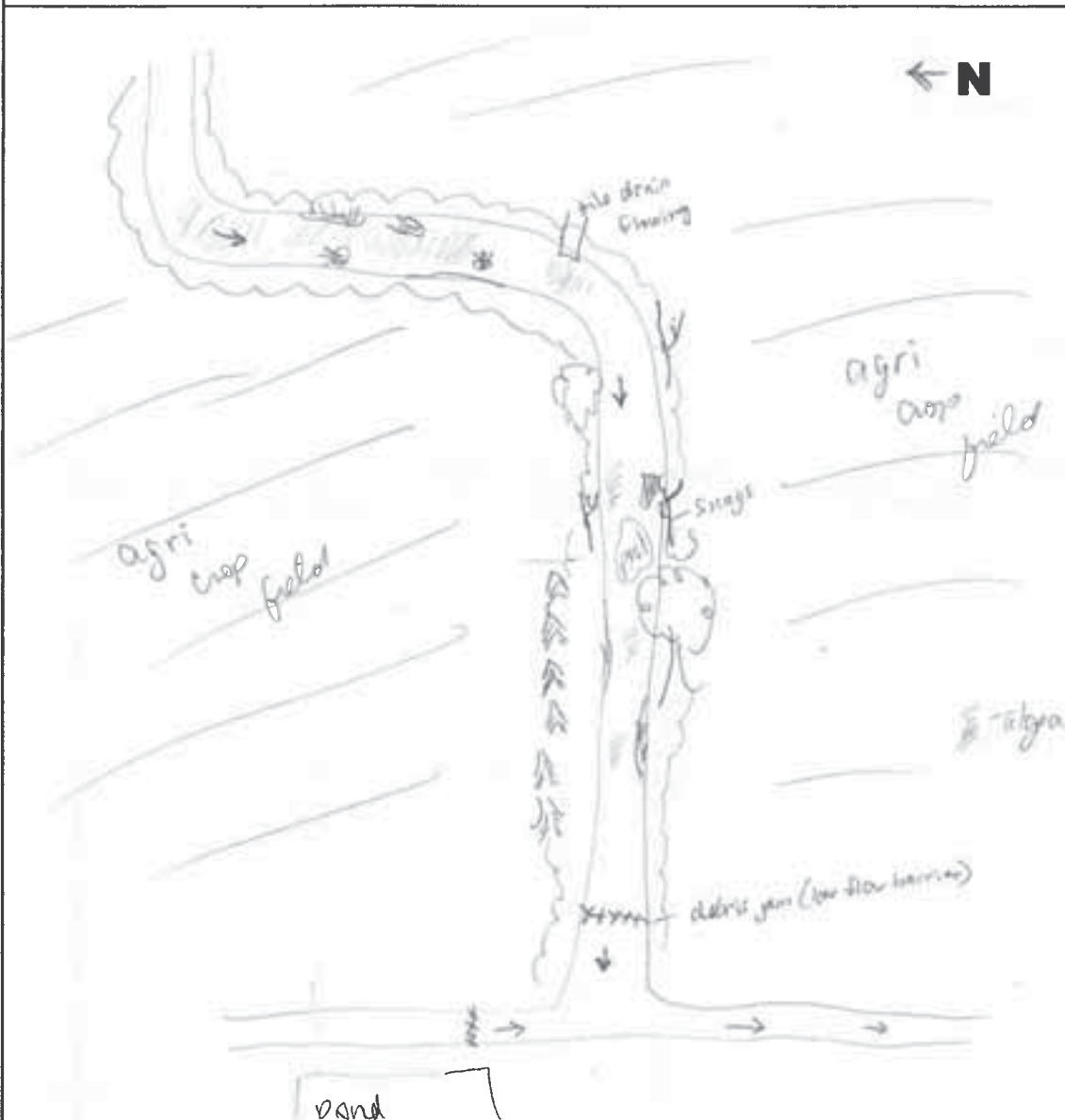
Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Watercourse Sketch

Study Area: Jericho Gosben Bluewater Land Parcel# 2160/2161 Site ID D07



LEGEND	
10d depth (cm)	→
0w width	→
Rifle	→
Run/Glide	→
Pool	○
Island/Bar	■
Fine Substrate	■
Gravel Substrate	###
Cobble/Boulder	oOooO
Debris	***
Cattail	CT
Submerg/Float Veg	SV/FV
Emergent Vegetation	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxxx
Instream Log/Tree	⊃
Dam/Weir / Obstruction	AAA
Riparian Tree	⊙
Seep/Spring	↳
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-x-x-
Culvert	⊥

Horizontal View of Channel



Initial QA/QC By: L. Bernier

Date: May 10, 2012

Technical QA/QC By: Saitkin Date: June 11/12

Property ID: 1557 (C200) Dog Date: Dec 22, 2011

Property Access: No Access Roadside ASA Start Time: 11:24
End Time: 17:30

Field Investigators: SA + TS Weather: Partly cloudy 5°C

Terrestrial Feature Present: No Yes

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No Yes

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

Permanent watercourse NW 1.5m BW - 2.0m
- culvert - choked with cattail
Agriculture on sides
1m wide 20cm deep - drainage - channelized

Photograph Numbers: # 20

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1559 Site ID: D11-East side
 Date: July 12/12 Start time: 10:35 End Time: 10:47
 Weather Conditions: Sunny, hot Field Crew: SA, GF
 Field Notes By: SA

Site Location

located east from mollard line Roadside survey

UTM Co-ordinates (continue on page 3 if necessary)

Easting: 438890 Northing: 4789336 Description: at culvert
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse

Residential Meadow
 Agriculture Wetland
 Forest Livestock
 Other

Description: Corn on both

Type of Watercourse

Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Description: channel is starting to naturalize

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

-collects water from roadside ditch

Is any portion of the water body underground or not as mapped? Y/N
 If Yes describe:

GPS Coordinate: Easting - Northing - Description-

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

WT (°C): 16.43 AT (°C): 29°C
 pH: 7.91 Cond (µs/cm): 558
 D.O. (mg/L): 4.85
 Water Clarity: Clear Turbid
 Water Colour: brown-lisht

Notes: Slight turbidity, WQ taken at culvert, algae mats

Ground Water and Seepage Indicators

Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other

Details: none observed

Water Bodies Assessment Field Collection Form

Stream Morphology																				
Site Length (m): ~ 20 m			Bank Stability:																	
Channel Dimensions			<table border="1" style="width:100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>				Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable																
Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Mean Wetted Width (m): 2.5	Mean Wetted Depth (m): 0.26	Description: well vegetated																		
Mean Bankfull Width (m): 5.0	Mean Bankfull Depth (m): 1.1																			
Mean Top of Bank Width (m): 10.	Mean Top of Bank Depth (m): 2.7	Flow Description: (high or low flow conditions, stagnant, etc) low flow conditions - water barely moving																		
Habitat																				
Substrate (<=>)			Morphological Structure (%)																	
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Debris			<table border="1" style="width:100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td></td> <td></td> <td></td> <td>100</td> </tr> </table>			Pool	Riffle	Run	Flat				100							
Pool	Riffle	Run	Flat																	
			100																	
Description: Si			Notes: barely moving																	
Instream Cover (%)																				
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks														
	20			50		Average Depth: (% Cover)														
Note: Low = 0 - 30% ; Moderate = 30 - 75% ; High = 75 - 100%																				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) algae, water plantain																				
Canopy Cover (% closed cover):			Types of Cover (% cover)																	
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees	30	Shrubs	40	Man-made structures												
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	20	Herbaceous	10	Other												
60-30%	<input checked="" type="checkbox"/>																			
Note: Low = 0 - 30% ; Moderate = 30 - 60% ; High = 60 - 100%																				
Notes: (vegetation species, types of structures) apple trees, willow trees																				
Riparian Vegetation																				
Width and Description of riparian vegetation:			LB - 5m			RB - 5m														
Overhanging Vegetation Present Y/N			<input checked="" type="checkbox"/>			% Overhanging Vegetation:														
Description of Overhanging Vegetation:																				
Obstructions to Fish Passage																				
None Observed	<input type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input checked="" type="checkbox"/>													
Description of Barrier:																				
Height of Barrier (m)			GPS Coordinates:																	

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

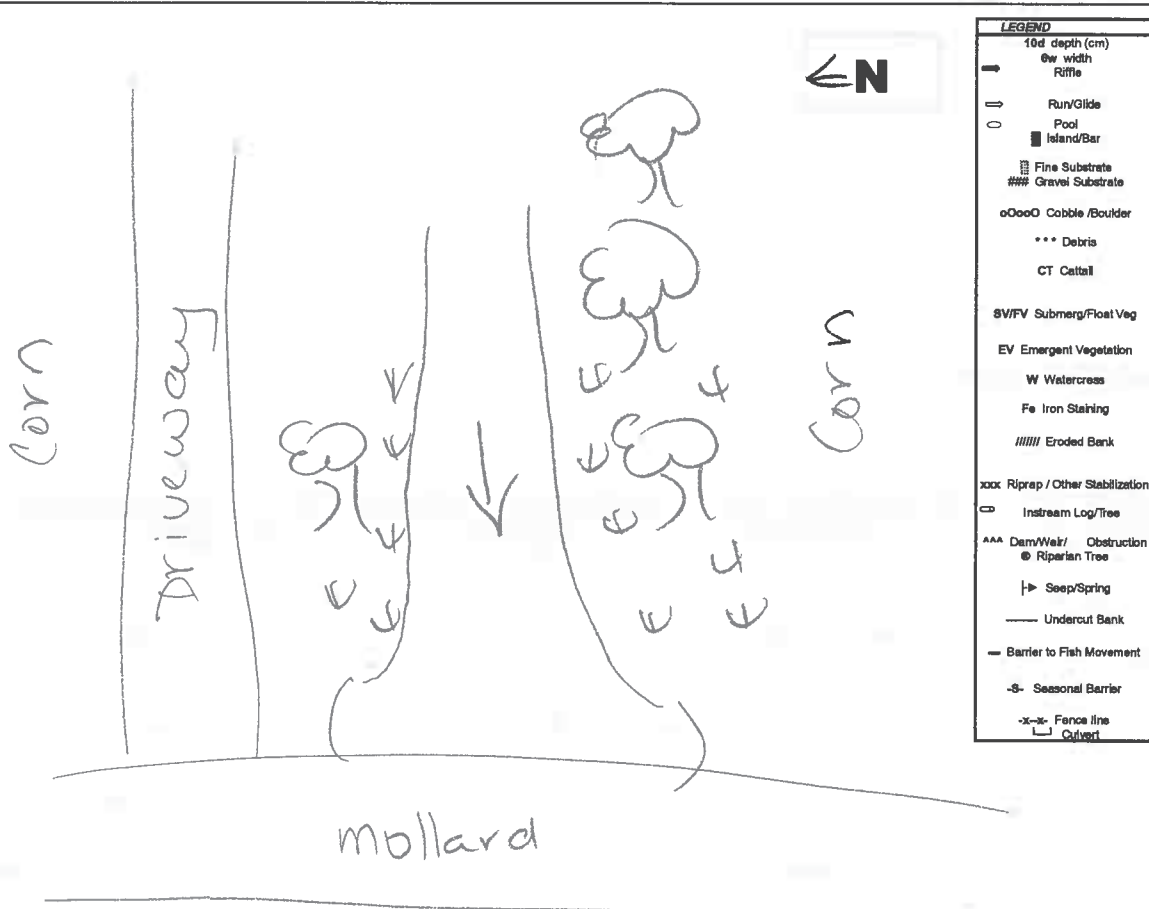
Bluewater

Land Parcel#

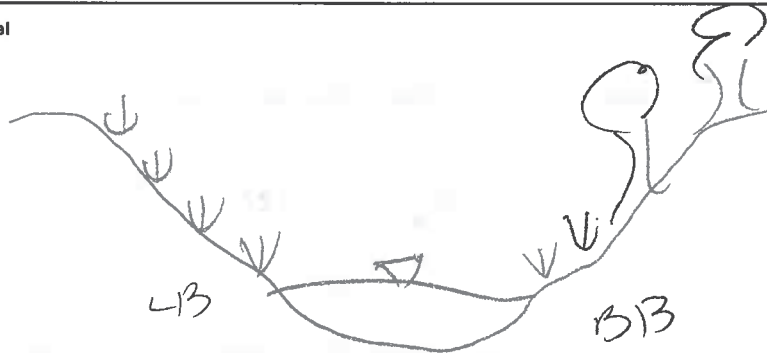
1559

Site ID

D11



Horizontal View of Channel



Initial QA/QC By:

L. Bentley

Date:

Aug 2, 2012

Technical QA/QC By:

AW

Date:

2nd Aug 2012

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# G3H2174 Site ID: 011
 Date: April 18/12 Start time: 10:10 End Time: 11:05
 Weather Conditions: Sunny, 10°C Field Crew: C. Boros, S. Lahras
 Field Notes By: C. Boros

Site Location

Mollard Line, North of Greenway

UTM Co-ordinates (Coordinate System: UTM)

Easting: 0438872 Northing: 4789342 Description: about rd road
 Easting: _____ Northing: _____ Description: _____
 Easting: _____ Northing: _____ Description: _____
 Easting: _____ Northing: _____ Description: _____

Surrounding Land Use

Residential
 Agriculture
 Forest
 Other
 Meadow
 Wetland
 Livestock
 Description: _____

Channel Watercourse

Intermittent
 Permanent
 Ephemeral
 Channelized
 Natural Channel
 Description: - some slight meandering

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)
None observed

Is any portion of the water body underground or not as mapped? Y/N
 If Yes describe: _____

GPS Coordinate: Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In Situ Water Quality

WT (°C): 7.22 AT (°C): N
 pH: 8.4 Cond (µs/cm): 362
 D.O. (mg/L): 15.78
 Water Clarity: Clear Turbid
 Water Colour: n/a
 Notes: areas of organic film

Ground Water and Seepage Information

Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other
 Details: Water speedwell observed

Water Bodies Assessment Field Collection Form

Stream Morphology																				
Site Length (m): <i>250m</i>			Bank Stability:																	
Channel Dimensions			<table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>				Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable																
Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Mean Wetted Width (m): <i>0.7</i>	Mean Wetted Depth (m): <i>0.15</i>		Description: <i>well veg.</i>																	
Mean Bankfull Width (m): <i>1.2</i>	Mean Bankfull Depth (m): <i>0.4</i>																			
Mean Top of Bank Width (m): <i>3.5</i>	Mean Top of Bank Depth (m): <i>1.8</i>																			
Flow Description: (high or low flow conditions, stagnant, etc)																				
<i>slow, low flow</i>																				
Material																				
Substrate (<=>)			Morphological Structure (%)																	
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus			<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td><i>10</i></td> <td></td> <td></td> <td><i>90</i></td> </tr> </table>			Pool	Riffle	Run	Flat	<i>10</i>			<i>90</i>							
Pool	Riffle	Run	Flat																	
<i>10</i>			<i>90</i>																	
Description			Notes:																	
<i>Substrate almost entirely covered by algae</i> <i>Si, Sa, Cl → covered by algae</i>			<i>average depths of pools 0.25m</i>																	
Instream Cover (%) <i>50</i>																				
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks														
	<i>20</i>	<i>/</i>	<i>/</i>	<i>50</i>	<i>/</i>	Average Depth: <i>0.10m</i> (% Cover) <i>10</i>														
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)																				
<i>algae attached to substrate > algae blooms > grasses + emergent veg.</i>																				
Canopy Cover (% closed cover):			Types of Cover (% cover)																	
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees <i>80</i>	Shrubs <i>10</i>	Man-made structures														
90-60%	<input checked="" type="checkbox"/>	0%	<input type="checkbox"/>	Grasses <i>10</i>	Herbaceous	Other														
60-30%	<input type="checkbox"/>																			
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																				
Notes: (vegetation species, types of structures)																				
<i>Young maple, poplars - no leaves on trees</i>																				
Riparian Vegetation																				
Width of riparian vegetation: <i>Left = 1m Right = 3m</i>																				
Description of vegetation community surrounding 30 m from watercourse:																				
<i>trees w grasses.</i>																				
Obstructions to Fish Passage																				
No Obstructions	<input checked="" type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input type="checkbox"/>													
Description of Barrier:																				
Height of Barrier (m)																				
GPS Coordinates:																				

Water Bodies Assessment Field Collection Form

AECOM

Date: April 18 / 12

Land Parcel/Site ID: GSH 2174
D11

Page 3 of 4

Other General Comments Regarding the Study Area:

- Rock pile observed in riparian area 5m x 5m x 2m
0438672, 4789390

- schools of cyprinids

- wood duck observed

Watercourse has slight meander, substrate soft +

Additional UTM Coordinates: covered in algae → resulting in high instream cover.

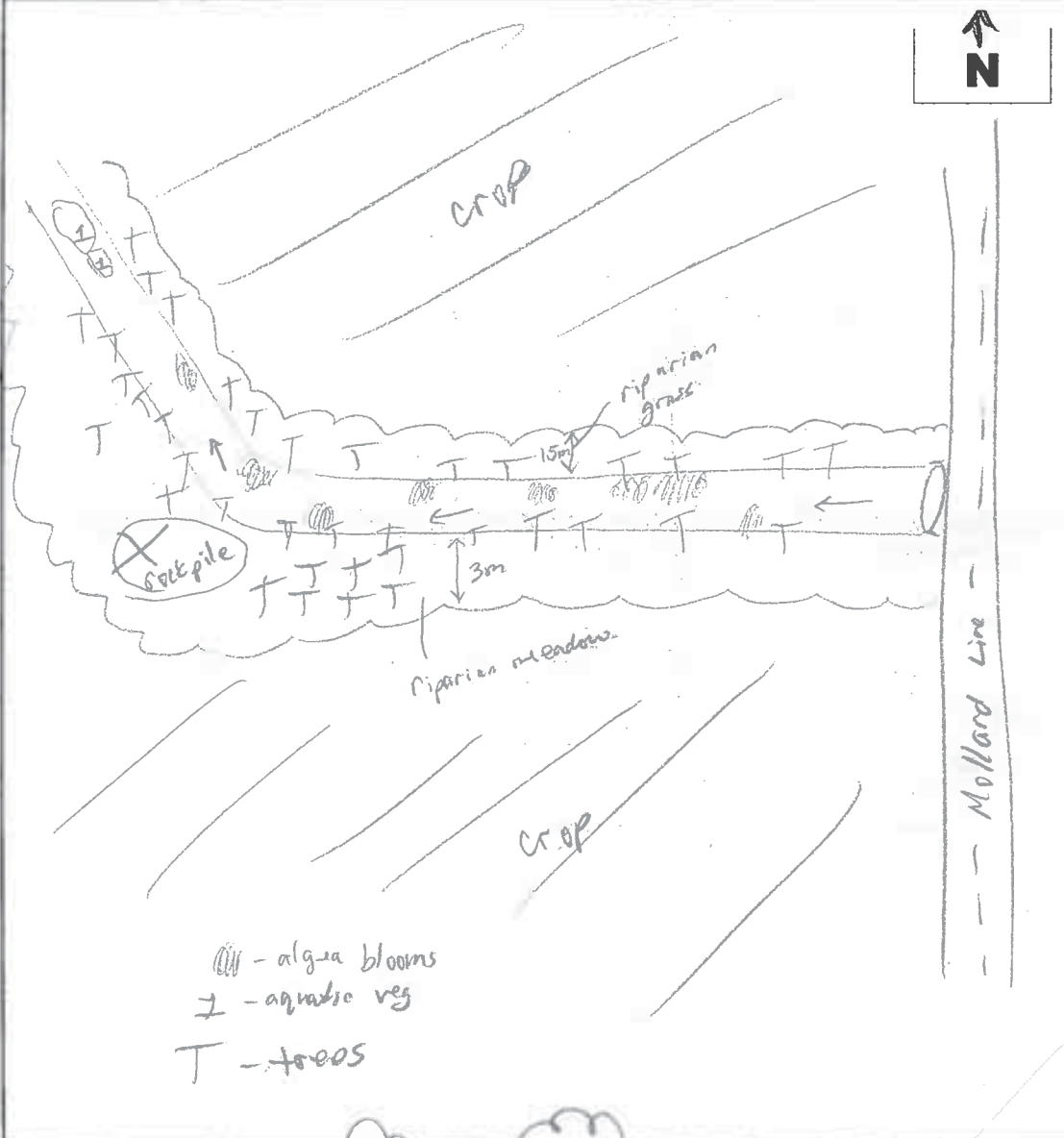
Picture #	Description	Picture #	Description
1, 2	overview		
3	from culvert		
4	culvert		
5	fish		
6, 7	stream		
8	substrate		
9	stream		
10	Rock pile 0438672 4789390		
11	west end		
12-13	aquatic veg-		

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

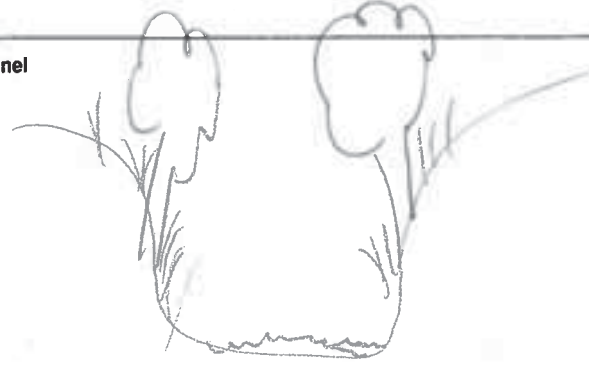
Study Area: Jericho Goshen Bluewater Land Parcel# 5N 2174 Site ID 011



LEGEND	
→	10d depth (cm) 6w width Rifle
—	Run/Glide
○	Pool
■	Island/Bar
■	Fine Substrate
###	Gravel Substrate
oOooO	Cobble/Boulder
***	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent Vegetation
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
CD	Instream Log/Tree
AAA	Dam/Wet/ Obstruction
⊗	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence line
□	Culvert

⊗ - algae blooms
 ⊥ - aquatic veg
 T - trees

Horizontal View of Channel



Initial QA/QC By: AMS

Date: Apr 19/12

Technical QA/QC By: Stutken

Date: May 3/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 2046/2126 Site ID: D12
 Date: May 10/12 Start time: 8:43 End Time: 10:00
 Weather Conditions: Sunny, 11°C Field Crew: C. Boros, J. EPP
 Field Notes By: C. Boros

Site Location

BABYLON Rd, South of Kinton

Roadside Survey
GSH 2126

UTM Co-ordinates (continue on page 3 if necessary)

Easting: <u>453333</u>	Northing: <u>4795234</u>	Description: <u>D12 start</u>
Easting: <u>453618</u>	Northing: <u>4795441</u>	Description: <u>D12 end</u>
Easting: _____	Northing: _____	Description: _____
Easting: _____	Northing: _____	Description: _____

Surrounding Landuse

Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>
Other <input type="checkbox"/>	

Description: agri crop fields

Type of Watercourse

Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Ephemeral <input type="checkbox"/>	

Description: starting to naturalize

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

tile drains observed - a couple flowing (low flow)

Is any portion of the water body underground or not as mapped? Y (N)
 If Yes describe:

GPS Coordinate Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

WT (°C): _____	AT (°C): _____
pH: _____	Cond (s/cm): _____
D.O. (mg/L) _____	
Water Clarity: <u>Clear</u> <input checked="" type="checkbox"/> <u>Turbid</u> <input type="checkbox"/>	
Water Colour: _____	

Notes: w/g meter would not work

Ground Water and Seepage Indicators

Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
Iron Staining <input type="checkbox"/>	None <input type="checkbox"/>
Bubbling <input type="checkbox"/>	<u>Water speedwell</u> <input checked="" type="checkbox"/>
Other <input type="checkbox"/>	

Details: Sparsely found in study area

Water Bodies Assessment Field Collection Form

Stream Morphology									
Site Length (m): ~ 300 m		Bank Stability:							
Channel Dimensions		Stable	Slightly unstable						
Mean Wetted Width (m): 1	Mean Wetted Depth (m): 0.20	Moderately unstable	Unstable						
Mean Bankfull Width (m): 1.5	Mean Bankfull Depth (m): 0.50	Left Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>						
Mean Top of Bank Width (m): 4.5	Mean Top of Bank Depth (m): 2.5	Right Bank <input type="checkbox"/>	<input checked="" type="checkbox"/>						
Flow Description: (high or low flow conditions, stagnant, etc)		Description: minor erosion in a couple areas banks well vegetated							
slow flow									
Substrate (<=>)		Habitat							
Bo - Boulder	Description - Road to major bend * gr >> sa = si = cl = co open bend cl >> gr > sa = si = co	Morphological Structure (%)							
Co - Cobble		Pool	Riffle	Run	Flat				
Gr - Gravel		30	20	10	40				
Sa - Sand		Notes: riffle run, pool sequence point - slight meander							
Si - Silt									
Cl - Clay									
MK-Muck									
DT-Detritus									
Instream Cover (%) 85									
Other <small>veg / small woody debris</small>	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks			
7	/	/	7	70	/	Average Depth: 0.1 m (% Cover) 1%			
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%									
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)									
filamentous algae >>> grasses, cattail, rushes, water speedwell									
Canopy Cover (% closed cover):			Types of Cover (% cover)						
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees	10	Shrubs	80	Man-made structures	
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	10	Herbaceous		Other	
60-30%	<input checked="" type="checkbox"/>								
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%									
Notes: (vegetation species, types of structures)									
Shrubs Willow, Hawthorn, white cedar, elms									
Riparian Vegetation									
Width of riparian vegetation: left + right - 1 m grasses, shrubs > trees									
Description of vegetation community surrounding 30 m from watercourse: agri crop fields									
Obstructions to Fish Passage									
No Obstructions	<input checked="" type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input type="checkbox"/>		
Description of Barrier:									
Height of Barrier (m)					GPS Coordinates:				

Water Bodies Assessment Field Collection Form

AECOM

Date: May 10/12

Land Parcel/Site ID: GSH 2046 ^{D12} 2126 Page 3 of 4

Other General Comments Regarding the Study Area:

- 30m up/s from rd appears to be similar watercourse
- watercourse is slightly meandering w ripple run, pool sequence but very little erosion. Instream cover high (algae). Substrate gravel/sand, cl then moves to clay dominated.
- Restoration works have occurred recently by road and at major bend ~ 200m from road. Banks lined w boulders

Additional UTM Coordinates:

- schools of minnows and possibly a creek chub ~ 15cm in size
- GSH 2126 - channelized stream, 1.5m wide, well veg banks, little canopy cover, sunny ~ 25m

Photo log

Picture #	Description	Picture #	Description
1-3	GSH 2126 - down stream		
4-14	Channel preview		
15	pool		
16	ripple		
17	Water speedwell		
18-21	Restoration works at bend		
22	moving upstream from restoration substrate cl dominated		
23-25	Preview		
26			

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 2A4612120 Site ID D12



LEGEND	
10d depth (cm)	→
0w width	○
Rifle	○
Run/Glide	○
Pool	○
Island/Bar	■
Fine Substrate	
Gravel Substrate	###
Cobble/Boulder	oOooO
Debris	***
Cattail	CT
Submerg/Floet Veg	SV/FV
Emergent Vegetation	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxxx
Instream Log/Tree	—
Dam/Weir / Obstruction	AAA
Riparian Tree	⊙
Seep/Spring	↳
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-x-x-
Culvert	⌊



Horizontal View of Channel



Initial QA/QC By: L Bentley

Date: May 16, 2012

Technical QA/QC By: Jautker

Date: Jun 11/12

AECOM		Page 1 of 4	
		Field Crew: CAS	
General Information			
Study Area: Jericho <u>Goshen</u> Bluewater	Land Parcel# <u>2046, 2026</u>	Turbine #	Site ID: <u>D 12</u>
Date: <u>Jan 13, 2012</u>	Start time: <u>15:30</u>	End Time: <u>18:00</u>	
Weather Conditions: <u>Snow</u>		Field Notes By: <u>CB</u>	
Site Location			
<u>Babylon Line, south of Kirkton Rd.</u>			
UTM Co-ordinates			
Easting:	Northing:	Description: <u>GPS not working</u>	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential <input checked="" type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other:			
Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)			
<u>- tile drain input noted</u>			
In-Situ Water Quality		Ground Water Indicators	
WT (°C):	AT (°C):	Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
pH:	Cond (µ/cm):	Iron Staining <input type="checkbox"/>	None <input checked="" type="checkbox"/>
Water Clarity: Clear <input checked="" type="checkbox"/>	Turbid <input checked="" type="checkbox"/>	Bubbling <input type="checkbox"/>	Other <input type="checkbox"/>
Notes: <u>sl. turbid</u>			
Stream Morphology			
Site Length (m):		Bank Stability:	
Channel Dimensions		Stable	Slightly unstable
Mean Wetted Width (m): <u>1.5</u>	Mean Bankfull Width (m): <u>/</u>	Moderately unstable	Unstable
Mean Wetted Depth (m): <u>0.2</u>	Mean Bankfull Depth (m): <u>/</u>	Left Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>
		Right Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>
Flow Description: <u>good flow observed</u>			
Notes: <u>- could not assess bankfull dimensions due to snow</u>			

AECOM

Stream Morphology (continued)

Substrate (<=>)

- Bo - Boulder
- Co - Cobble
- Gr - Gravel
- Sa - Sand
- Si - Silt
- Cl - Clay
- MK - Muck
- DT - Detritus
- Other

Description

sa, gr

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Habitat

Instream Cover (%)

45

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
				100		

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed cover):

- 100-90%
- 90-80%
- 60-30%
- 30-1%
- 0%

Types of Cover (% cover)

- Trees _____
- Grasses 90
- Shrubs _____
- Herbaceous _____
- Man-made structures _____
- Other _____

Notes:

Obstructions to Fish Passage

- No Obstructions
- Natural
- Man-Made

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

- flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

-Roadside Survey Completed.

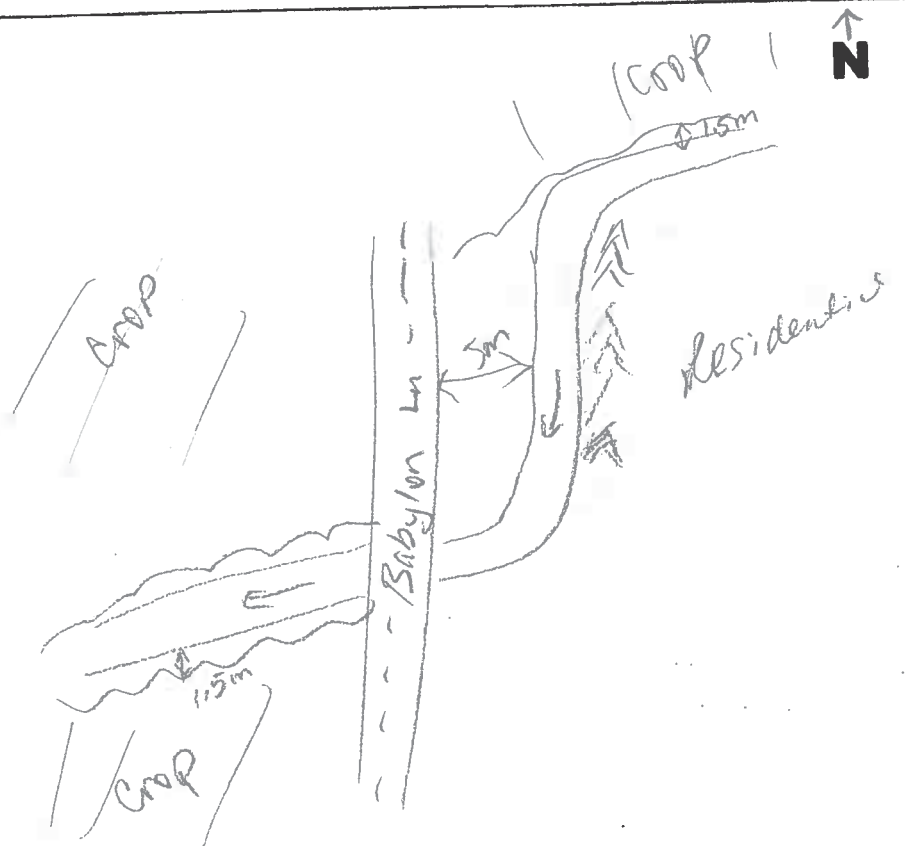
Photo log

Picture #	Description	Picture #	Description
2282	East side		
2283	↓		
2284	West side		
2285	↓		

AECOM

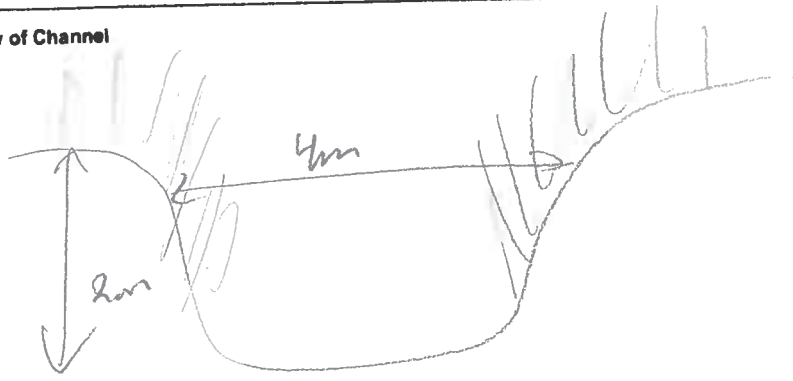
Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 2046, 2126 Site ID D12 Tubing # _____



LEGEND	
100 depth (cm)	Sw width
—	Rifle
—	Run/Glide
○	Pool
■	Island/Bar
—	Fine Substrate
—	Gravel Substrate
o	Cobble
○	Boulder
•••	Debris
CT	Cattails
SV/FV	Submerge/Float Veg
EV	Emergent
W	Watercross
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
—	Stream Log/Tree
^^^	Dam/Wall
⊙	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-B-	Seasonal Barrier
-x-x-	Fence line
└─┘	Culvert

Horizontal View of Channel



Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# CG# 2119/2124 Site ID: D13
 Date: April 18/12 Start time: 13:30 End Time: 14:00
 Weather Conditions: Sunny, 15°C Field Crew: C. Boros, S. Lohres
 Field Notes By: C. Boros

Site Location

Kirkton Rd, East of Goshen Line *Roadside also completed for Asth 2124

UTM Co-ordinates (continue to page 2 if necessary)

Easting: 0452522 Northing: 4795806 Description: at culvert
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse

Type of Watercourse

Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other <input type="checkbox"/>			

Description: old corn fields Description: newly dug out

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

tile drain observed

Is any portion of the water body underground or not as mapped? Y / N
 If Yes describe:

GPS Coordinate: Easting - Northing - Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

Ground Water and Seepage Indicators

WT (°C): 20 AT (°C): 15°C
 pH: 8.34 Cond (µs/cm): 584
 D.O. (mg/L) 11.78
 Water Clarity: Clear Turbid

Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other

Water Colour: none

Details:

Notes:

Water Bodies Assessment Field Collection Form

Stream Morphology							
Site Length (m): <i>80m</i>				Bank Stability:			
Channel Dimensions				Stable	Slightly unstable	Moderately unstable	Unstable
Mean Wetted Width (m): <i>1.5</i>	Mean Wetted Depth (m): <i>0.05</i>		Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mean Bankfull Width (m): <i>2</i>	Mean Bankfull Depth (m): <i>0.2</i>		Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mean Top of Bank Width (m): <i>2.4</i>	Mean Top of Bank Depth (m): <i>2.5</i>		Description: <i>well regulated</i>				
Flow Description: (high or low flow conditions, stagnant, etc) <i>visible flow, slow</i>							
Habitat							
Substrate (<=>)			Morphological Structure (%)				
Description			Pool	Riffle	Run	Flat	
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus			Notes: <i>straight channel</i>				
<i>sa, si</i>			<i>100</i>				
Instream Cover (%)							
Other <i>Plant debris</i>	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks	
<i>3</i>	<i>/</i>	<i>/</i>	<i>/</i>	<i>7</i>	<i>/</i>	Average Depth: (% Cover) <i>1</i>	
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%							
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <i>algae</i>							
Canopy Cover (% closed cover):				Types of Cover (% cover)			
100-90% <input type="checkbox"/>	30-1% <input type="checkbox"/>		Trees	Shrubs	Man-made structures		
90-60% <input type="checkbox"/>	0% <input checked="" type="checkbox"/>		Grasses	Herbaceous	Other		
60-30% <input type="checkbox"/>							
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%							
Notes: (vegetation species, types of structures)							
Riparian Vegetation							
Width of riparian vegetation: <i>0.5m</i>							
Description of vegetation community surrounding 30 m from watercourse: <i>grasses, shrubs</i>							
Obstructions to Fish Passage							
No Obstructions <input checked="" type="checkbox"/>	Man-Made <input type="checkbox"/>	Natural <input type="checkbox"/>	Low Flow Barrier <input type="checkbox"/>				
Description of Barrier:							
Height of Barrier (m)				GPS Coordinates:			

Water Bodies Assessment Field Collection Form

AECOM

Date: April 18/10

Land Parcel/Site ID:

GSH 219/2124
D13

Page 3 of 4

Other General Comments Regarding the Study Area:

- Fish observed
- South side of stream same as north side (~50m down/s)

Watercourse straight channel that has been newly dugout with v. little instream cover and no canopy cover. Substrate soft

Additional UTM Coordinates:

Photo Log			
Picture #	Description	Picture #	Description
1	- South of the road		
2	North side - overview		
3	culvert		
4	substrate		

Water Bodies Assessment Field Collection Form

Study Area:

Jericho

Goshen

Bluewater

Land Parcel#

GS112119/2124

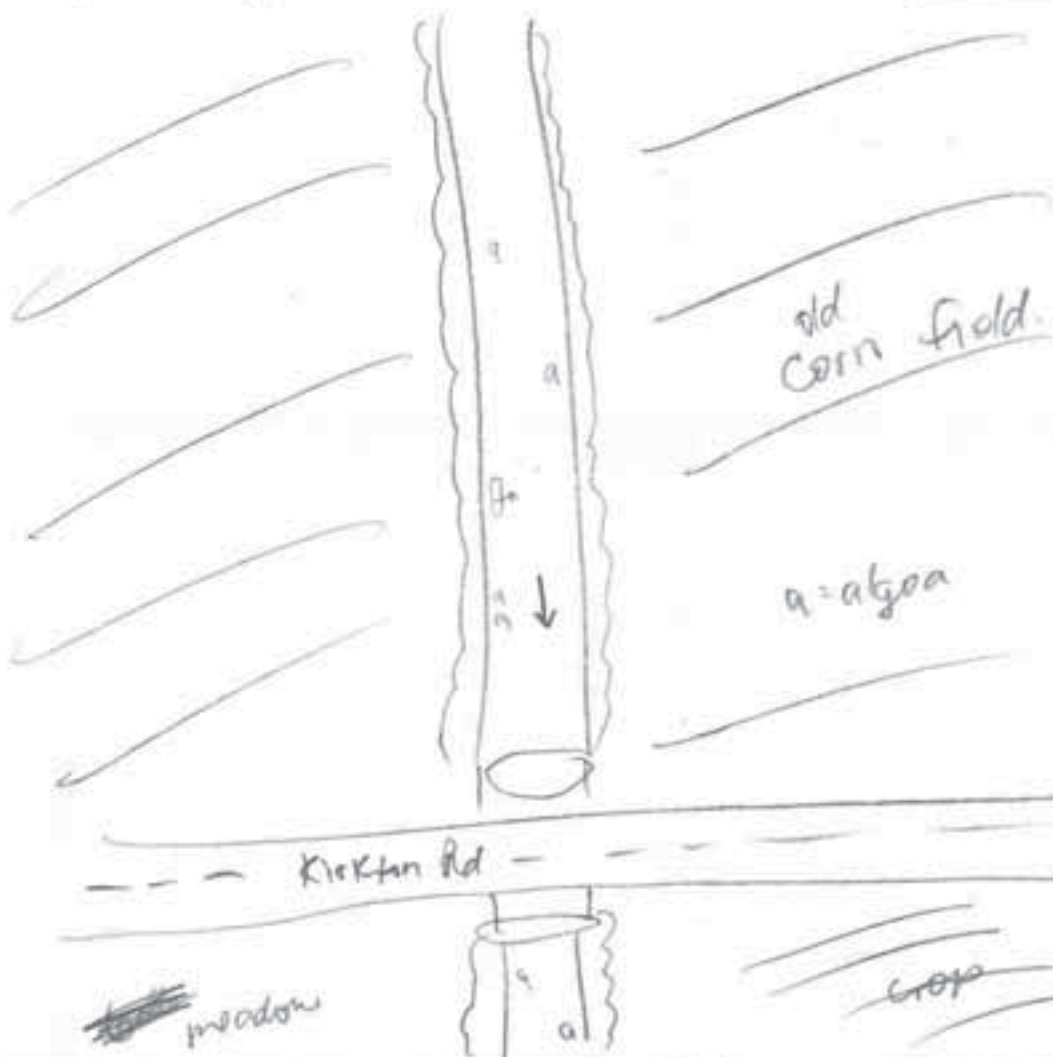
Site ID

D13

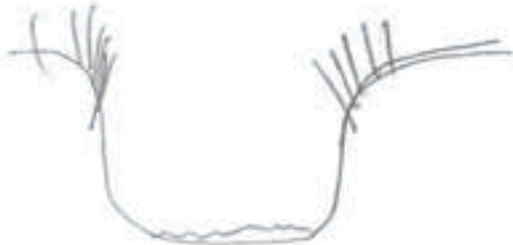
- channel appears to be freshly dug out



LEGEND	
→	10d depth (cm) 6w width Riffle
⇄	Run/Glide
○	Pool
■	Island/Bar
■	Fine Substrate
###	Gravel Substrate
oOooO	Cobble /Boulder
***	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent Vegetation
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
⊞	Instream Log/Tree
AAA	Dam/Weir/ Obstruction
⊙	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
-S-	Seasonal Barrier
-x-x-	Fence line
⊞	Culvert



Horizontal View of Channel



Initial QA/QC By: AMS

Date: 09/19/2012

Technical QA/QC By:

Jawler Date: Nov 22/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# G542054 Site ID: 014

Date: June 25/12 Start time: 10:45 End Time: 11:45

Weather Conditions:

Sunny, 12°C

Field Crew: C. Boros, J. Epp

Field Notes By: C. Boros

Site Location

Babylon Rd, south of Creditor Rd.

UTM Co-ordinates (continue on page 3 if necessary)

Easting: 454522 Northing: 4793377 Description: D14G2054 st

Easting: 454611 Northing: 4793447 Description: D14G2054 →

Easting: 454627 Northing: 4793467 Description: D14G2054 end.

Easting: Northing: Description:

Surrounding Landuse

- Residential
- Agriculture
- Forest
- Other
- Meadow
- Wetland
- Livestock

Type of Watercourse

- Intermittent
- Permanent
- Ephemeral
- Channelized
- Natural Channel

Description:

Young ~~deciduous~~ deciduous forest

Description:

dry out channel

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

Is any portion of the water body underground or not as mapped? Y / N
 If Yes describe:

GPS Coordinate: Easting - Northing - Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

WT (°C): 16.4 AT (°C): 12°C
 pH: 7.89 Cond (µs/cm): 886
 D.O. (mg/L): 6.14
 Water Clarity: Clear Turbid

Water Colour: n/a

Notes: shallow pool ~0.08m

Ground Water and Seepage Indicators

- Watercress
- Iron Staining
- Bubbling
- Other
- Bank Seepage
- None

Details:

Water Bodies Assessment Field Collection Form

Stream Morphology				
Site Length (m): <i>120m</i>		Bank Stability:		
Channel Dimensions		Stable	Slightly unstable	
Mean Wetted Width (m): <i>1</i>	Mean Wetted Depth (m): <i>0.06</i>	Moderately unstable	Unstable	
Mean Bankfull Width (m): <i>2</i>	Mean Bankfull Depth (m): <i>0.5</i>	Left Bank <input type="checkbox"/> Stable <input type="checkbox"/> Slightly unstable <input checked="" type="checkbox"/> Moderately unstable <input type="checkbox"/> Unstable <input type="checkbox"/>	Right Bank <input type="checkbox"/> Stable <input type="checkbox"/> Slightly unstable <input checked="" type="checkbox"/> Moderately unstable <input type="checkbox"/> Unstable <input type="checkbox"/>	
Mean Top of Bank Width (m): <i>4</i>	Mean Top of Bank Depth (m): <i>2</i>	Description: <i>exposed soils, v. vulnerable, minor erosion at toe of slope</i>		
Flow Description: (high or low flow conditions, stagnant, etc) <i>slow, low flow</i>				
Habitat				
Substrate (<=>)		Morphological Structure (%)		
Bo - Boulder	Description <i>si = cl = gr > co > bo</i>	Pool	Riffle	
Co - Cobble		Run	Flat	
Gr - Gravel		<i>10</i>	<i>10</i>	<i>10</i>
Sa - Sand		Notes: <i>a few small riffles, pool sequences</i>		<i>70</i>
Si - Silt				
Cl - Clay				
MK - Muck				
DT - Detritus	Instream Cover (%) <i>60</i>			
Other	Woody Debris	Boulders	Cobble	
	<i>10</i>	<i>10</i>	<i>40</i>	
Average Depth: (% Cover)				
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)				
Canopy Cover (% closed cover):		Types of Cover (% cover)		
100-90%	<input checked="" type="checkbox"/>	30-1%	<input type="checkbox"/>	
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	
60-30%	<input type="checkbox"/>	Trees <i>100</i>	Shrubs _____	
		Grasses _____	Man-made structures _____	
		Herbaceous _____	Other _____	
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%				
Notes: (vegetation species, types of structures) <i>m maple, basswood, oak</i>				
Riparian Vegetation				
Width and Description of riparian vegetation: LB - <i>>15m forest</i>		RB - <i>>15m forest</i>		
Overhanging Vegetation Present <i>Y/N</i>		% Overhanging Vegetation: _____		
Description of Overhanging Vegetation: _____				
Obstructions to Fish Passage				
None Observed <input checked="" type="checkbox"/>	Man-Made <input type="checkbox"/>	Natural <input type="checkbox"/>	Low Flow Barrier <input type="checkbox"/>	
Description of Barrier: _____				
Height of Barrier (m)		GPS Coordinates:		

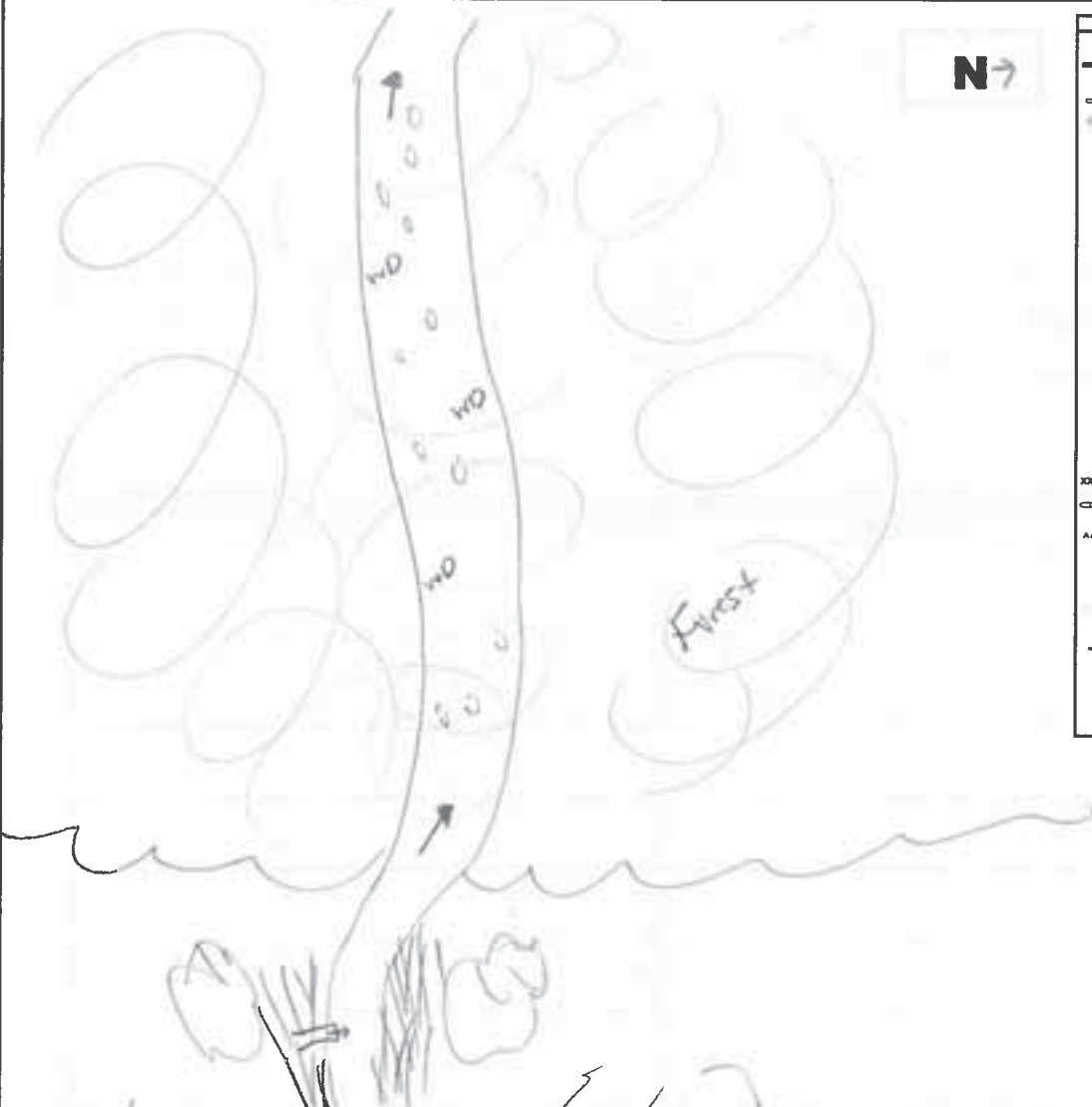
Water Bodies Assessment Field Collection Form

AECOM

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Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# ASH 2054 Site ID D14



LEGEND	
10d depth (cm)	→
θw width	⇌
Riffle	○
Run/Glide	□
Pool	■
Island/Bar	○
Fine Substrate	○
Gravel Substrate	##
Cobble/Boulder	oOoO
Debris	***
Cattail	CT
Submerg/Float Veg	SV/FV
Emergent Vegetation	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxx
Instream Log/Tree	⊃
Dam/Weir/ Obstruction	AAA
Riparian Tree	⊙
Seep/Spring	↳
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-x-x-
Overt	⊥

Horizontal View of Channel



Initial QA/QC By: L. Bentley Date: June 26, 2012 Technical QA/QC By: Slutkin Date: July 10/12

Water Bodies Assessment Field Collection Form

AECOM

Page 1 of 4

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GH0203/0054 Site ID: D14
 Date: April 17 / 12 Start time: 13:16 End Time: ~~13:16~~ 14:35
 Weather Conditions: Clouds, 7°C Field Crew: C. Barros, S. Lohner
 Field Notes By: C. Barros

Site Location

Babylon Rd, south of Crofton Rd.

UTM Coordinates (continue on page 2 if necessary)

Easting: 8453947 Northing: 4793604 Description: Start of study area
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Land Use

Type of Watercourse

Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other <input type="checkbox"/>			

Description: crop - corn Description: flow through barn

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

The drain inputs observed, flowing (slow)

Is any portion of the water body underground or not as mapped? Y N
 If Yes describe:

GPS Coordinate: Easting - Northing - Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

Groundwater and Seepage Indicators

WT (°C): 19.9 AT (°C): 7°C
 pH: 7.60 Cond (µm/cm): 499
 D.O. (mg/L): 19.77
 Water Clarity: Clear Turbid
slightly turbid

Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other

Water Colour: clear/brown

Details:

Notes: organic film noted in some areas

Water Bodies Assessment Field Collection Form

Stream Morphology													
Site Length (m): <i>~300m</i>			Bank Stability:										
Channel Dimensions			Stable	Slightly unstable	Moderately unstable	Unstable							
Mean Wetted Width (m):	<i>0.6</i>	Mean Wetted Depth (m):	<i>0.10</i>	Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Mean Bankfull Width (m):	<i>3</i>	Mean Bankfull Depth (m):	<i>0.6</i>	Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Mean Top of Bank Width (m):	<i>5.5</i>	Mean Top of Bank Depth (m):	<i>2.5</i>	Description: <i>veg banks</i>									
Flow Description: (high or low flow conditions, stagnant, etc) <i>visible low flow in most areas, low gradient</i>													
Habitat													
Substrate (<=>)			Morphological Structure (%)										
Description Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Debris			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"><i>100</i></td> </tr> </tbody> </table>			Pool	Riffle	Run	Flat				<i>100</i>
Pool	Riffle	Run	Flat										
			<i>100</i>										
<i>Si, mk</i>			Notes:										
Instream Cover (%)													
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks							
	<i>/</i>	<i>/</i>	<i>/</i>	<i>90%</i>		Average Depth: (% Cover) <i>/</i>							
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%													
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <i>- cattail choked, one section of emergent</i>													
Canopy Cover (% closed cover):			Types of Cover (% cover)										
100-90%	<input type="checkbox"/>	30-1%	<input checked="" type="checkbox"/>	Trees <i>5</i>	Shrubs	Man-made structures							
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	Herbaceous	Other							
60-30%	<input type="checkbox"/>												
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%													
Notes: (vegetation species, types of structures) <i>Sparse trees, no shrubs</i>													
Riparian Vegetation													
Width of riparian vegetation: <i>R = 1m Left = 3m</i>													
Description of vegetation community surrounding 30 m from watercourse: <i>grass</i>													
Obstructions to Fish Passage													
No Obstructions	<input type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input checked="" type="checkbox"/>						
Description of Barrier: <i>sediment + veg build up</i>													
Height of Barrier (m)			GPS Coordinates:										

Water Bodies Assessment Field Collection Form

AECOM

Date: April 17/12

Land Parcel/Site ID: G5H2063/2054
014

Page 3 of 4

Other General Comments Regarding the Study Area:

- review site investigation completed for associated turbine for upler details
- channel from road to fork ~~is~~ different than study area, very little cattail + ~~the~~ emergent + submergent veg. Substrate similar → silt dominated
- frog egg mass observed (east end of study area)

Additional UTM Coordinates:

Picture #	Description	Picture #	Description
1	Roadside looking East		
2	Roadside substrate		
3	Ups of fork in channel		
4	Start of study reach - west end		
5	in channel		
6	review mid way		
7	emergent aquatic veg		
8, 9	end of site		
10	possible egg mass of frog		

Water Bodies Assessment Field Collection Form

Study Area:

Jericho

Goshen

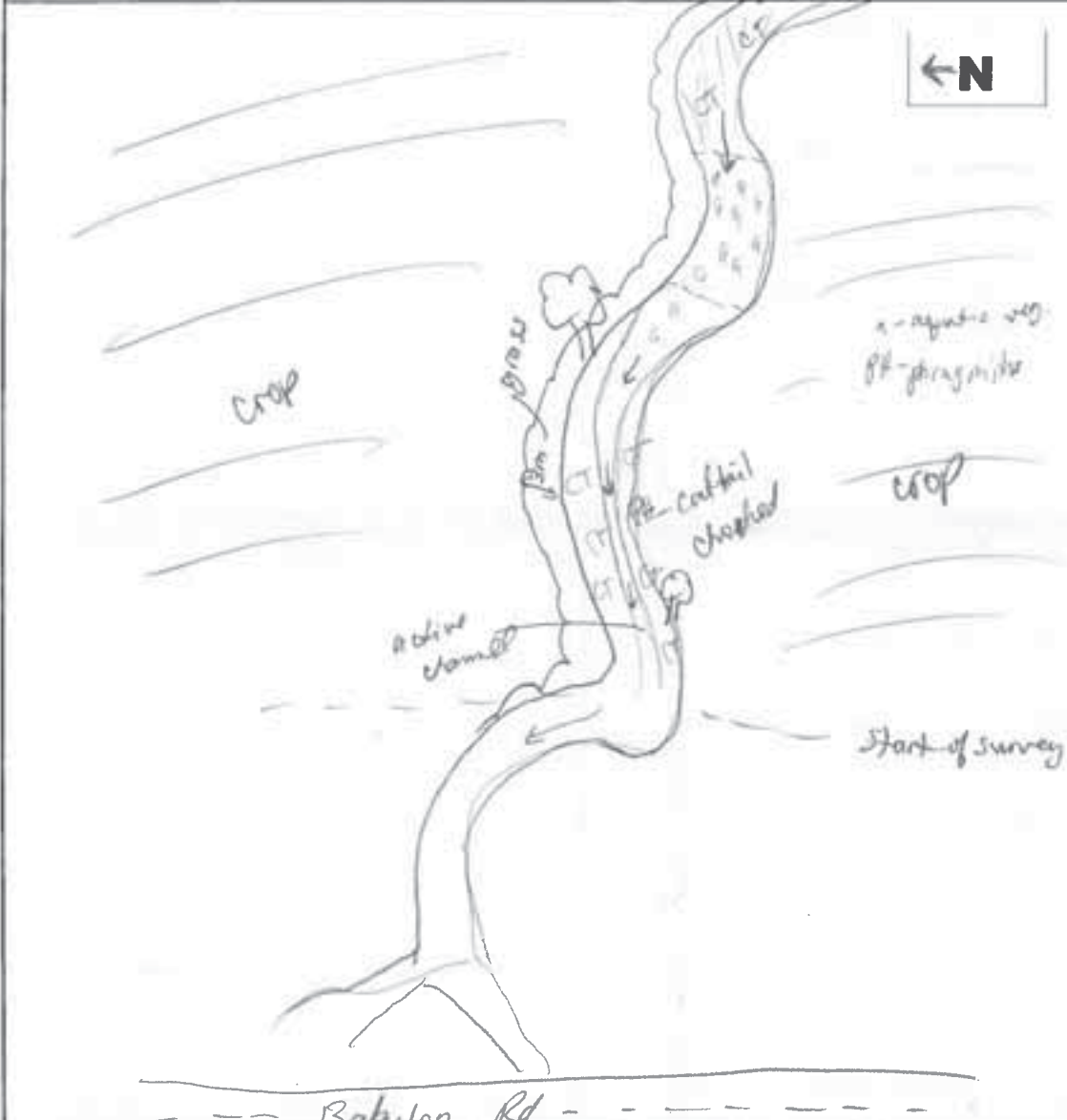
Bluewater

Land Parcel#

GSH 2053 609

Site ID

D14



LEGEND	
→	10d depth (cm) 6w width Riffle
○	Run/Glide
○	Pool
■	Island/Bar
■	Fine Substrate
##	Gravel Substrate
○○○○	Cobble/Boulder
***	Debris
CT	Cattail
SVFV	Submerg/Float Veg
EV	Emergent Vegetation
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
⊓	Instream Log/Tree
AAA	Dam/Weir/ Obstruction
⊙	Riparian Tree
⊢	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence line
⊓	Culvert

Horizontal View of Channel



Initial QA/QC By: AMS

Date: Apr. 11/12

Technical QA/QC By: M. Klein

Date: May 02/12

D14

AECOM		Page 1 of 4	
		Field Crew: CB JS	
General Information			
Study Area: Jericho <u>Goshan</u> Bluewater Land Parcel# 2054	Form# 212		
Date: Dec 16/11	Start time: 10:00	End Time: 10:40	
Weather Conditions: Cloudy, 1°C		Field Notes By: CB	
Site Location			
Babylon Rd, south of Crediton			
UTM Co-ordinates			
Easting: 045 4310	Northing: 479 34 08	Description: at stream	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other:			
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow) - no tile drains observed.			
In-Situ Water Quality		Ground Water Indicators	
WT (°C):	AT (°C):	Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
pH:	Cond (s/cm):	Iron Staining <input type="checkbox"/>	None <input checked="" type="checkbox"/>
Water Clarity: Clear <input type="checkbox"/>	Turbid <input checked="" type="checkbox"/>	Bubbling <input type="checkbox"/>	Other <input type="checkbox"/>
Notes: Wg meter not working - sk turbid, brown			
Stream Morphology			
Site Length (m): 200		Bank Stability:	
Channel Dimensions		Stable	Slightly unstable
Mean Wetted Width (m): 2	Mean Bankfull Width (m): 2.7	Moderately unstable	Unstable
Mean Wetted Depth (m): 0.40	Mean Bankfull Depth (m): 0.75	Left Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>
		Right Bank <input checked="" type="checkbox"/>	<input type="checkbox"/>
Flow Description: slow flow, mod water levels.			
Notes:			

1.7
4

AECOM

Stream Morphology (continued)

Substrate (<=>)

- Bo - Boulder
- Co - Cobble
- Gr - Gravel
- Sa - Sand
- Si - Silt
- Cl - Clay
- MK - Muck
- DT - Detritus
- Other

Description

cl, si >> gr

Morphological Structure (%)

Pool	Riffle	Run	Fiat
		<i>100</i>	

Notes:

mod levels

Habitat

Instream Cover (%) *90*

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
				<i>100</i>		

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Cattails, grasses

Canopy Cover (% closed cover):

- 100-90%
- 90-80%
- 60-30%
- 30-1%
- 0%

Types of Cover (% cover)

- Trees _____
- Grasses *100*
- Shrubs _____
- Herbaceous _____
- Man-made structures _____
- Other _____

Notes:

*Channel completely grass + cattail choked
↳ no riparian veg or trees*

Obstructions to Fish Passage

- No Obstructions
- Natural
- Man-Made

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

flat

Terrestrial features Present

Yes No

Terrestrial Recon Form Filled out

Yes No

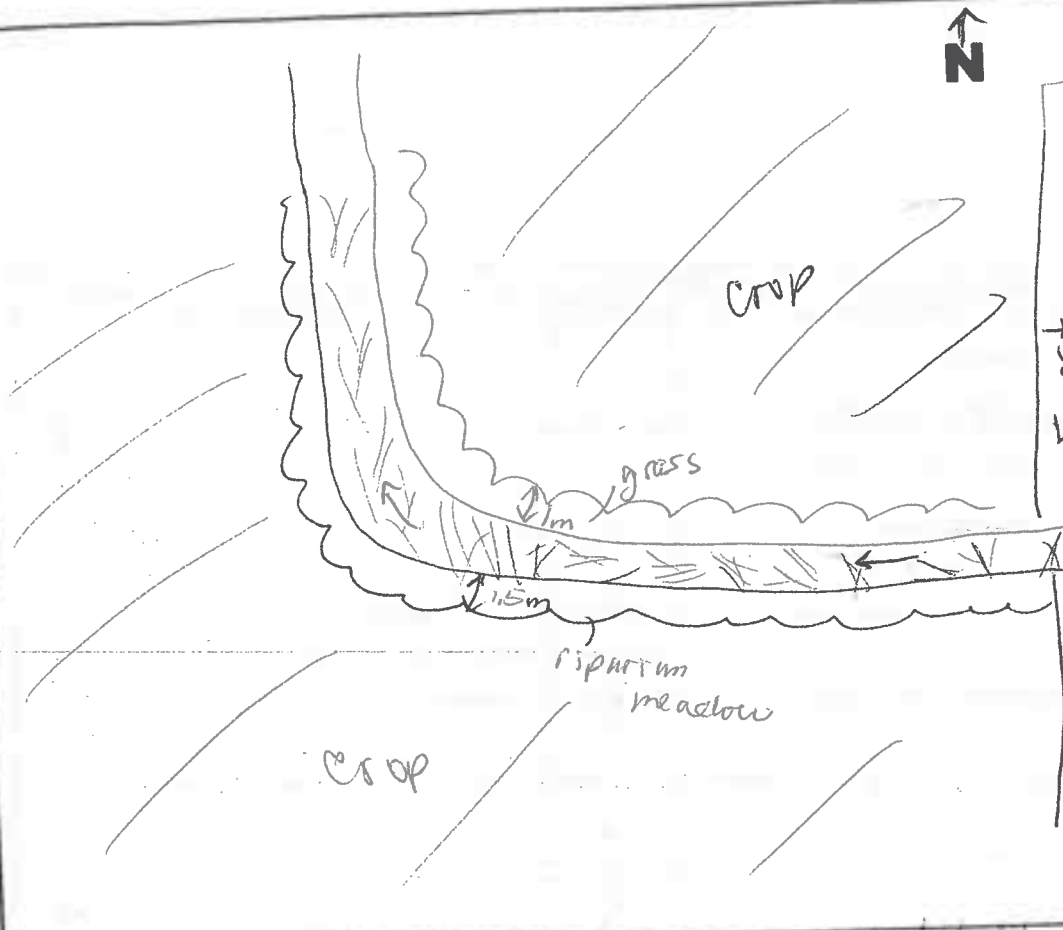
C212

AECOM

Watercourse Sketch

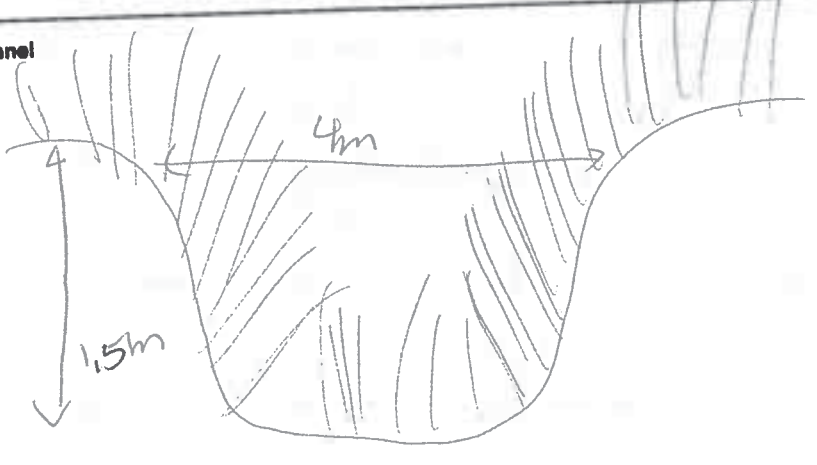
D14
COTZ

Study Area: Jericho Goshen Bluewater Land Parcel# 2054 Turbine #



LEGEND	
100 depth (cm)	
6w width	
Riffle	→
Run/Glide	—
Pool	○
Island/Bar	■
Fine Substrate	—
Gravel Substrate	—
Cobble/Boulder	oOooO
Debris	***
Catal	CT
Submerg/Float Veg	SV/FV
Emergent	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	
Instream Log/Tree	—
Dem/Weir	***
Riparian Tree	●
Seep/Spring	→
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	—
Fence line	—
Culvert	—

Horizontal View of Channel



Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho ~~Goshen~~ Bluewater Land Parcel# GSH2028 Site ID: 015-GSH2028
 Date: April 17/12 Start time: 11:58 End Time: 13:15
 Weather Conditions: Cloudy, 6°C Field Crew: C. Boros, S. Lohmes
 Field Notes By: C. Boros

Site Location

Babylon Rd, south of South Rd.

UTM Coordinates (Latitude and Longitude)

Easting: 0453886 Northing: 4791327 Description: at road
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Streamflow Location

Type of Watercourse

Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other <input type="checkbox"/>			

Description: crop Description: straight channel.

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

like drains noted on both sides

Is any portion of the water body underground or not as mapped? Y (N)

If Yes describe:

GPS Coordinate: Easting - Northing - Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

-flat, no soil input

In-Situ Water Quality

Ground Water and Seepage Indicators

WT (°C): 9.5 AT (°C): 6°C
 pH: 7.88 Cond (µs/cm): 454
 D.O. (mg/L) 26.8
 Water Clarity: Clear Turbid

Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other

Water Colour: sh yellow tinge

Details:

Notes:

Water Bodies Assessment Field Collection Form

Stream Morphology															
Site Length (m): <i>~250m</i>			Bank Stability:												
Channel Dimensions			Stable	Slightly unstable	Moderately unstable										
Mean Wetted Width (m): <i>0.70</i>	Mean Wetted Depth (m): <i>0.35</i>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Left Bank</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">Right Bank</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>				Left Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Left Bank	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Right Bank	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Mean Bankfull Width (m): <i>2.5</i>	Mean Bankfull Depth (m): <i>0.75</i>														
Mean Top of Bank Width (m): <i>4.5</i>	Mean Top of Bank Depth (m): <i>2</i>	Description: <i>Straight channel</i>													
Flow Description: (high or low flow conditions, stagnant, etc) <i>visible flow, low gradient → flow may be a result of tile drain input</i>															
Habitat															
Substrate (<=>)		Morphological Structure (%)													
Description Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Debris		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"><i>100</i></td> </tr> </table>				Pool	Riffle	Run	Flat				<i>100</i>		
		Pool	Riffle	Run	Flat										
			<i>100</i>												
<i>si > cl, mk >> gr, sa</i>		Notes: <i>Straight channel</i>													
Instream Cover (%)															
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None										
<i>/</i>	<i>15%</i>	<i>/</i>	<i>/</i>	<i>75%</i>	<i>/</i>										
					Average Depth: <i>/</i>										
					(% Cover)										
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%															
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <i>-floating + submergent algae, grasses,</i>															
Canopy Cover (% closed cover):			Types of Cover (% cover)												
100-90%	<input type="checkbox"/>	30-1%	<input checked="" type="checkbox"/>	Trees	Shrubs										
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	Herbaceous										
60-30%	<input type="checkbox"/>				Man-made structures										
Other															
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%															
Notes: (vegetation species, types of structures) <i>trees + shrubs have no leaves - hard to assess canopy cover</i>															
Riparian Vegetation															
Width of riparian vegetation: <i>Right - 0.5m Left - 0.5m grasses + meadow</i>															
Description of vegetation community surrounding 30 m from watercourse: <i>agri fields</i>															
Obstructions to Fish Passage															
No Obstructions	<input checked="" type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>										
				Low Flow Barrier	<input checked="" type="checkbox"/>										
Description of Barrier: <i>/</i>															
Height of Barrier (m)			GPS Coordinates: <i>/</i>												

Water Bodies Assessment Field Collection Form

AECOM

Date: April 17 / 12

Land Parcel/Site ID: GSIT2028/015 Page 3 of 4

Other General Comments Regarding the Study Area:

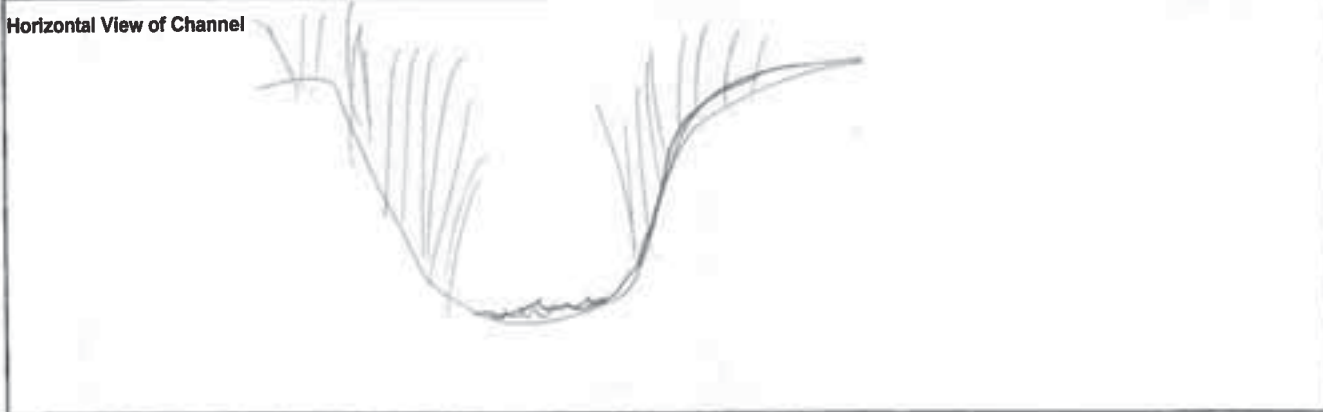
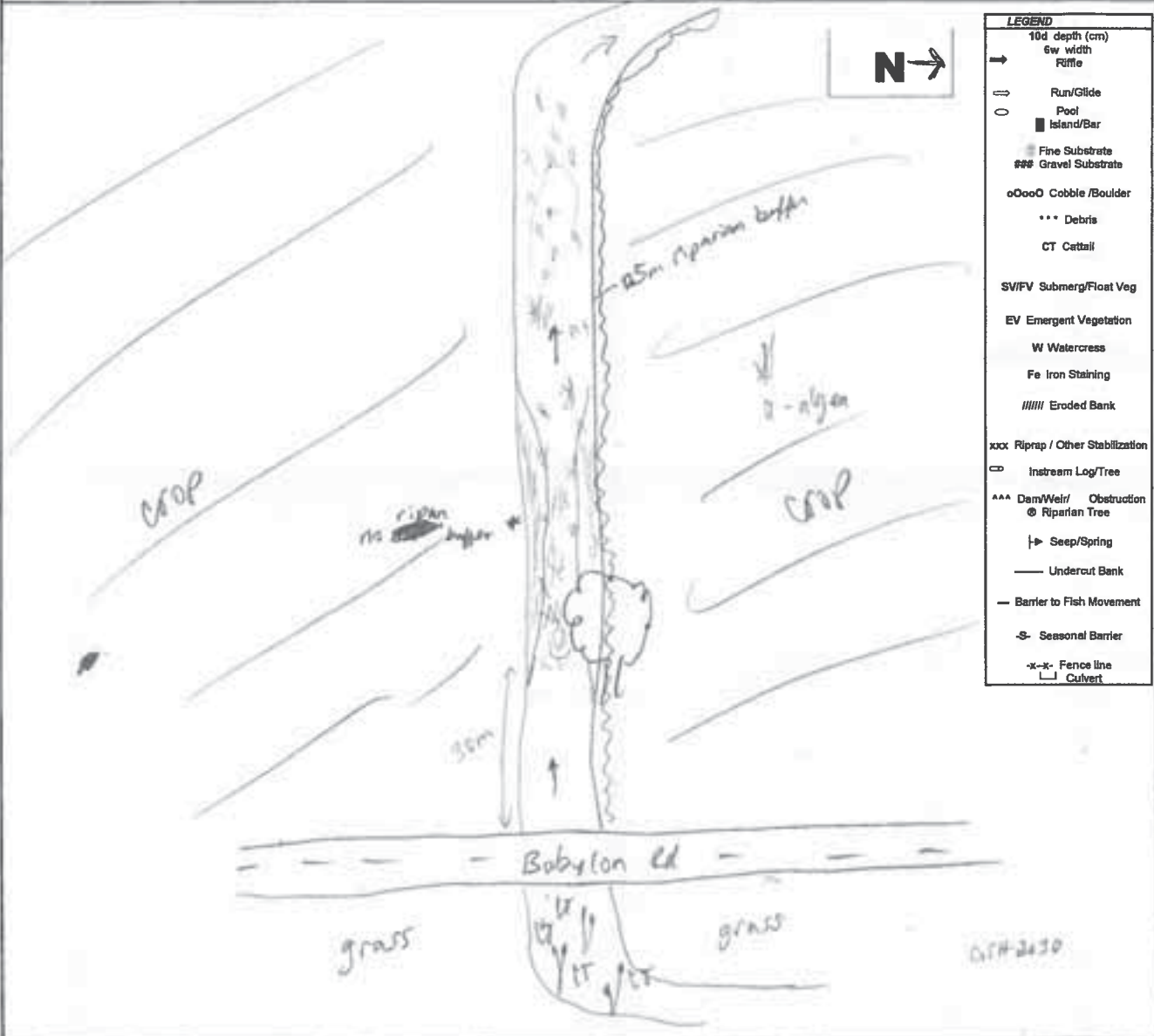
- beyond study area channel appeared to be the same
or could be 50m down/s
 - racoon + deer tracks
- Watercourse in straight channel with soft substrate
Covered in algae, low canopy cover

Additional UTM Coordinates:

Picture #	Description	Picture #	Description
1, 2	East side, looking east		
3, 4	Overview - looking West		
5	Wetland		
6,	below culvert		
7	Substrate		
8, 9	aquatic veg		
10	mid way		
11	aquatic veg		
12-14	end of secte		
15	downstream		

Water Bodies Assessment Field Collection Form

Study Area: Jericho Goshen Bluewater Land Parcel# 05H202P Site ID P15



Initial QA/QC By: AMS

Date: Apr. 19/12

Technical QA/QC By: Sautker Date: May 8/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1226 Site ID: D16
 Date: Apr 26/2012 Start time: 8:30 End Time: 9:06
 Weather Conditions: overcast, ~10°C Field Crew: SA, SL
 Field Notes By: SA

Site Location

located east of Grand Bend Line, south of Crediton

UTM Co-ordinates (consult page 51 for details)

Easting: <u>0441463</u>	Northing: <u>4791536</u>	Description: <u>WB</u>
Easting: <u>0441551</u>	Northing: <u>4791570</u>	Description: <u>end of site</u>
Easting: _____	Northing: _____	Description: _____
Easting: _____	Northing: _____	Description: _____

Surrounding Land Use

Type of Watercourse

Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	_____ <input type="checkbox"/>
Other <input type="checkbox"/>			

Description: crop to the north - not planted

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

Several tile drain inputs were observed.

Is any portion of the water body underground or not as mapped? Y/N
 If Yes describe:

GPS Coordinate: Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

north-relatively flat
South-slopes towards creek.

In-Situ Water Quality

Ground Water and Seepage Indicators

WT (°C): <u>9.08</u>	AT (°C): <u>9.0°C</u>	Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
pH: <u>8.10</u>	Cond (µs/cm): <u>472</u>	Iron Staining <input type="checkbox"/>	None <input checked="" type="checkbox"/>
D.O. (mg/L): <u>11.90</u>		Bubbling <input type="checkbox"/>	_____ <input type="checkbox"/>
Water Clarity: Clear <input checked="" type="checkbox"/> Turbid <input type="checkbox"/>		Other <input type="checkbox"/>	

Details:

Water Colour: yellow

Notes:

Water Bodies Assessment Field Collection Form

Stream Morphology																				
Site Length (m): <u>200.</u>			Bank Stability:																	
Channel Dimensions			<table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>				Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable																
Left Bank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Right Bank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Mean Wetted Width (m): <u>1.5</u>	Mean Wetted Depth (m): <u>0.20</u>		Description: <u>Some slumping and washed away areas, but banks well vegetated</u>																	
Mean Bankfull Width (m): <u>4.0</u>	Mean Bankfull Depth (m): <u>2.00</u>																			
Mean Top of Bank Width (m): <u>10.0</u>	Mean Top of Bank Depth (m): <u>6.0</u>																			
Flow Description: (high or low flow conditions, stagnant, etc) <u>low conditions - moderate gradient → flowing</u>																				
Material																				
Substrate (<=>)			Morphological Structure (%)																	
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus			<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td><u>15</u></td> <td><u>30</u></td> <td><u>55</u></td> <td></td> </tr> </table>			Pool	Riffle	Run	Flat	<u>15</u>	<u>30</u>	<u>55</u>								
Pool	Riffle	Run	Flat																	
<u>15</u>	<u>30</u>	<u>55</u>																		
Description <u>Si > Co > Bo > Gr</u> <u>clay bottom</u>			Notes:																	
Instream Cover (%)																				
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks														
	<u>15</u>	<u>5</u>		<u>30</u>		Average Depth: <u>0.20m</u> (% Cover) <u>15%</u>														
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <u>attached algae</u>																				
Canopy Cover (% closed cover):			Types of Cover (% cover)																	
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees <u>30</u>	Shrubs <u>40</u>	Man-made structures _____														
90-60%	<input checked="" type="checkbox"/>	0%	<input type="checkbox"/>	Grasses _____	Herbaceous _____	Other _____														
60-30%	<input type="checkbox"/>																			
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																				
Notes: (vegetation species, types of structures) <u>willow shrubs, maple trees</u>																				
Riparian Vegetation																				
Width of riparian vegetation: <u>LB - 5m, RB - 10m.</u>																				
Description of vegetation community surrounding 30 m from watercourse: <u>cultural meadow and agricultural.</u>																				
Obstructions to Fish Passage																				
No Obstructions	<input type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input type="checkbox"/>													
Description of Barrier: <u>none observed.</u>																				
Height of Barrier (m)			GPS Coordinates:																	

Water Bodies Assessment Field Collection Form

AECOM

Date: Apr 26/2012

Land Parcel/Site ID: 1526
D16

Page 3 of 4

Other General Comments Regarding the Study Area:

- fish observed - cyprinid species
- channelized feature starting to naturalize.
- overhanging vegetation provided by willow shrubs
- Some nice riffle areas
- West of GB line - more natural channel
good canopy cover.
- low riparian cover on LB → crop right to TOB

Additional UTM Coordinates:

Picture #	Description	Picture #	Description
104	Start		
105	looking u/s		
106	tile drain		
107	culvert		
108	washout area		
109	looking u/s		
110	facing u/s at end of site		
111	facing d/s at end of site		
112	West of Grand Bend Line		
113	view of d/s side		
114	view of d/s		

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Study Area:

Jericho

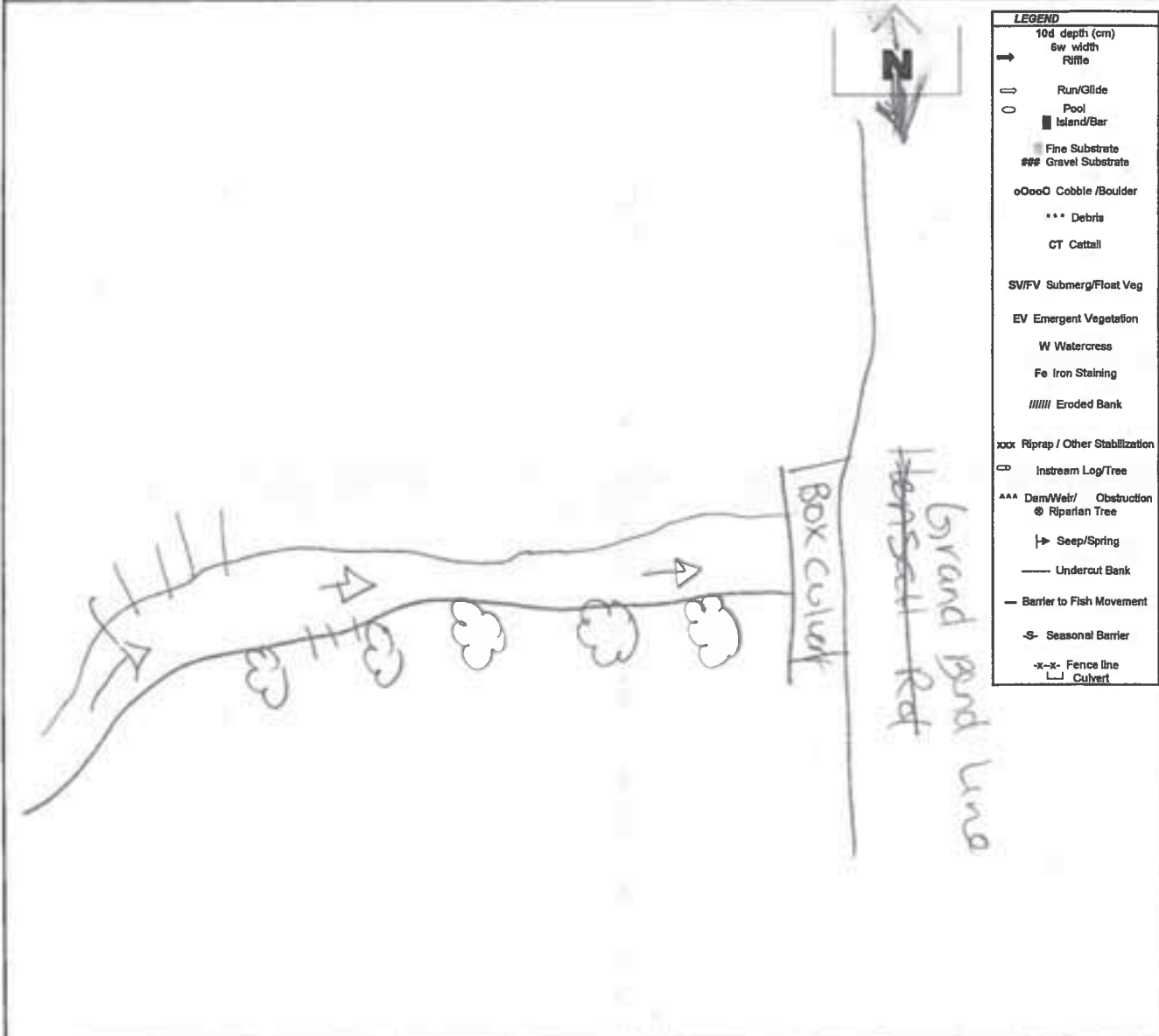
Goshen

Bluewater

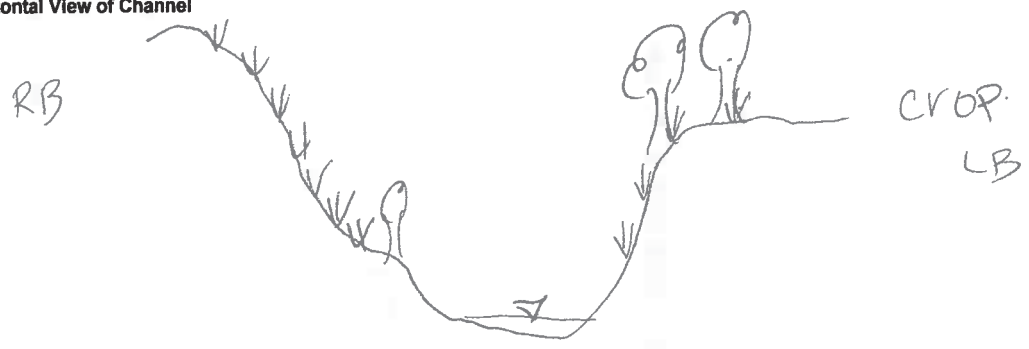
Land Parcel# 1586

Site ID

D16



Horizontal View of Channel



Initial QA/QC By: L. Bentley

Date: May 2, 2012

Technical QA/QC By: [Signature]

Date: 2nd Aug 2012

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GSH 1539 Site ID: D16

Date: June 25/12 Start time: 12:50 End Time: 13:30

Weather Conditions:

Sunny, 15°C

Field Crew: C. Boros, J. Epp

Field Notes By: C. Boros

Site Location

Grand Bend Line, south of Crediton

UTM Co-ordinates (continue on page 3 if necessary)

Easting: 441324 Northing: 4791520 Description: D16 start

Easting: 441300 Northing: 4791514 Description: D16 w/g

Easting: 441235 Northing: 4791507 Description: D16 GWP

Easting: Northing: Description:

Surrounding Landuse

- Residential Meadow
 Agriculture Wetland
 Forest Livestock
 Other

Type of Watercourse

- Intermittent Channelized
 Permanent Natural Channel
 Ephemeral

Description:

north - soy bean then trees
south - meadow + forest

Description:

starting to maturing

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

none observed

is any portion of the water body underground or not as mapped? Y/N

If Yes describe:

GPS Coordinate: Easting -

Northing -

Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat & sloped towards watercourse

In-Situ Water Quality

WT (°C): 19.4 AT (°C): 17°C
 pH: 8.54 Cond (µs/cm): 528
 D.O. (mg/L) 6.88
 Water Clarity: Clear Turbid 3/1

Water Colour: brown

Notes: narrowed run area, water depth = 0.17m

Ground Water and Seepage Indicators

- Watercress Bank Seepage
 Iron Staining None
 Bubbling
 Other

Details:

Water Bodies Assessment Field Collection Form

Stream Morphology									
Site Length (m): ~100m			Bank Stability:						
Channel Dimensions			Stable	Slightly unstable	Moderately unstable	Unstable			
Mean Wetted Width (m):	1.75	Mean Wetted Depth (m):	0.2	Left Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mean Bankfull Width (m):	2.25	Mean Bankfull Depth (m):	0.5	Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mean Top of Bank Width (m):	6	Mean Top of Bank Depth (m):	3.5	Description: erosion + old channeling present					
Flow Description: (high or low flow conditions, stagnant, etc)									
slow flow, moderate water level									
Habitat									
Substrate (<=>)			Morphological Structure (%)						
Bo - Boulder	Description		Pool	Riffle	Run	Flat			
Co - Cobble	Si > cl > Co, gr > bo		15	5	5	75			
Gr - Gravel									
Sa - Sand									
Si - Silt									
Cl - Clay									
MK - Muck	Notes: one riffle, run pool sequence present								
DT - Detritus									
Instream Cover (%) 79									
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks			
	5	10	45	5		Average Depth: 0.015 (% Cover) 5			
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%									
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)									
grasses									
Canopy Cover (% closed cover):			Types of Cover (% cover)						
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees	80	Shrubs	10	Man-made structures	
90-60%	<input checked="" type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	10	Herbaceous		Other	
60-30%	<input type="checkbox"/>								
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%									
Notes: (vegetation species, types of structures)									
Cottonwood, dogwood, willow									
Width and Description of riparian vegetation:			Riparian Vegetation						
LB -	1.5m	1.5m meadow then agri field then tree stand	RB -	20m - meadow + forest					
Overhanging Vegetation Present <input checked="" type="checkbox"/> N			% Overhanging Vegetation: 5						
Description of Overhanging Vegetation:									
some willow + dogwood overhanging - but not covering stream -> clump by pool									
Obstructions to Fish Passage									
None Observed	<input checked="" type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input type="checkbox"/>		
Description of Barrier:									
Height of Barrier (m)			GPS Coordinates:						

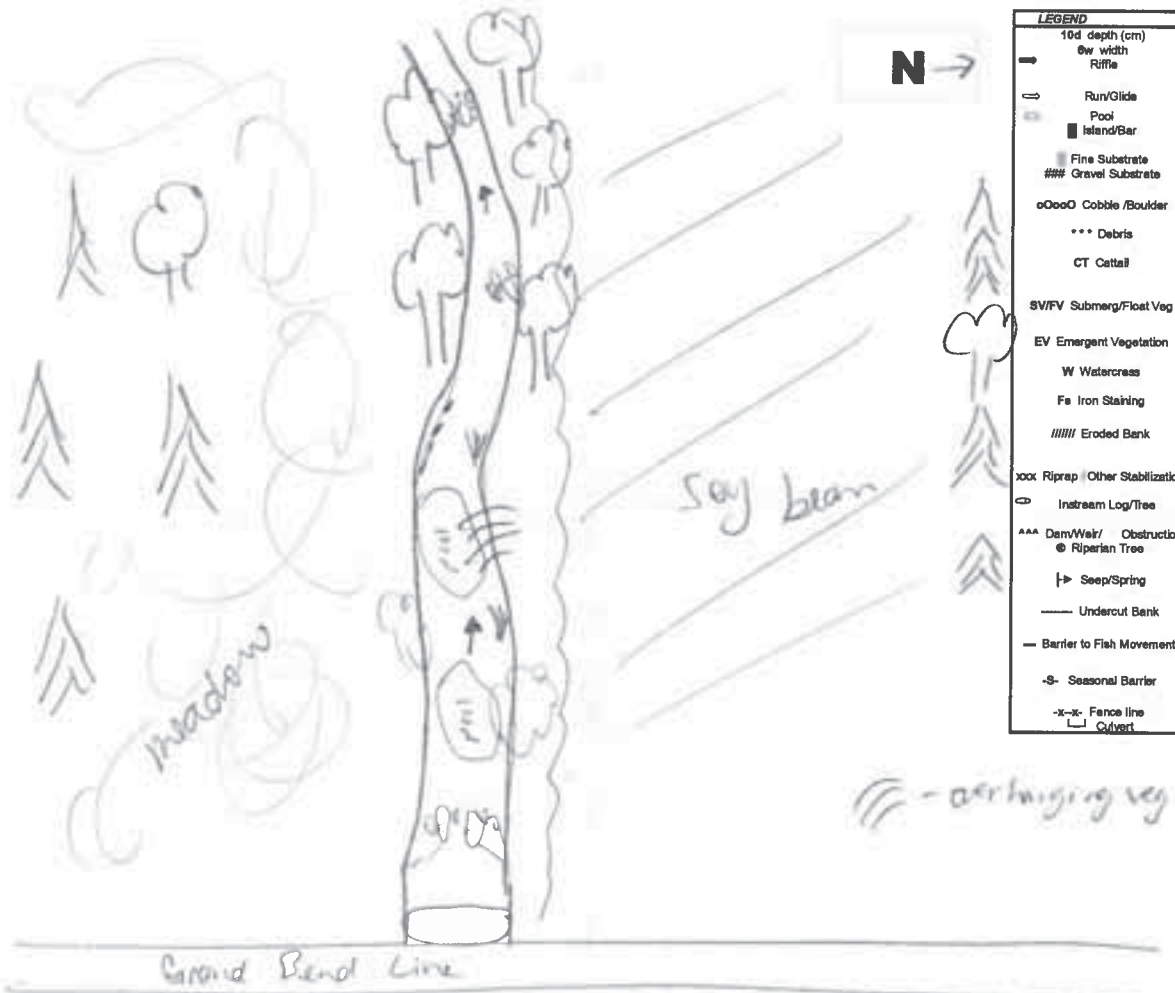
Water Bodies Assessment Field Collection Form

AECOM

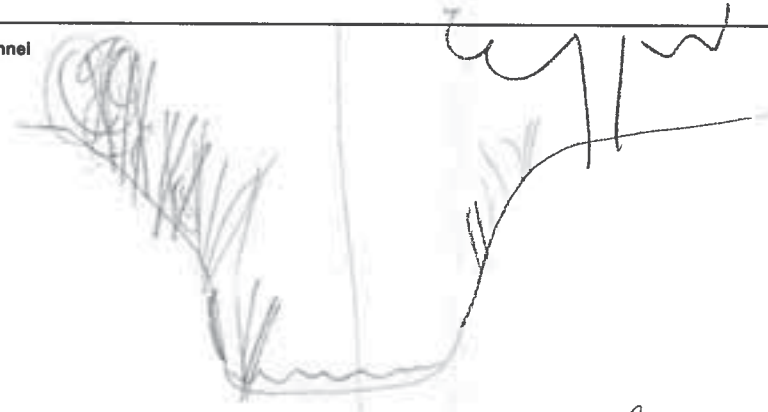
Page 4 of 4

Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# GSH 1539 Site ID 016



Horizontal View of Channel



Initial QA/QC By: L Bentley

Date: June 26, 2012

Technical QA/QC By: Stutken Date: July 10/12

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GSH2238 Site ID: D17
 Date: APR 26/2012 Start time: 12:53 PM End Time: 13:16 PM
 Weather Conditions: rain, ~~10~~ 8°C Field Crew: S. ATKEN S. LOHNES
 Field Notes By: S. LOHNES

Site Location

off Shipka Line, south of Dashedwood.

UTM Co-ordinates (coordinates on page 2 if necessary)

Easting: 4796073 Northing: 0445371 Description: start (west)
 Easting: 4796062 Northing: 0445668 Description: end (east)
 Easting: _____ Northing: _____ Description: _____
 Easting: _____ Northing: _____ Description: _____

Surrounding Land Use

Residential Meadow
 Agriculture Wetland
 Forest Livestock
 Other
 Description: active corn crop

Type of Watercourse

Intermittent Channelized
 Permanent Natural Channel
 Ephemeral _____
 Description: naturalizing channel.

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

one tile drain w/ reach. no other inputs obs.

Is any portion of the water body underground or not as mapped? Y/N
 If Yes describe:

GPS Coordinate: Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat topography

Physical Water Quality

WT (°C): 9.75 AT (°C): 7.0
 pH: 8.29 Cond (s/cm): 585
 D.O. (mg/L) 13.65
 Water Clarity: Clear Turbid

Water Colour: No colour.

Notes:

Biological Water and Seepage Indicators

Watercress Bank Seepage
 Iron Staining None
 Bubbling _____
 Other

Details: individual plants scattered

Water Bodies Assessment Field Collection Form

Stream Morphology																		
Site Length (m): <u>500m</u>		Bank Stability:																
Channel Dimensions		<table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>			Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable														
Left Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														
Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														
Mean Wetted Width (m): <u>1.20m</u>	Mean Wetted Depth (m): <u>0.15m</u>	Description: <u>evidence of past failures, very steep slope, loose soil under top layer of vegetation</u>																
Mean Bankfull Width (m): <u>6.0m</u>	Mean Bankfull Depth (m): <u>1.0m</u>																	
Mean Top of Bank Width (m): <u>8.5m</u>	Mean Top of Bank Depth (m): <u>3.5m</u>																	
Flow Description: (high or low flow conditions, stagnant, etc) <u>low flow, visibly flowing</u>																		
Substrate (<=>)		Morphological Structure (%)																
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus	Description <u>Si >> Gr > Bo</u>	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td><u>5</u></td> <td><u>5</u></td> <td><u>90</u></td> <td></td> </tr> </table>	Pool	Riffle	Run	Flat	<u>5</u>	<u>5</u>	<u>90</u>		Notes: <u>Pool: 0.50m deep 3m x 1.5m</u>							
Pool	Riffle	Run	Flat															
<u>5</u>	<u>5</u>	<u>90</u>																
Instream Cover (%)																		
Other <u>detritus</u>	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks												
<u>20</u>			<u>5</u>	<u>5</u>		Average Depth: (% Cover) <u> / </u>												
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																		
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) <u>detritus, old corn stalks, attached algae</u>																		
Canopy Cover (% closed cover):				Types of Cover (% cover)														
100-90%	<input type="checkbox"/>	30-1%	<input checked="" type="checkbox"/>	Trees <u>50</u>	Shrubs <u>50</u>	Man-made structures												
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	Herbaceous	Other												
60-30%	<input type="checkbox"/>																	
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																		
Notes: (vegetation species, types of structures) <u>shrubs - willows, dogwood</u>																		
Riparian Vegetation																		
Width of riparian vegetation: <u>Ru/s minimal, 21m. Lu/s</u>																		
Description of vegetation community surrounding 30 m from watercourse: <u>FOD & com</u>																		
Obstructions to Fish Passage																		
No Obstructions	<input checked="" type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier												
Description of Barrier:																		
Height of Barrier (m)			GPS Coordinates:															

Water Bodies Assessment Field Collection Form

AECOM

Date: APR 26/12

Land Parcel/Site ID:

931 2238
D17

Page 3 of 4

Other General Comments Regarding the Study Area:

- deer tracks noted on L u/s bank w/ channel.
- wood frog
- tile drain input east of wood triangle on R u/s.
- ~~pasture~~ hayfield across from site access @ Kirkton Rd.

Additional UTM Coordinates:

Photo Log			
Picture #	Description	Picture #	Description
131	Sheet ✓	143	exposed soils
132	facing d/s ✓		
133	facing u/s -		
134	facing u/s -		
135	facing d/s -		
136	facing u/s -		
137	facing u/s -		
138	facing d/s ✓		
139	facing u/s		
140	facing d/s		
141	facing u/s		
142	facing d/s		

Water Bodies Assessment Field Collection Form

Study Area:

Jericho

Goshen

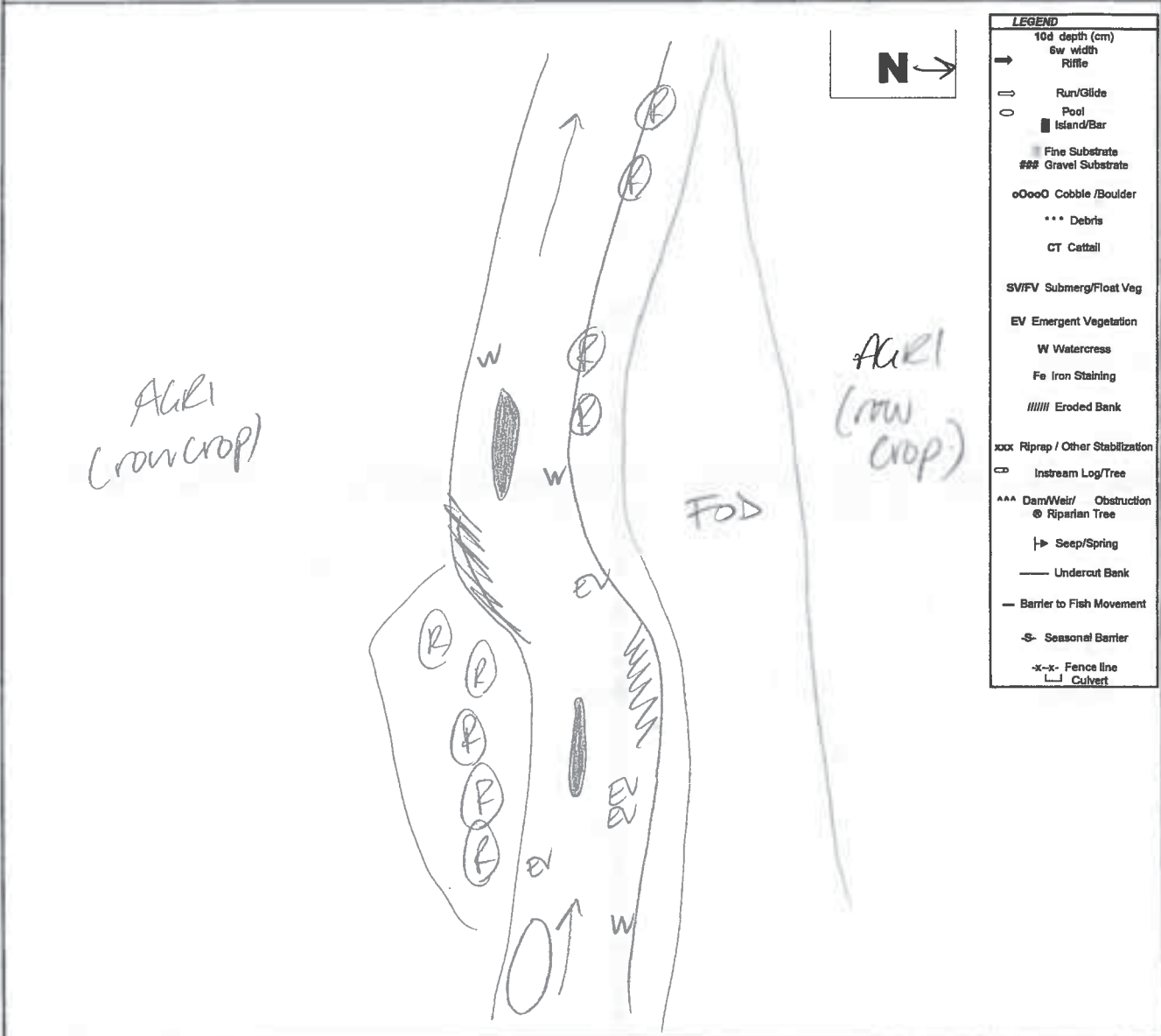
Bluewater

Land Parcel#

894 2238

Site ID

017



Horizontal View of Channel



Initial QA/QC By:

C Bentley

Date:

May 4, 2012

Technical QA/QC By:

M

Date:

May 8th 2012

Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GS# 1079/1081/1082 Site ID: 018
 Date: April 17/12 Start time: 16:00 End Time: 17:00
 Weather Conditions: Sunny, 9°C Field Crew: C. Boros, S. Lehms
 Field Notes By: C. Boros

Site Location

West of Bronson, Crediton

UTM Co-ordinates (optional - only if necessary)

Easting: <u>0448403</u>	Northing: <u>4793147</u>	Description: <u>East branch - side of house</u>
Easting: <u>0448413</u>	Northing: <u>4793084</u>	Description: <u>W/O</u>
Easting: _____	Northing: _____	Description: _____
Easting: _____	Northing: _____	Description: _____

Surrounding Land Use

Residential <input checked="" type="checkbox"/>	Meadow <input type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>
Other <input type="checkbox"/>	

Description: crop on south side
Residential on north.

Type of Watercourse

Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Permanent <input checked="" type="checkbox"/>	Natural Channel <input checked="" type="checkbox"/>
Ephemeral <input type="checkbox"/>	

Description: Channelized stream naturalizing

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

tile drain inputs noted on agro side

Is any portion of the water body underground or not as mapped? Y/N
 If Yes describe:

GPS Coordinate: Easting - _____ Northing - _____ Description - _____
 Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

Water Quality

WT (°C): <u>14°C</u>	AT (°C): <u>10°C</u>
pH: <u>7.91</u>	Cond (µs/cm): <u>585</u>
D.O. (mg/L): <u>4.17</u>	
Water Clarity: <u>Clear</u> <input type="checkbox"/> <u>st. turbid</u> <input type="checkbox"/>	

Water Colour: brown/yellowish greenish

Notes: w/q done in a pool where fish were observed before
→ calibrated D.O. @ this site visit

Ground Water and Seepage Indicators

Watercress <input checked="" type="checkbox"/>	Bank Seepage <input type="checkbox"/>
Iron Staining <input type="checkbox"/>	None <input type="checkbox"/>
Bubbling <input type="checkbox"/>	
Other <input checked="" type="checkbox"/>	

Details: 2 clumps (mats) found at east/north end.
Water Speedwell observed

pool = 0.4m deep 8cm = 90cm
= 2m wide
- 2 1. 11

12/10/12

Water Bodies Assessment Field Collection Form

Stream Morphology																				
Site Length (m): <i>~200m</i>			Bank Stability:																	
Channel Dimensions			<table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Right Bank</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>				Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stable	Slightly unstable	Moderately unstable	Unstable																
Left Bank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Right Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Mean Wetted Width (m): <i>0.9</i>	Mean Wetted Depth (m): <i>0.2</i>																			
Mean Bankfull Width (m): <i>3</i>	Mean Bankfull Depth (m): <i>0.8</i>																			
Mean Top of Bank Width (m): <i>5.5</i>	Mean Top of Bank Depth (m): <i>2.5</i>	Description: <i>vegetated but evidence of erosion</i>																		
Flow Description: (high or low flow conditions, stagnant, etc) <i>slow flow, slight gradient where riffles are present</i>																				
Habitat																				
Substrate (<=>)		Morphological Structure (%)																		
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus		<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td><i>15</i></td> <td><i>5</i></td> <td><i>/</i></td> <td><i>80</i></td> </tr> </table>				Pool	Riffle	Run	Flat	<i>15</i>	<i>5</i>	<i>/</i>	<i>80</i>							
Pool	Riffle	Run	Flat																	
<i>15</i>	<i>5</i>	<i>/</i>	<i>80</i>																	
Description: <i>sa, si >> cl > gr, co</i>		Notes: <i>v. slight meanders</i>																		
Instream Cover (%) <i>70</i>																				
Other debris	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks														
<i>plant debris</i>	<i>5</i>	<i>/</i>	<i>20</i>	<i>10</i>	<i>/</i>	Average Depth: <i>10 cm</i> (% Cover) <i>10%</i>														
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.) = <i>emergent (grasses, Speedwell), algae attached to rocks</i>																				
<i>Plant debris - grasses, cedar twigs.</i>																				
Canopy Cover (% closed cover):			Types of Cover (% cover)																	
100-90%	<input type="checkbox"/>	30-1%	<input type="checkbox"/>	Trees	<i>80</i>	Shrubs	<i>10</i>	Man-made structures												
90-60%	<input type="checkbox"/>	0%	<input type="checkbox"/>	Grasses	<i>10</i>	Herbaceous		Other												
60-30%	<input checked="" type="checkbox"/>																			
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																				
Notes: (vegetation species, types of structures) <i>Willows, alder</i>																				
Riparian Vegetation																				
Width of riparian vegetation: <i>4m</i>																				
Description of vegetation community surrounding 30 m from watercourse: <i>grass, cedar row plantation</i>																				
Obstructions to Fish Passage																				
No Obstructions	<input type="checkbox"/>	Man-Made	<input type="checkbox"/>	Natural	<input type="checkbox"/>	Low Flow Barrier	<input checked="" type="checkbox"/>													
Description of Barrier: <i>sediment + debris build up</i>																				
Height of Barrier (m)			GPS Coordinates:																	

Water Bodies Assessment Field Collection Form

AECOM

Date: April 17/10

Land Parcel/Site ID: GSH1078/108/1032
D18

Page 3 of 4

Other General Comments Regarding the Study Area:

- white tailed deer footprints, small mammal den
- tadpoles + minnows observed
- cobbles covered in algae
- cliff swallow nest observed in West culvert (box)

* North side of road similar to West branch

Additional UTM Coordinates:

Watercourse in channelized feature but starting to meander. Ripples + pools present w mixed substrate (s, si, gr, co) Moderate instream cover mix of plant debris, cobbles, grasses.

Picture #	Description	Picture #	Description
1	East branch overview		
2	East branch substrate		
3	low flow barrier		
4	animal den East branch		
5	just passe low flow barrier		
6-10	East Central branch		
11-14	South branch		
17-19 20 -	West branch		
20	- west culvert		
21 + 22	- North side of road		

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Study Area:

Jericho

Goshen

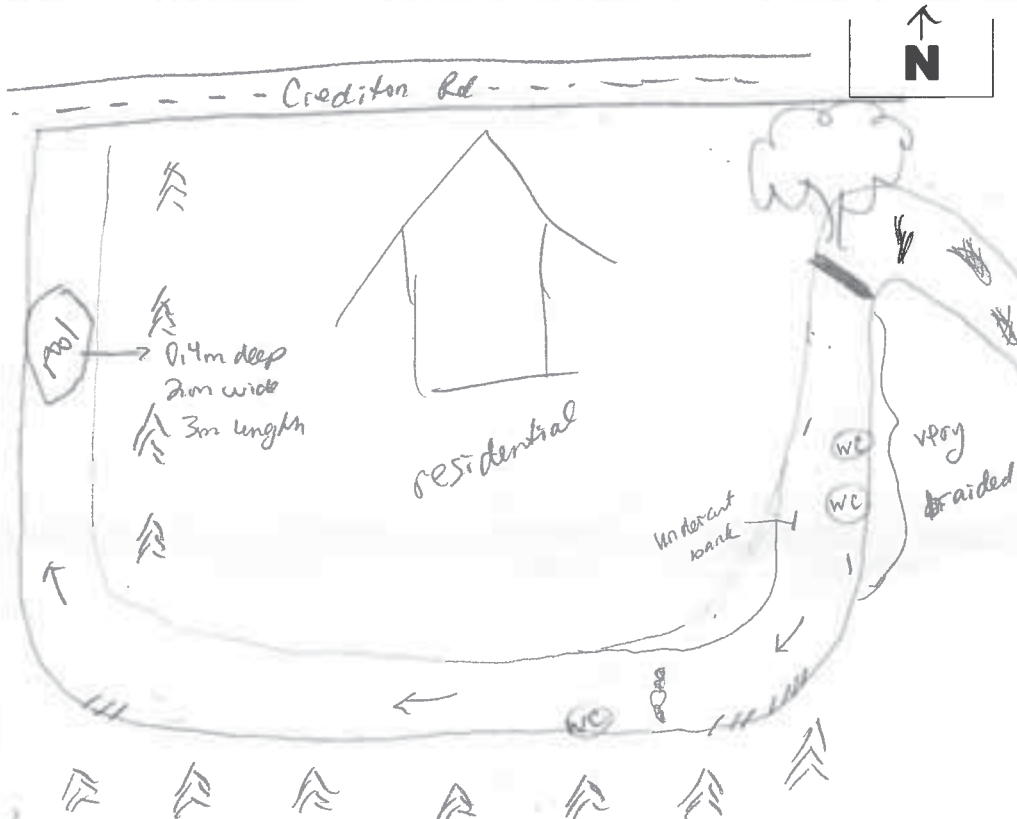
Bluewater

Land Parcel#

674 1672 11021
1482

Site ID

018



LEGEND	
10d depth (cm)	6w width
→	Riffle
—	Run/Glide
○	Pool
■	Island/Bar
□	Fine Substrate
##	Gravel Substrate
oOoO	Cobble/Boulder
***	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent Vegetation
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
⊓	Instream Log/Tree
AAA	Dam/Weir/ Obstruction
⊙	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence line
□	Gate

crop

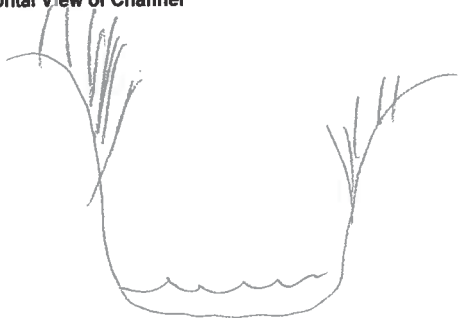
residential

undercut bank

braided

crop

Horizontal View of Channel



braided on east branch

Initial QA/QC By: AMS

Date: Apr. 19/12

Technical QA/QC By: Sauken

Date: May 3/12

D19

AECOM		Page 1 of 4	
		Field Crew: CB, TS	
General Information			
Study Area: Jericho Goshen Bluewater	Land Parcel# 107711092 1787	Turbine # GAS C54	
Date: Sept 28/11	Start time: 13:40	End Time: 14:40	
Weather Conditions: Cloudy, 16°C		Field Notes By: CB	
Site Location			
On Bronson Ln, north of Crediton			
UTM Co-ordinates			
Easting: 0449434	Northing: 4798410	Description: in stream east culvert	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential <input type="checkbox"/>	Meadow <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Channelized <input checked="" type="checkbox"/>
Agriculture <input checked="" type="checkbox"/>	Wetland <input type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Natural Channel <input checked="" type="checkbox"/>
Forest <input type="checkbox"/>	Livestock <input type="checkbox"/>	Ephemeral <input type="checkbox"/>	
Other:			
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow) - tile drain input found on east + west side			
In-Situ Water Quality		Ground Water Indicators	
WT (°C): 11	AT(°C): 16	Watercress <input type="checkbox"/>	Bank Seepage <input type="checkbox"/>
pH:	Cond (s/cm):	Iron Staining <input type="checkbox"/>	None <input checked="" type="checkbox"/>
Water Clarity: Clear <input checked="" type="checkbox"/> Turbid <input type="checkbox"/>		Bubbling <input type="checkbox"/>	Other <input type="checkbox"/>
Notes: v. S/L, turbid			
Stream Morphology			
Site Length (m): E = 80m W = 450m		Bank Stability:	
		Stable	Slightly unstable
		Moderately unstable	Unstable
Channel Dimensions			
E	W		
Mean Wetted Width (m): 2 1.5	Mean Bankfull Width (m): 2.5 3	Left Bank	<input type="checkbox"/> Stable <input checked="" type="checkbox"/> Slightly unstable <input type="checkbox"/> Moderately unstable <input type="checkbox"/> Unstable
Mean Wetted Depth (m): 0.9 0.4	Mean Bankfull Depth (m): 0.8 0.8	Right Bank	<input type="checkbox"/> Stable <input checked="" type="checkbox"/> Slightly unstable <input type="checkbox"/> Moderately unstable <input type="checkbox"/> Unstable
Flow Description: undercutting, slumping occurring on both sides → moderate flow			
Notes:			

Stream Morphology (continued)

Substrate (< = >)

- Bo - Boulder
- Co - Cobble
- Gr - Gravel
- Sa - Sand
- Si - Silt
- Cl - Clay
- MK - Muck
- DT - Detritus
- Other

Description

E = gr > sa >> co > si, cl
 W = sa > gr >> co > si, cl

Morphological Structure (%)

Pool	Riffle	Run	Flat
W=15	W=10	W=75 E=100	

Notes:

E = steady flow but some areas deeper than others
 W = one very large pool div's of culvert

Habitat

Instream Cover (%)

~~60%~~ 60% = E 45% = W

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	W=10		E=20 W=30	W=30 E=70	W=30 E=10	

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

E = submergents, emergents, grasses
 W = submergents, grasses, emergents

Canopy Cover (% closed cover):

- 100-90%
- 90-60%
- 60-30%
- 30-1% E+W
- 0%

Types of Cover (% cover)

Trees W=5% Shrubs 20
 Grasses 60 Herbaceous 20 Man-made structures _____
 Other _____

Notes:

overhanging veg.

Obstructions to Fish Passage

- No Obstructions Man-Made
- Natural

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

- slight slope from residential property to stream
 - flat on agri side

Terrestrial features Present

Yes No

Terrestrial Recon Form Filled out

Yes No

D19

AECOM

Sep 28/11

GIS 554

Page 3 of 4

Other General Comments Regarding the Study Area:

- ~40m east of culvert a grass den/dam observed. Potentially a muskrat home.
- fish observed (minnow) on both sides of culvert
- east side sl. different than the west (east less veg, more confined, faster flow)

Photo log

Picture #	Description	Picture #	Description
173	overview of site	186 187	overview west "
174	box culvert up/s	188	box culvert
175, 176	up/s	189	down/s channel
177	looking a box culvert	190	"
178	tire drain	191	bank erosion
179	channel	192	"
180	den/dam	193 194	channel
181	up/s channel	195	undercut
182, 183	channel	196 196	channel
184	erosion	197 198	riffle channel
185	box culvert @ crediton Rd.	199	"
		200	end of site - channel

15 W 265
 Bd 080
 18
 040
 040

D19

AECOM

Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater Land Parcel#

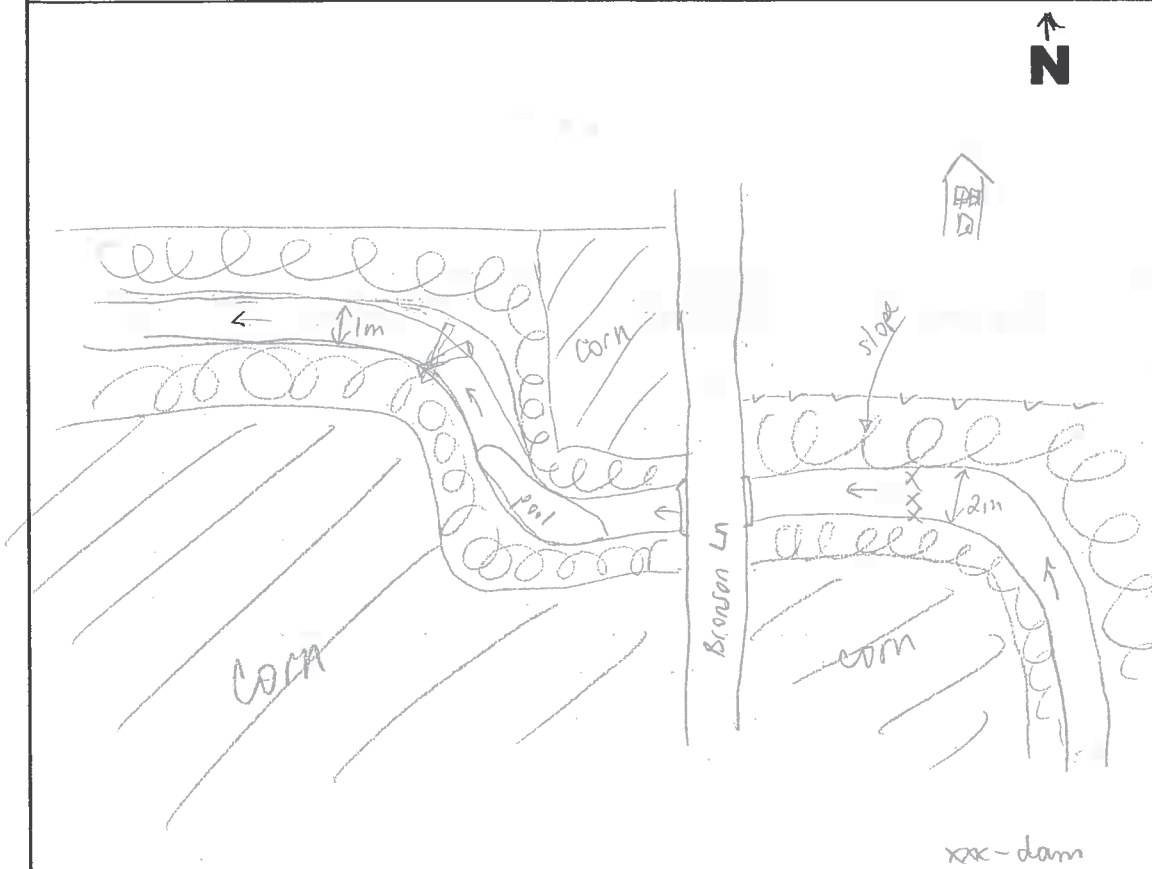
1077/1092
1787

Turbine #

6-05-054

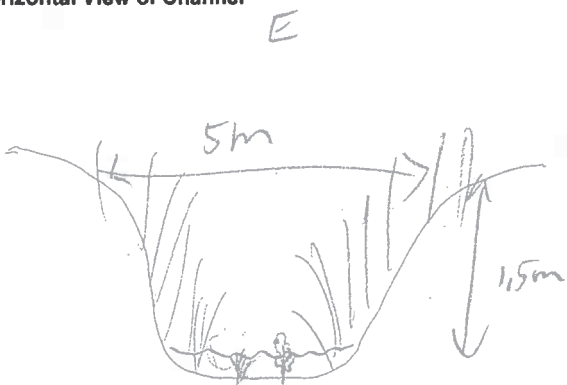


LEGEND	
10d	depth (cm)
8w	width
→	Riffle
→	Run/Glide
○	Pool
■	Island/Bar
□	Fine Substrate
###	Gravel Substrate
o	Cobble
○	Boulder
•••	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
□	Instream Log/Tree
▲▲▲	Dam/Weir
⊙	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence line
□	Culvert



xxx - dam
v - electric fence
o - riparian meadow

Horizontal View of Channel



Water Bodies Assessment Field Collection Form

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 17871077 Site ID: D19

Date: May 10 / 12 Start time: 16:00 End Time: 17:50

Weather Conditions:

Sunny, 10°C

Field Crew: C. Boros, J. Epp

Field Notes By: C. Boros

Site Location

Crediton Rd, west of Bronson Ln.

UTM Co-ordinates (continue on page 3 if necessary)

Easting: 449032 Northing: 4793482 Description: D19 start

Easting: 448374 Northing: 4793555 Description: D19 end.

Easting: _____ Northing: _____ Description: _____

Easting: _____ Northing: _____ Description: _____

Surrounding Landuse

- | | |
|---|------------------------------------|
| Residential <input type="checkbox"/> | Meadow <input type="checkbox"/> |
| Agriculture <input checked="" type="checkbox"/> | Wetland <input type="checkbox"/> |
| Forest <input type="checkbox"/> | Livestock <input type="checkbox"/> |
| Other <input type="checkbox"/> | |

Description: crop fields

Type of Watercourse

- | | |
|---|---|
| Intermittent <input type="checkbox"/> | Channelized <input checked="" type="checkbox"/> |
| Permanent <input checked="" type="checkbox"/> | Natural Channel <input checked="" type="checkbox"/> |
| Ephemeral <input type="checkbox"/> | |

Description: watercourse naturalizing

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

tile drain inputs - flowing

Is any portion of the water body underground or not as mapped? Y / N

If Yes describe:

GPS Coordinate: Easting - _____ Northing - _____ Description - _____

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

Slightly hilly

In-Situ Water Quality

WT (°C): <u>16°C</u>	AT (°C): <u>10°C</u>
pH: <u>/</u>	Cond (s/cm): <u>/</u>
D.O. (mg/L) <u>/</u>	
Water Clarity: Clear <input checked="" type="checkbox"/> Turbid <input type="checkbox"/>	

Water Colour: n/a

Notes: w/g meter not working

Ground Water and Seepage Indicators

- | | |
|---|---------------------------------------|
| Watercress <input type="checkbox"/> | Bank Seepage <input type="checkbox"/> |
| Iron Staining <input type="checkbox"/> | None <input type="checkbox"/> |
| Bubbling <input type="checkbox"/> <u>water</u> | <input checked="" type="checkbox"/> |
| Other <input type="checkbox"/> <u>speedwell</u> | |

Details:

sparse clumps at up/s portion

Water Bodies Assessment Field Collection Form

Stream Morphology				
Site Length (m): <i>~450m</i>		Bank Stability:		
Channel Dimensions		Stable	Slightly unstable	
Mean Wetted Width (m): <i>1m</i>	Mean Wetted Depth (m): <i>0.23</i>	Moderately unstable	Unstable	
Mean Bankfull Width (m): <i>1.5</i>	Mean Bankfull Depth (m): <i>0.5</i>	Left Bank <input type="checkbox"/>	<input type="checkbox"/>	
Mean Top of Bank Width (m): <i>3.5</i>	Mean Top of Bank Depth (m): <i>2</i>	Right Bank <input type="checkbox"/>	<input type="checkbox"/>	
Flow Description: (high or low flow conditions, stagnant, etc)		Description: <i>erosion + slumping occurring throughout</i>		
Habitat				
Substrate (<=>)		Morphological Structure (%)		
Bo - Boulder	Description <i>clay packed bottom w means of mk, si and areas of cobbles, gravel</i>	Pool	Riffle	
Co - Cobble		Run	Flat	
Gr - Gravel		<i>20</i>	<i>10</i>	<i>5</i>
Sa - Sand		Notes: <i>was not meandering</i>		<i>65</i>
Si - Silt				
Cl - Clay				
MK-Muck				
DT-Detritus				
Instream Cover (%) <i>80</i>				
Other	<i>small Woody Debris</i>	Boulders	Cobble	
	<i>6</i>	<i>2</i>	<i>6</i>	
		Aquatic Vegetation*	None	
		<i>50</i>	<input checked="" type="checkbox"/>	
		Undercut Banks		
		Average Depth: <i>0.15</i>		
		(% Cover) <i>15</i>		
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)				
<i>attached algae (covering rocks + bottom) > grasses >> speedwell, herbaceous</i>				
Canopy Cover (% closed cover):		Types of Cover (% cover)		
100-90% <input type="checkbox"/>	30-1% <input type="checkbox"/>	Trees <i>20</i>	Shrubs <i>70</i>	
90-60% <input checked="" type="checkbox"/>	0% <input type="checkbox"/>	Grasses <i>10</i>	Herbaceous _____	
60-30% <input type="checkbox"/>			Man-made structures _____	
			Other _____	
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%				
Notes: (vegetation species, types of structures)				
<i>Willows, Sumac, Strawberry maple, Poplar</i>				
Riparian Vegetation				
Width of riparian vegetation: <i>N - 2m - grasses S - 3m - grasses, shrubs,</i>				
Description of vegetation community surrounding 30 m from watercourse:				
<i>agri crop fields</i>				
Obstructions to Fish Passage				
No Obstructions <input checked="" type="checkbox"/>	Man-Made <input type="checkbox"/>	Natural <input type="checkbox"/>	Low Flow Barrier <input type="checkbox"/>	
Description of Barrier:				
Height of Barrier (m)		GPS Coordinates:		

Water Bodies Assessment Field Collection Form

AECOM

Date: May 10 / 12

Land Parcel/Site ID: 1077
1787 D19

Page 3 of 4

Other/General Comments Regarding the Study Area:

- Turkey nesting on riparian; frog observed
- Schools of minnows/cyprinids

Banks were slumping and eroding but channel was not meandering. The watercourse contained riffles, runs and pools but not always sequenced - more pools than riffles. The channel narrowed and widened according to riffles or pools. Instream cover was high (algae), and substrate ~~was~~ differed depending on surrounding veg, erosion.

Additional UTM Coordinates:

Overall good fish habitat.

Photo log

Picture #	Description	Picture #	Description
1	site overview - at property line		
2- 11	moving towards back of barns		
12-19	behind barns		
20-24	past barns		
25-36	west end		
37	end of site		
38	30 m past site		

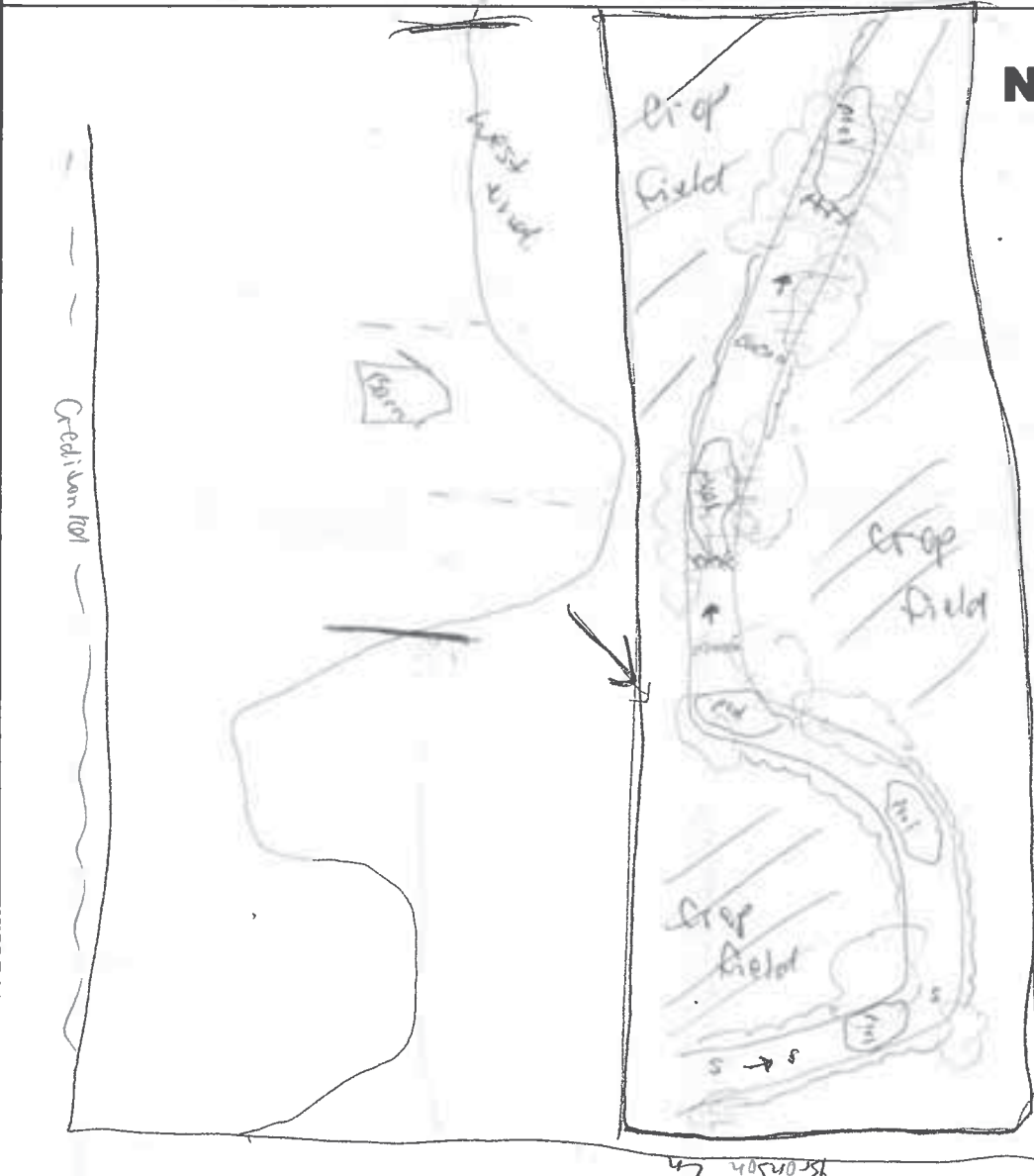
Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Watercourse Sketch

Study Area: Jericho Gospen Bluewater Land Parcel# 1787/1077 Site ID D19



LEGEND	
10d depth (cm)	10d
8w width	8w
Riffle	o
Run/Glide	o
Pool	o
Island/Bar	■
Fine Substrate	■
Gravel Substrate	###
Cobble/Boulder	oOoo
Debris	***
Cattail	CT
Submerg/Floater Veg	SV/FV
Emergent Vegetation	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxxx
Instream Log/Tree	o
Dam/Weir / Obstruction	AAA
Riparian Tree	⊙
Seep/Spring	↳
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-X-X-
Culvert	⌊

water
 S - speedwell
 X - debris jam
 ooo - riffle

• erosion + shaping found throughout
 • algal coating substrate throughout

Horizontal View of Channel



Initial QA/QC By: L. Bentley

Date: May 16, 2012

Technical QA/QC By: J. [unclear]

Date: Aug 2/12