

## **APPENDIX 9.**

### **GROUND ELECTRODE, CONVERTER STATION AND CONSTRUCTION CAMP FISH HABITAT ASSESSMENT BOOKLETS**

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# Site 1

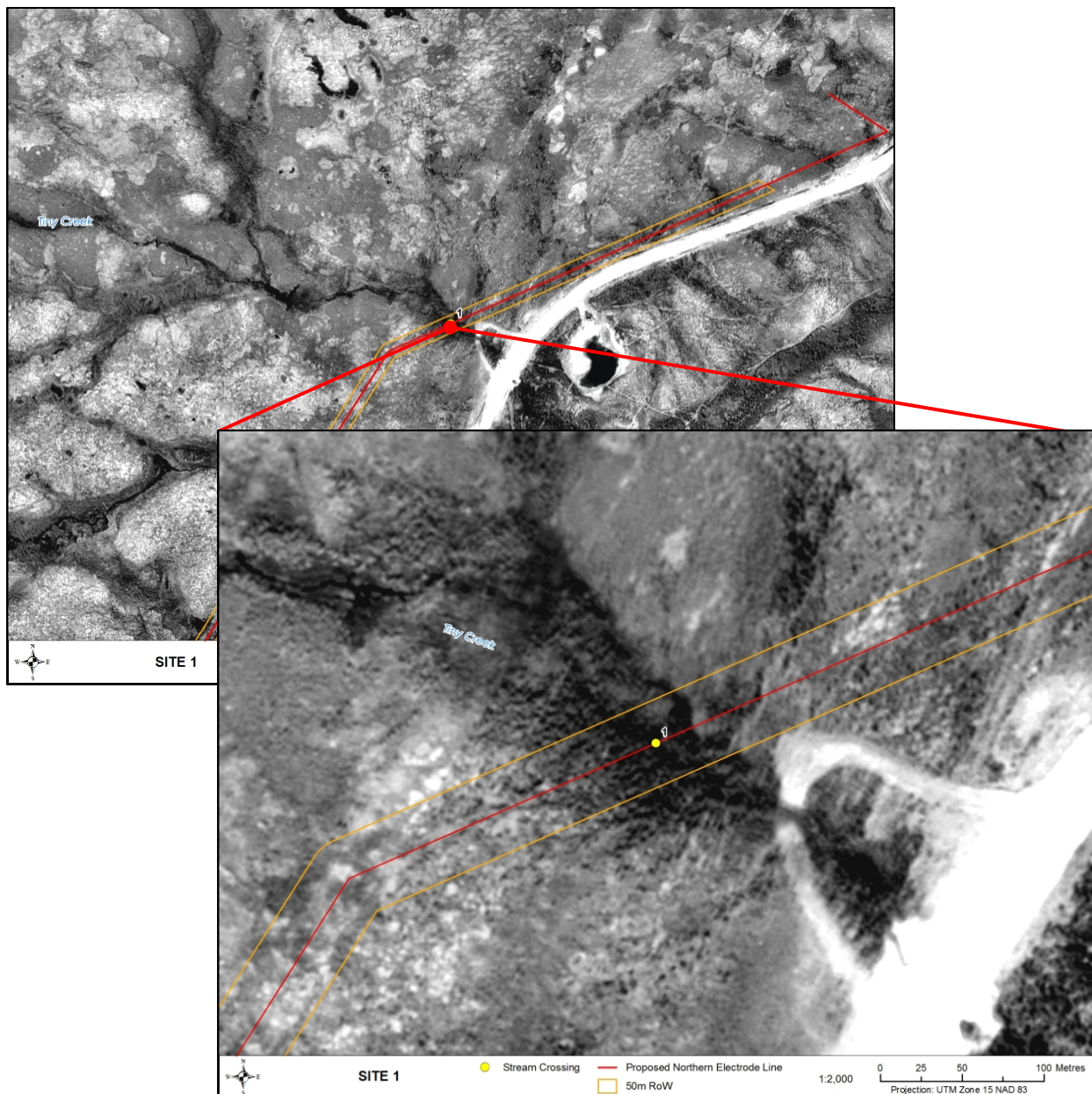
## Tiny Creek

### Location

**Datum:** NAD 83  
**UTM:** Zone: 14N  
Easting: 814329  
Northing: 6289981  
**Data Source:** DOI

### General Morphology

**Stream/Lake:** Stream  
**Pattern:** IR  
**Confinement:** UN  
**Stage:** Moderate  
**Flow Regime:** Perennial  
**Morphology:** -  
**U/S Drainage:** 16.4 km<sup>2</sup>  
**Distance to Receiving Water:** Nelson River 1.78 km



## Site Conditions

### + Physical Data

#### Channel Profile

##### Channel and Flow

Wetted Width (m)	10
Channel Width (m)	10

##### Banks (%)

Right Bank Stability	-
Left Bank Stability	-

#### Riparian

##### Floodplain Distance (m)

Right Bank	-
Left Bank	-

##### Riparian Distance (m)

Right Bank	13
Left Bank	17

##### Riparian Vegetation Type (Y/N)

None	-
Grasses/sedges	Y
Shrubs	-
Conifers	Y
Deciduous	-
Mixed Forest	-

##### Canopy Cover (%)

	-
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#### Substrate

##### Substrate Type (%)

Fines	-
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

#### Cover Types

##### Total Cover Available (%)

-

##### Cover Composition (% of Total)

Large Woody Debris	-
Overhanging Vegetation	-
Instream Vegetation	-
Pool	-
Boulder	-
Undercut Bank	-
Surface Turbulence	-
Turbidity	-

#### Habitat Type

##### Habitat Composition

Pool	-
Run	-
Flat	-
Riffle	-
Rapid	-

## Fish Habitat Classification and Sensitivity

### + Fish Habitat

#### Fish Habitat Present

Yes

#### DFO Manitoba Agricultural Watershed Classification:

-

#### Fish Habitat Classification:

Important

**Fish Presence:** Kroeker and MacDonell (2006) reported brook trout, brook stickleback, sculpins (mottled and slimy), and longnose dace. Johnson et al (2005) reported brook stickleback, finescale dace, and pearl dace. Swanson et al. (1991) reported brook stickleback and slimy sculpin. Kroeker and MacDonell (2006) found the stream to provide nursery habitat for brook trout. All sampling was conducted in the lower reaches of the creek.

#### Comments:

Tiny Creek is known to provide important fish habitat for both indicator and forage fish in the lower reaches of the creek where the RoW crosses the channel. Tiny Creek likely provides only low overwintering potential. At the crossing the creek consists of a defined channel with unknown bank stability.

### + Habitat Sensitivity

#### Sensitivity Rating: Moderate

#### Comments:

Unknown bank stability and important fish habitat results in a moderate sensitivity rating.

# Site 2

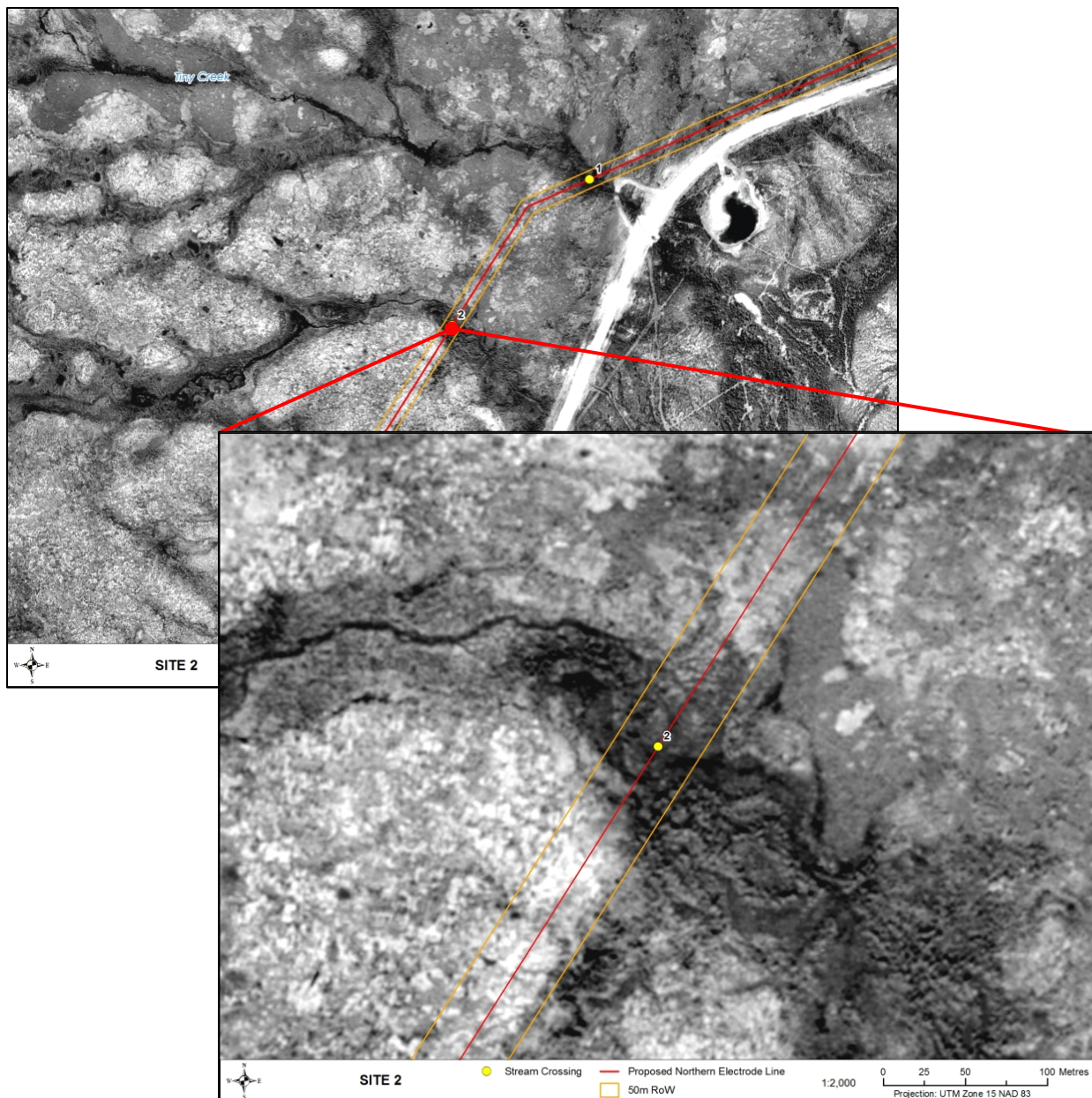
## Unnamed tributary of Nelson River

### Location

**Datum:** NAD 83  
**UTM:** Zone: 14N  
Easting: 813955  
Northing: 6289508  
**Data Source:** DOI

### General Morphology

**Stream/Lake:** Stream  
**Pattern:** IR  
**Confinement:** UN  
**Stage:** Moderate  
**Flow Regime:** Intermittent  
**Morphology:** LC  
**U/S Drainage:** 2.4 km<sup>2</sup>  
**Distance to Receiving Water:** Nelson River 1.83 km



## Site Conditions

### + Physical Data

#### Channel Profile

##### Channel and Flow

Wetted Width (m)	10
Channel Width (m)	-

##### Banks (%)

Right Bank Stability	-
Left Bank Stability	-

#### Riparian

##### Floodplain Distance (m)

Right Bank	38
Left Bank	24

##### Riparian Distance (m)

Right Bank	116
Left Bank	48

##### Riparian Vegetation Type (Y/N)

None	-
Grasses/sedges	Y
Shrubs	-
Conifers	Y
Deciduous	-
Mixed Forest	-

##### Canopy Cover (%)

	-
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#### Substrate

##### Substrate Type (%)

Fines	-
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

#### Cover Types

##### Total Cover Available (%)

##### Cover Composition (% of Total)

Large Woody Debris	-
Overhanging Vegetation	-
Instream Vegetation	-
Pool	-
Boulder	-
Undercut Bank	-
Surface Turbulence	-
Turbidity	-

#### Habitat Type

##### Habitat Composition

Pool	-
Run	100
Flat	-
Riffle	-
Rapid	-

## Fish Habitat Classification and Sensitivity

### + Fish Habitat

<b>Fish Habitat Present</b>	Yes
<b>DFO Manitoba Agricultural Watershed Classification:</b>	-
<b>Fish Habitat Classification:</b>	Marginal

**Fish Presence:** N/A

#### **Comments:**

This unnamed tributary of the Nelson River provides very marginal fish habitat for forage fish only, and low overwintering potential. At the crossing the tributary consists of bog/wetland habitat, and its connection to the Nelson River appears ephemeral. A cut-line of approximately 30m crosses the creek at the site already.

### + Habitat Sensitivity

**Sensitivity Rating:** Moderate

#### **Comments:**

Soft floodplain results in a moderate sensitivity rating, despite marginal fish habitat.



# Site 3

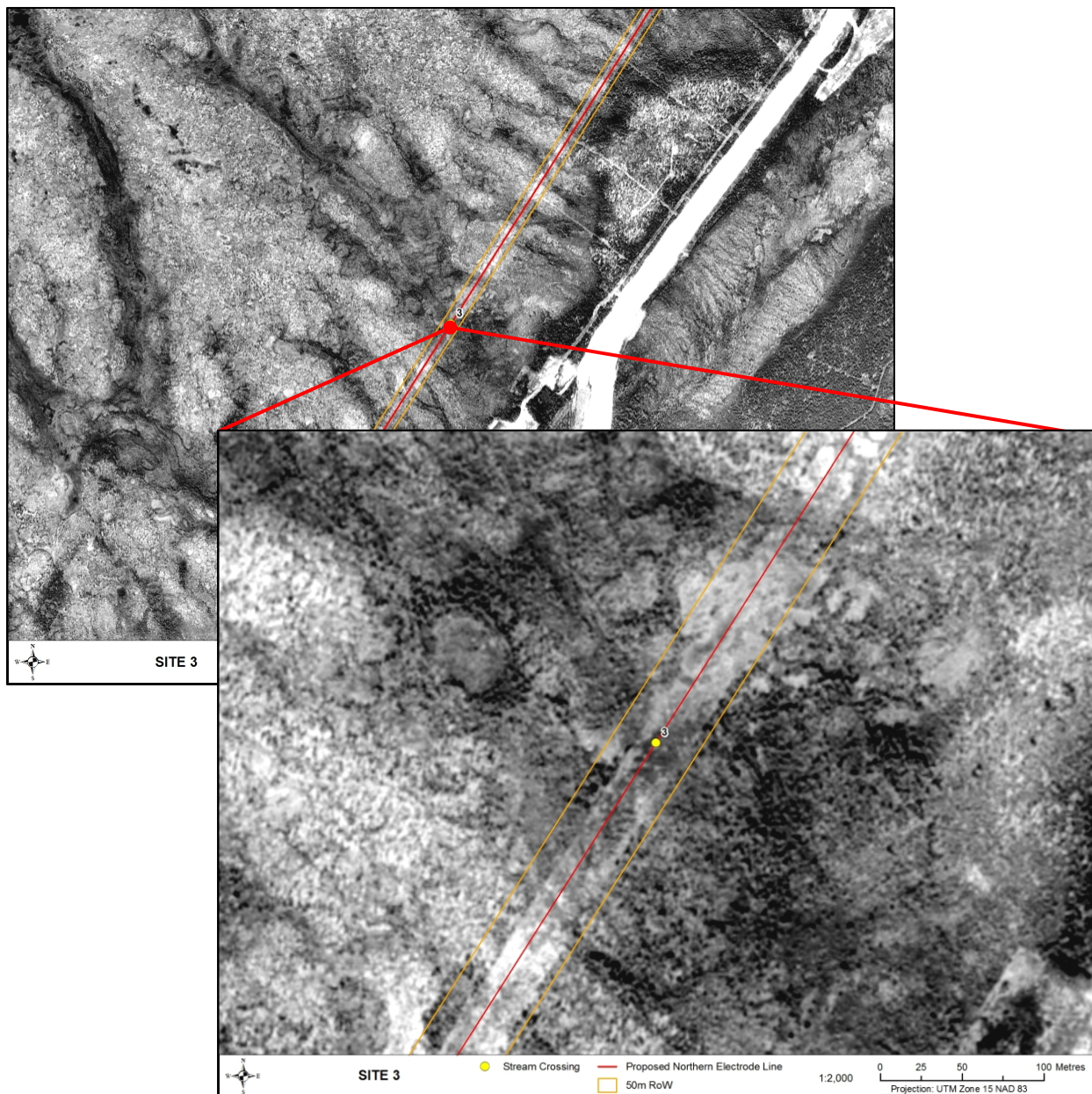
## Unnamed tributary of Swift Creek

### Location

**Datum:** NAD 83  
**UTM:** Zone: 14N  
Easting: 813104  
Northing: 6287866  
**Data Source:** DOI

### General Morphology

**Stream/Lake:** Stream  
**Pattern:** IR  
**Confinement:** UN  
**Stage:** Moderate  
**Flow Regime:** Intermittent  
**Morphology:** LC  
**U/S Drainage:** 0.9 km<sup>2</sup>  
**Distance to Receiving Water:** Swift Creek 1.07 km



## Site Conditions

### + Physical Data

#### Channel Profile

##### Channel and Flow

Wetted Width (m)	-
Channel Width (m)	-

##### Banks (%)

Right Bank Stability	-
Left Bank Stability	-

#### Riparian

##### Floodplain Distance (m)

Right Bank	264 (total)
Left Bank	-

##### Riparian Distance (m)

Right Bank	298 (total)
Left Bank	-

##### Riparian Vegetation Type (Y/N)

None	-
Grasses/sedges	Y
Shrubs	Y
Conifers	-
Deciduous	-
Mixed Forest	-

##### Canopy Cover (%)

0

#### Substrate

##### Substrate Type (%)

Fines	-
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

#### Cover Types

##### Total Cover Available (%)

-

##### Cover Composition (% of Total)

Large Woody Debris	-
Overhanging Vegetation	-
Instream Vegetation	-
Pool	-
Boulder	-
Undercut Bank	-
Surface Turbulence	-
Turbidity	-

#### Habitat Type

##### Habitat Composition

Pool	-
Run	100
Flat	-
Riffle	-
Rapid	-

## Fish Habitat Classification and Sensitivity

### + Fish Habitat

**Fish Habitat Present** Yes

**DFO Manitoba Agricultural Watershed Classification:** -

**Fish Habitat Classification:** Marginal

**Fish Presence:** N/A

#### **Comments:**

This unnamed tributary of Swift Creek provides very marginal fish habitat for forage fish only, and low overwintering potential. At the crossing the tributary consists of bog/wetland habitat, and its connection to Swift Creek appears ephemeral. A cut-line of approximately 30m crosses the creek at the site already.

### + Habitat Sensitivity

**Sensitivity Rating:** Moderate

#### **Comments:**

Soft floodplain results in a moderate sensitivity rating, despite marginal fish habitat.

# Site 4

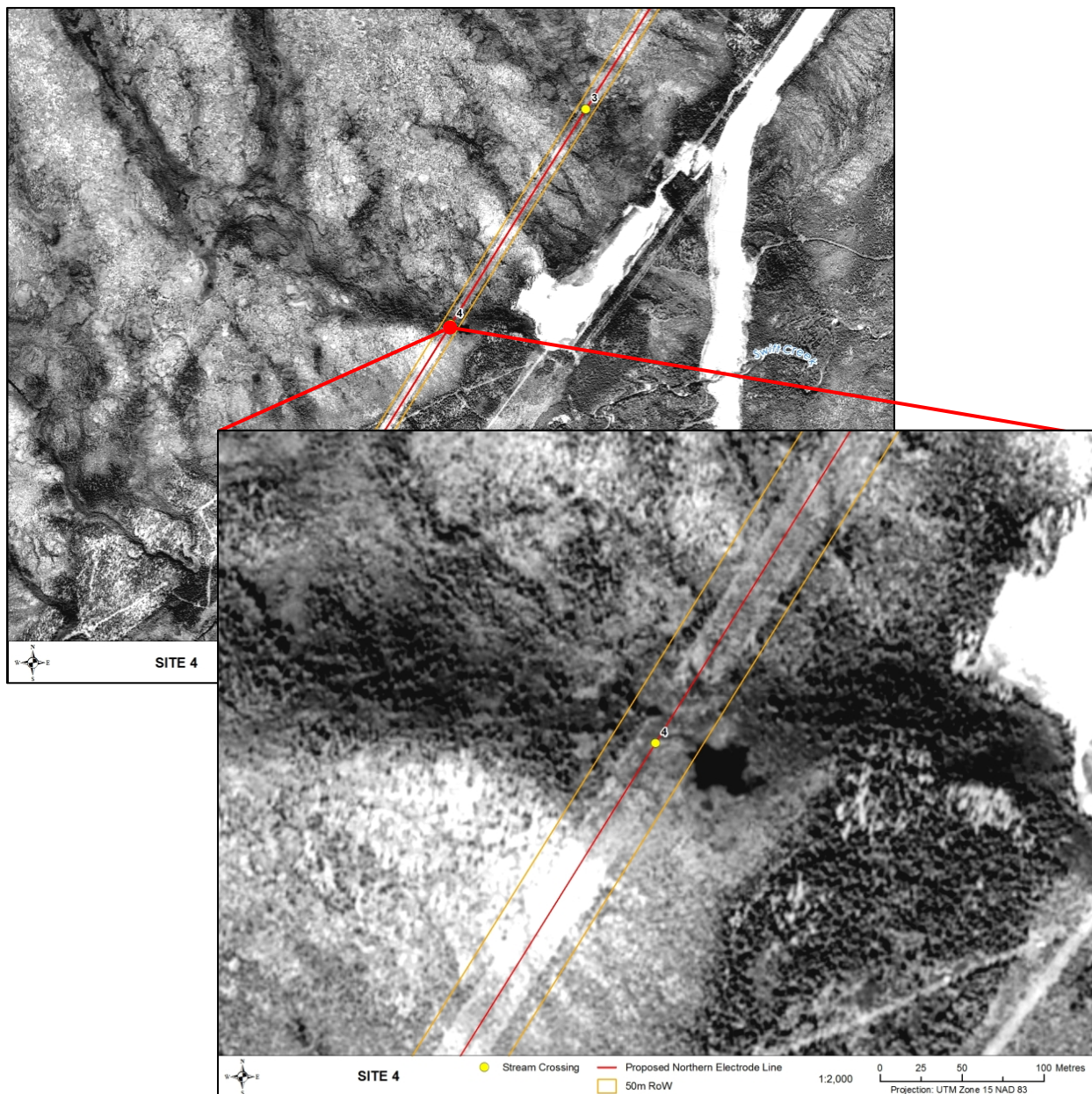
## Unnamed tributary of Swift Creek

### Location

**Datum:** NAD 83  
**UTM:** Zone: 14N  
Easting: 812755  
Northing: 6287185  
**Data Source:** DOI

### General Morphology

**Stream/Lake:** Stream  
**Pattern:** IR  
**Confinement:** UN  
**Stage:** Moderate  
**Flow Regime:** Intermittent  
**Morphology:** LC  
**U/S Drainage:** 3.7 km<sup>2</sup>  
**Distance to Receiving Water:** Swift Creek 0.55 km



## Site Conditions

### + Physical Data

#### Channel Profile

##### Channel and Flow

Wetted Width (m)	-
Channel Width (m)	-

##### Banks (%)

Right Bank Stability	-
Left Bank Stability	-

#### Riparian

##### Floodplain Distance (m)

Right Bank	31 (total)
Left Bank	-

##### Riparian Distance (m)

Right Bank	81 (total)
Left Bank	-

##### Riparian Vegetation Type (Y/N)

None	-
Grasses/sedges	Y
Shrubs	-
Conifers	Y
Deciduous	-
Mixed Forest	-

##### Canopy Cover (%)

0

#### Substrate

##### Substrate Type (%)

Fines	-
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

#### Cover Types

##### Total Cover Available (%)

-

##### Cover Composition (% of Total)

Large Woody Debris	-
Overhanging Vegetation	-
Instream Vegetation	-
Pool	-
Boulder	-
Undercut Bank	-
Surface Turbulence	-
Turbidity	-

#### Habitat Type

##### Habitat Composition

Pool	50
Run	50
Flat	-
Riffle	-
Rapid	-

## Fish Habitat Classification and Sensitivity

### + Fish Habitat

#### Fish Habitat Present

Yes

#### DFO Manitoba Agricultural Watershed Classification:

-

#### Fish Habitat Classification:

Marginal

#### Fish Presence: N/A

#### Comments:

This unnamed tributary of Swift Creek provides very marginal fish habitat for forage fish only, and low overwintering potential. At the crossing the tributary consists of bog/wetland habitat, and its connection to Swift Creek appears ephemeral. A cut-line of approximately 30m crosses the creek at the site already.

### + Habitat Sensitivity

#### Sensitivity Rating: Moderate

#### Comments:

Soft floodplain results in a moderate sensitivity rating, despite marginal fish habitat.

# Site 5

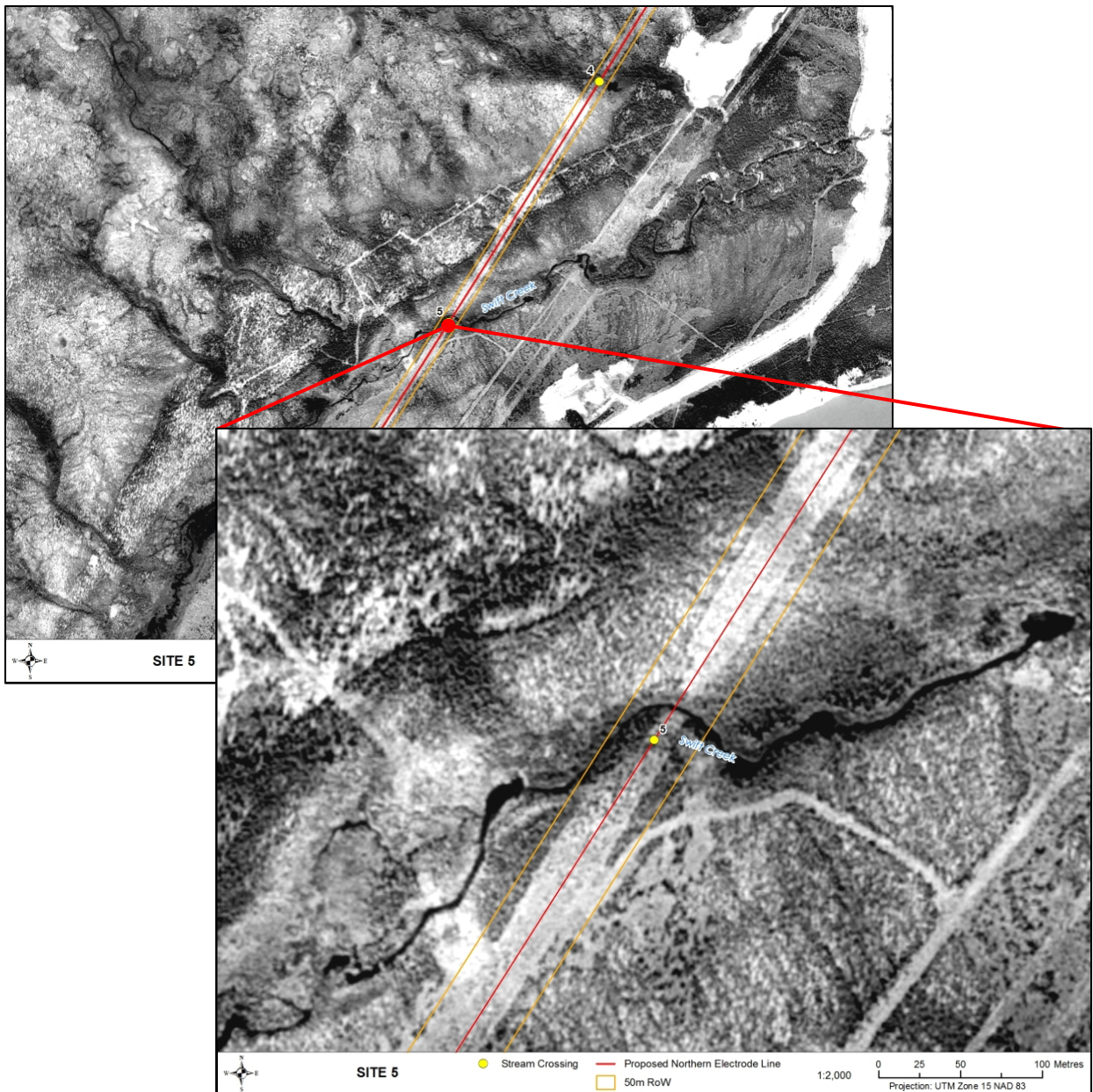
## Swift Creek

### Location

**Datum:** NAD 83  
**UTM:** Zone: 14N  
Easting: 812365  
Northing: 6286421  
**Data Source:** DOI

### General Morphology

**Stream/Lake:** Stream  
**Pattern:** TM  
**Confinement:** UN  
**Stage:** Moderate  
**Flow Regime:** Perennial  
**Morphology:** -  
**U/S Drainage:** 73.8 km<sup>2</sup>  
**Distance to Receiving Water:** Nelson River 4.97 km



## Site Conditions

### + Physical Data

#### Channel Profile

##### Channel and Flow

Wetted Width (m)	5
Channel Width (m)	5

##### Banks (%)

Right Bank Stability	-
Left Bank Stability	-

#### Riparian

##### Floodplain Distance (m)

Right Bank	-
Left Bank	-

##### Riparian Distance (m)

Right Bank	20
Left Bank	18

##### Riparian Vegetation Type (Y/N)

None	-
Grasses/sedges	-
Shrubs	-
Conifers	Y
Deciduous	-
Mixed Forest	-

##### Canopy Cover (%)

	-
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#### Substrate

##### Substrate Type (%)

Fines	-
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

#### Cover Types

##### Total Cover Available (%)

-

##### Cover Composition (% of Total)

Large Woody Debris	-
Overhanging Vegetation	-
Instream Vegetation	-
Pool	-
Boulder	-
Undercut Bank	-
Surface Turbulence	-
Turbidity	-

#### Habitat Type

##### Habitat Composition

Pool	-
Run	-
Flat	-
Riffle	-
Rapid	-

## Fish Habitat Classification and Sensitivity

### + Fish Habitat

<b>Fish Habitat Present</b>	Yes
<b>DFO Manitoba Agricultural Watershed Classification:</b>	-
<b>Fish Habitat Classification:</b>	Important

**Fish Presence:** Kroeker and MacDonell (2006) reported burbot, brook stickleback, sculpins (mottled and slimy), longnose dace, pearl dace, white sucker, and longnose sucker. Johnson et al (2005) reported burbot, brook stickleback, slimy sculpin, longnose dace, pearl dace, white sucker, longnose sucker, johnny darter. Swanson et al. (1991) reported burbot, brook trout, brook stickleback, slimy sculpin, longnose dace, finescale dace, pearl dace, white sucker, and longnose sucker. Swanson (1991) found the stream to provide nursery habitat for brook trout. All sampling was conducted in the lower reaches of the creek.

#### **Comments:**

Swift Creek is known to provide important fish habitat for both indicator and forage fish in the lower reaches of the creek where the RoW crosses the channel. The creek likely provides only low overwintering potential. Habitat at the crossing consists of a well-defined channel with unknown bank stability. A cut-line of approximately 30m crosses the creek at the site already.

### + Habitat Sensitivity

**Sensitivity Rating:** Moderate

#### **Comments:**

Unknown bank stability and important fish habitat result in a moderate sensitivity rating.

