

**Environmental Screening Report**  
**for**  
**Tk'emlúps te Secwépemc**  
**Engineered Waste Management Facility**

**September 2021**

*Prepared for:*

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**TABLE OF CONTENTS**

1.0	Introduction .....	3
2.0	Project & Site Description .....	3
2.1.	Project Description .....	3
2.2.	Site Description .....	3
3.0	Methodology .....	5
4.0	Environmental Setting .....	6
4.1.	Topography/ Soils .....	6
4.2.	Climate .....	6
4.3.	Surface/Ground Water .....	6
4.4.	Fisheries/Aquatic Biology .....	7
4.5.	Terrestrial Habitats & Wildlife .....	7
4.6.	Species at Risk.....	8
4.6.1.	American Badger.....	9
4.6.2.	Western Rattlesnake .....	9
4.6.3.	North American Racer.....	10
4.6.4.	Gopher Snake .....	10
4.7.	Species at Risk – Summary .....	10
4.8.	Social Infrastructure et al.....	11
5.0	Existing Condition of Property .....	11
6.0	Previous Studies .....	14
6.1.	Columbia Environmental, 2011. Letter Report – 2010/2011 Groundwater Monitoring KIB Landfill. ....	14
6.2.	Columbia Environmental/Keystone Environmental. 2010. <i>Detailed Quantitative Risk Assessment</i> .....	15
6.3.	Sperling Hanson Associates. 2010. <i>Preliminary Remedial Design</i> .....	15
7.0	Existing Environmental Condition .....	15
8.0	Summary and Conclusions .....	15
9.0	References Cited .....	16
10.0	Closure .....	16

**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

---

**List of Photos**

Photo 1. View to southwest showing site & city. ....	4
Photo 2. Embankment overlooking Paul Lake Rd. ....	4
Photo 3. Typical vegetation in grazed area. ....	7
Photo 4. Ungrazed portion of site showing vegetation health ....	8
Photo 5. Major gully on property ....	11
Photo 6. One of several small gullies on site ....	12
Photo 7. Old landfill access road. ....	12
Photo 8. Example of shrubs on site ....	13
Photo 9. Lone Ponderosa Pine on site. ....	13
Photo 10. Example of cacti present on site. ....	14

**List of Figures**

Figure 1. Google Earth Map showing Project Location ....	18
Figure 2. Schematic of project design. ....	19

**Appendices**

Appendix I. CDC Species Report. ....	20
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## **1.0 Introduction**

Grasslands Organics has teamed up with Tk'emlúps te Secwépemc (TteS) to devise a proposal to remediate the existing Tk'emlúps te Secwépemc, also known as the Kamloops Indian Band (KIB)) landfill, as well as the construction of a modern engineered waste management facility (EWMF) that will provide a full suite of services for the local indigenous community.

As an adjunct to the Proposal, an Environmental Assessment of the proposed work site is required by ISC to determine any existing environmental issues associated with the Project and to categorize the existing flora and fauna on the site.

## **2.0 Project & Site Description**

### **2.1. Project Description**

The proposed Project location centers on the existing Tk'emlúps te Secwépemc landfill site, approximately 1.2 km East of Highway 5 (Yellowhead Highway) between Paul Lake Road and a gravel pit access road (*Fig. 1*). The relative location to major transportation routes, as well as the North Thompson valley bottom, make this location ideal for waste management haulage from the TteS reserve, City of Kamloops, and neighbouring communities in the Thompson Nicola Regional District (TNRD). The Project design is shown in Figure 2. The current landfill has been in operation for approximately 50 – 65 years, with the latest permit issued by the BC Government Pollution Control Branch (#PR 5876) issued to the Kamloops Indian Band in 1992.

There have been possible soil contamination issues associated with the site. Accordingly, between 2008 and 2010, TteS commissioned a site investigation *Funding Proposal for Indigenous Services Canada Tk'emlúps te Secwépemc Waste Management Facility July 2021 5* study and remediation plan for the operation, however, no action was taken to implement the proposed plan (*Columbia Environmental, 2010*). Part of Phase I is to reassess this plan and revise where necessary prior to moving forward with remediation and closure related activities.

### **2.2. Site Description**

The site is situated on a relatively flat bench above Paul Creek Road and Paul Creek to the south (*Photo 1*).

## Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility

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**Photo 1. View to southwest showing site & city.**



The southern part of the proposed site has a sharp cut down to Paul Lake Road (*Photo 2*).

**Photo 2. Embankment overlooking Paul Lake Rd.**



This area also contains an active concrete industry and an abandoned unremediated sawmill complex. A significant industrial area comprised of two

**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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concrete plants/gravel operations is situated to the the west. The area to the east contains the existing Tk'emlups te Secwepemc landfill site which is slated to be decommissioned. The area to the north is undeveloped grazing land.

Historical imagery indicates there has been little change to the area in recent years. There is some evidence that refuse dumping has occurred at the landfill site to the east since the late 1950's

### **3.0 Methodology**

The scope of work for this Environmental Site Assessment (ESA) is broadly based on the processes as set forth in the Canadian Impact Assessment Act [Section 22(1)], the Canadian Standards Association (CSA) Phase 1 Environmental Site Assessment Guidelines (Z768-01) and Tk'emlups te Secwepemc guidelines used for granting leases on their lands in Kamloops.

The processes were modified to fit this assessment. The scope of the work included:

- website map reviews
- historical aerial photographs
- interviews with tenants and TteS staff
- site inspection of the land with appropriate photographs
- condition and activities of adjacent properties that may have potential environmental impact
- review of previous land and environmental assessments
- species at risk web searches
- species at risk site assessments

An ESA (also known as a Phase I) identifies potential liabilities associated with contaminants in soil, sediment, ground or surface water through site inspection and historical review. This level of ESAs is non-intrusive investigative research conducted to obtain as much detailed site history as possible without having to sample and analyze the site. It is composed of a preliminary assessment of the site and of properties in the vicinity of the site which is the process of collecting and reviewing available information about known or suspected hazardous wastes storage, spills, releases, and contamination. Typical characteristics associated with light industrial properties include soil, sediment, surface water and/or groundwater impacted by former operations, stored, or buried infrastructure, chemicals, waste, hazardous materials and spills or illegal disposal.

A simple ESA does not include sampling or testing of air, soil, groundwater, surface water or building materials. These activities would be carried out in a Phase II ESA, if required.

**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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Several site inspections were undertaken on the property and the entire property was walked and numerous photographs were taken. This process is consistent with the industry standards for a Phase I ESA.

## **4.0 Environmental Setting**

### **4.1. Topography/ Soils**

The site is within the historical area of the Paul Creek floodplain and possibly the North Thompson River. The present area sits above these floodplains. The soil profile at the site generally consists of topsoil, over loose colluvium deposited silt then loose fluvial sands (*Fulton, 1975*). Some fill soils were encountered in the northwest corner of the site. The topsoil varies in thickness with thin layers within the colluvium silt deposits along the south side of the site. Underlying the topsoil, the colluvium silt can generally be described as a non to low plastic silt with trace amounts of sand. The colluvium silts are dry, contain a low density and exhibit a visible porous structure. Underlying the colluvium silts is a fluvial deposit of sand.

Mt. Paul Industrial Park consist of modern alluvium deposits of non-glacial (Post Fraser Glaciation) origin (*Fulton, 1975*).

### **4.2. Climate**

The climate of the area varies from hot summers to cool winters. The summer is characterized by hot, fairly dry months in July and August and the winter can be cool and snowy in December and January. The warmest month is July, and the coolest month is January. Environment Canada<sup>1</sup> meteorological information for the Kamloops Airport (approximately 8 km west of the Mount Paul Industrial Park) collected from 1951 to 1990 (Environment Canada, Canadian Climate Normals, 1961 – 1990, British Columbia) is summarized below.

- normal annual precipitation is 269.5 mm/year.
- on average there are annually 13 days with thunderstorms, 8 days with fog, 2 days with freezing rain, 102 days with measurable precipitation, and 2046.8 hours of sunshine.
- average wind speed is 11 km/hr.
- normal daily maximum and minimum temperatures for January (the coldest month) are  $-1.3^{\circ}$  and  $-8.4^{\circ}$  C, respectively.
- normal daily maximum for July (the warmest month) is  $28.3^{\circ}$  C.

### **4.3. Surface/Ground Water**

The properties do not have any permanent or temporary surface bodies of water. The nearest permanent body of water is Paul Creek which lies 265m to the south. The North Thompson River is approximately 2.2km to the west. Ground

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**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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water was encountered between 12m and 23m bgs at the landfill site and 2m and 6m bgs adjacent to Paul Creek (*Columbia Environmental, 2010/2011*). Groundwater flows in a south-southwest direction and elevation data suggests that groundwater from the site does provide some recharge to the creek.

**4.4. Fisheries/Aquatic Biology**

There are no aquatic habitats on the property due to lack of permanent water bodies.

**4.5. Terrestrial Habitats & Wildlife**

Vegetation on the property consists of mainly of sagebrush with smaller amounts of crested wheatgrass, cheatgrass and cacti. The northern portion of the site has been heavily grazed and plants such as crested wheatgrass have been reduced to only a few centimeters in height (*Photo 3*).

**Photo 3. Typical vegetation in grazed area.**



A small section of the south portion of the property is fenced off and the vegetation is noticeably thicker and healthier (*Photo 4*).

**Photo 4. Ungrazed portion of site showing vegetation health**



Wildlife potentially using the property are somewhat restricted by the commercial and industrial activity in the area but could include a variety of large and small mammals. It is possible that mule/whitetail deer and black bear may be occasionally present on the site. There is direct evidence of use by coyotes, black bear, cattle and wild horses that are found throughout this area. The presence of extensive grasses on the ungrazed south portion of the site would be home to small birds, and mammals such as meadow mice and voles. Larger bird species, such as Chukar partridge, have been noted on the site. The heavily grazed area would not present significant habitat for nesting birds.

#### **4.6. Species at Risk**

Numerous species at risk (at least 12) are known to inhabit TteS lands (*TteS 2017*). The BC Conservation Data Centre (CDC) tracks and categorizes species according to their conservation status in BC. The CDC assigns a provincial rank or listing of 'Red' or 'Blue' or 'Yellow' to a species based on its status within BC.

In order to determine a list of potential species at risk which may be found within the project area, the following searches were conducted:

- A search of the BC Ministry of Environment's Conservation Data Centre to determine documented sightings of Red-listed or Blue-listed species within the project area; and

**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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- A search of the BC Ministry of Environment's "BC Species and Ecosystems Explorer: Species and Ecosystems Search" website to determine the potential for species at risk within the project area.

Searches of the CDC website indicated the potential for one species, the American Badger (*Appendix I*). Online searches through the BC Species & Ecosystems Explorer for the categories, *Antelope-Brush* habitat, *Sagebrush Steppe* and *Industrial* habitats revealed numerous species found in this type of habitat.

The subject property was walked in search of sign of potential Species at Risk delineated in the TteS report which is a better source than the government Species at Risk website as it incorporates local knowledge. Of the 12 listed species in the localized TteS list, three are aquatic based which eliminates them from the site. The list includes four birds, three snakes and one large mammal and one small mammal. The large mammal, bighorn sheep would not normally be found at this site. Of the threatened bird species, the habitat on the site would only be suitable for the Sharp-tailed grouse. The possibility of this species being present at this site is not considered high due to site location. The following subsections describe the ecology and habitat of those species at risk that might be present on the subject site.

#### **4.6.1. American Badger**

The badger (*Taxidus taxus*) inhabits the dry southern interior region of BC and north to the Cariboo. Range extent is estimated roughly to be 120,000 km squared. Ponderosa Pine and Interior Douglas Fir biogeoclimatic zones support the greatest numbers of badgers, but badgers and their prey have also been documented using Bunchgrass and Alpine and disturbed areas of the Sub-boreal Pine Spruce, Sub-boreal Spruce, Montane Spruce, Interior Cedar Hemlock and Engelmann Spruce Subalpine Fir. Badgers in British Columbia are found in many biogeoclimatic zones from hot, dry grassland valley bottom to alpine tundra. However, preferences seem to be for grasslands/fields or open-canopied forests. Badgers in British Columbia occur in Kikomun Creek, Wasa Lake, Lac Du Bois Grasslands, Kalamalka Lake, Roche Lake, and Vaseaux Lake Provincial Parks, Churn Creek and South Okanagan Grasslands Protected Areas, Kootenay National Park, and on parcels owned by nature conservation organizations. It is difficult to define an occurrence for this wide-ranging and sparsely distributed species. Recent sightings in the East Kootenay have been concentrated in the Columbia, Kootenay, Elk, Flathead and Moyie drainages. Patchy sightings were also recorded in the Thompson and Okanagan regions. In the Boundary Region between Bridesville and Grand Forks and in the Cariboo Region from Clinton to Soda Creek and from west of the Fraser River to the Bonaparte Plateau.

The decline of the badger appears to be their vulnerability to increasing threats of mortality from roadkill and habitat loss associated with change of open areas to urban and forest environments.

#### **4.6.2. Western Rattlesnake**

The Western Rattlesnake inhabits four separate sectors in the province's interior, which are mainly located in the Thompson and Okanagan valleys. Range extent is approximately 5000 km square (*COSEWIC 2004a*). For the most part, rattlesnakes are restricted to the dry lower valleys of the Okanagan and Thompson River basins and the hotter portions of the Kettle, Nicola,

## **Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility**

Similkameen and Fraser (Lytton-Lillooet area) valleys (*Charland et al. 1993*). It is found as far west as Lytton, north to Cache Creek and Kamloops, all through the Okanagan region, and east to the Christina Lake area (*Matsuda et al. 2006*). In 2007, the known denning range was extended east along the South Thompson River, and it is suspected that additional denning features still exist further east, at least parallel to the Pritchard Bridge (Iredale and Ferguson 2007).

### **4.6.3. North American Racer**

Racers inhabit most of the grassland and shrub-steppe ecosystems of the Southern Interior of the Province (*COSEWIC 2004b*). Although they can be found in forested landscapes, they seem to have a preference for open habitats where their good vision can most benefit them seeking prey and their speed is unencumbered by abundant debris, especially avoiding predators. They also have a high tolerance for warm temperatures and typically avoid shade. Populations are probably quite stable between years, without anthropogenic threats. Adults are believed to have home ranges which rarely extend beyond 1km from their den. Racers typically hibernate in fractured rock outcroppings and talus slopes on warm aspects and forage in open habitats (e.g. grasslands, shrub-steppe) where vision is unobstructed and high body temperatures can be maintained. However, Racers have also been found in broad forested habitats with clearings suggesting they have some tolerance for this habitat structure. There has been no extensive inventory of Racers in British Columbia. However, an estimate of 5,000 to 10,000 mature individuals is reasonable given the estimates for the more widely studied Western Rattlesnake and Gopher snake which have similar distribution, common usage of hibernacula, and frequency of sightings (*COSEWIC 2004a*). There are 5 populations in BC: 3 small populations near Trail, Grand Forks and Midway; a population in the Okanagan/Similkameen (the largest in BC); and the Thompson/Fraser population.

### **4.6.4. Gopher Snake**

The gopher snake (*Pituophis catenifer deserticola*) is on the provincial blue list. *Pituophis c. deserticola* occurs in five discrete populations in the interior "Dry Belt" in B.C. (the valleys of the Thompson, Okanagan and parts of the Fraser and Similkameen rivers), although the four southern populations (Trail, Grand Forks, Midway and Okanagan) are connected south of the Canadian border (Hobbs and Sarell 2001; Fig.3). *P.c. deserticola* is restricted to grasslands, shrub steppe, and dry open forest of the ponderosa pine - bunchgrass bio-geoclimatic zone of a few (5) south Interior valleys (British Columbia Conservation Data Centre 1998; Cannings et al. 1999).

## **4.7. Species at Risk – Summary**

A review of the habitat and biology of the listed Species at Risk for this area indicates it is possible four of the species could be found in the area. The remainder have numerous reasons why they are probably not present. The possible species that could be found in this area include the American Badger, Western Rattlesnake, North American Racer and Gopher Snake.

A search was undertaken to determine whether there were any American Badger dens present but none were noted. It is possible the Western Rattlesnake would be present but may be restricted due to the site location and industrial activity in the area. The potential use of this site by the North American Racer and Gopher Snake could not be ascertained without a detailed study. However, since the Racers require fractured rock outcroppings and talus slopes for hibernation, this site would be undesirable as they would have to cross major arterial roads to access hibernating and feeding areas. It is also doubtful that Gopher Snakes

**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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would use the site as it lacks the features noted as preferable habitat for this species.

**4.8. Social Infrastructure et al**

The proposed development site is situated near major arterial routes (Yellowhead Highway and Paul Lake Rd.) and industrial complexes.

This area is used mainly for commercial/industrial operations with a large unused area (except for cattle grazing) to the north. There is some potential that archaeological resources could be found on the site. Proposed use of the property would not affect existing transportation routes, agricultural or recreational activities but will impact any archaeological resources that may be present.

**5.0 Existing Condition of Property**

Site inspections were conducted on several days in September 2021. Detailed site investigations were completed by walking the entire property and observing the existing state of the vegetation and general condition of the property. The property is generally flat with slight slopes to the south and west. There is a steep embankment on the south side of the property.

There is one major gully (*Photo 5*) and several minor ones that run in a southwesterly direction towards Paul Lake Rd. (*Photo 6*).

**Photo 5. Major gully on property**



**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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**Photo 6. One of several small gullies on site**



It is assumed these may carry snowmelt water in the spring but are dry throughout the remainder of the year. A decommissioned road that used to service the original TteS landfill is still evident on the property (*Photo 7*).

**Photo 7. Old landfill access road.**



**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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As previously mentioned, vegetation on the site is typical of this biogeographical region except for the grazing impact. There are a few shrubs (*Photo 8*), one lone Ponderosa Pine (*Photo 9*), with some cacti scattered throughout the property (*Photo 10*).

**Photo 8. Example of shrubs on site**



**Photo 9. Lone Ponderosa Pine on site**



**Photo 10. Example of cacti present on site**



As noted in Section 4.5, the site has been heavily grazed by both cattle and wild horses in the northern part of the property. The site is strewn with garbage from the adjacent existing landfill. It appears obvious that there has been no previous residential/commercial/industrial activity on the site.

Other than the heavy grazing, the site remains in similar condition to other nearby unused areas.

## **6.0 Previous Studies**

### **6.1. Columbia Environmental, 2011. Letter Report – 2010/2011 Groundwater Monitoring KIB Landfill.**

This report presents the results of a groundwater monitoring report undertaken at the KIB existing landfill site. The objectives of the report are as follows:

- *To investigate potential seasonal variability in groundwater conditions at the site and make recommendations for future groundwater monitoring frequency.*
- *To confirm that the groundwater Exposure Point Concentrations (EPCs) used in the risk assessment modeling were still valid (i.e., are maintained at steady-state or decreasing concentrations).*

## **6.2. Columbia Environmental/Keystone Environmental. 2010. *Detailed Quantitative Risk Assessment.***

### Report Conclusions:

- I. *Unacceptable risks to Human Health receptors were not identified based on the following assumption:*
  - *Groundwater constituents of concern (COC's) are at steady state conditions.*
  
- II. *Unacceptable risks to Ecological receptors were not identified based on the following assumption:*
  - *Assuming that COC's in groundwater are at steady-state conditions, COC's in Site groundwater pose low risks to off-site plants, livestock and aquatic life in Paul Creek based on the existing data.*

## **6.3. Sperling Hanson Associates. 2010. *Preliminary Remedial Design.***

### Report Conclusion:

*The conclusion of the report is there is little potential for leachate generation from the existing KIB landfill.*

## **7.0 Existing Environmental Condition**

The proposed project site was assessed from an environmental perspective. The assessment revealed there were no Areas of Potential Environmental Concern (APEC's) at the existing site. There are no conditions present on the property that have cause for environmental concern. The site remains in an unused condition except for heavy ungulate browsing.

## **8.0 Summary and Conclusions**

The main objective of this study was to determine the existing environmental condition of the proposed new TteS Waste Management Site prior to continuing discussions with ISC for continuation of the project.

Detailed site investigations were completed by walking the entire property and observing the existing state of the vegetation and general condition of the property. Several photographs were taken of the existing vegetation and the overall condition of the land. Particular attention was paid to the specific ecological aspects of the site and any environmental issues that may be present.

Previous use is not recorded but historic aerial photos and local knowledge show that activity on the site was restricted to cattle grazing. A haul road is present on the northern edge of the site and is used for vehicles accessing the existing KIB landfill and trucks hauling gravel etc. from an existing gravel pit approximately 1.0 km to the east.

## Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility

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Previous studies related to groundwater monitoring adjacent the existing landfill did not find any unacceptable risks to either ecological or human health receptors.

Numerous species at risk (at least 12) are known to inhabit TteS lands (*TteS 2017*). Although this review was based on accessing CDC records, reviewing ecological information on selected species and observing the site in a fairly detailed manner, it cannot be stated without detailed field work that no Species at Risk inhabit the property. Also, based on the review work, it seems unlikely that any Species at Risk inhabit the site.

There are no areas of environmental concern (APEC's) at the existing site. There are no conditions present on the property that have cause for environmental concern.

### 9.0 References Cited

BC Conservation Data Centre. 2014. *Occurrence Report Summary, Shape ID, American Badger*, B.C. Ministry of Environment. Available: <http://maps.gov.bc.ca/ess/hm/cdc>.

BC Species & Ecosystems Explorer. 2021. *Antelope-Brush habitat, Sagebrush Steppe and Industrial habitats*. BC Ministry of Environment.

Fulton, Robert J., 1975. *Geological Survey of Canada, 1975, Quaternary Geology and Geomorphology, Nicola-Vernon Area, British Columbia*.

Government of Canada., 2019. *Impact Assessment Act, Section 22(1)*.

Kamloops Indian Band, 2002. *General Terms of Reference for Completing Environmental Assessments: Environmental Assessment Report*. Kamloops Indian Band, Kamloops, BC.

TK'emlups te Secwepemc 2017. *Species at Risk: On-Reserve Management*. TK'emlups te Secwepemc Lands, Leasing & Tax Department.

### 10.0 Closure

This "Environmental Screening" report was prepared by Lakeshore Environmental Ltd.

The report has been prepared in accordance with generally accepted environmental assessments. The environmental site assessment or investigation cannot totally eliminate uncertainty regarding the potential for recognized environmental conditions in connection with this site. Performance of a standardized environmental site investigation protocol is intended to reduce, but

**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the site, given reasonable limits of time and cost.

While this report provides an overview of potential environmental concerns, both past and present, the environmental assessment is limited by the availability of information at the time of the assessment. It is possible that unreported disposal of waste or illegal activities impairing the environmental status of the property may have occurred which could not be identified. Any use which a third party makes of this report, or any reliance on or decisions to be made based upon it, are the responsibility of such third parties. Lakeshore Environmental Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

As a mutual protection to our client, the public, and our firm, all reports and figures are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this report or any data, statements, conclusions or abstracts from or regarding our reports and figures, through any form of print or electronic media, including without limitation, posting or reproduction of same on any web site, is reserved pending the written approval of Lakeshore Environmental Ltd.

  
D.W. Holmes, R.P.Bio.



**D.W. Holmes, R.P.Bio. #221**

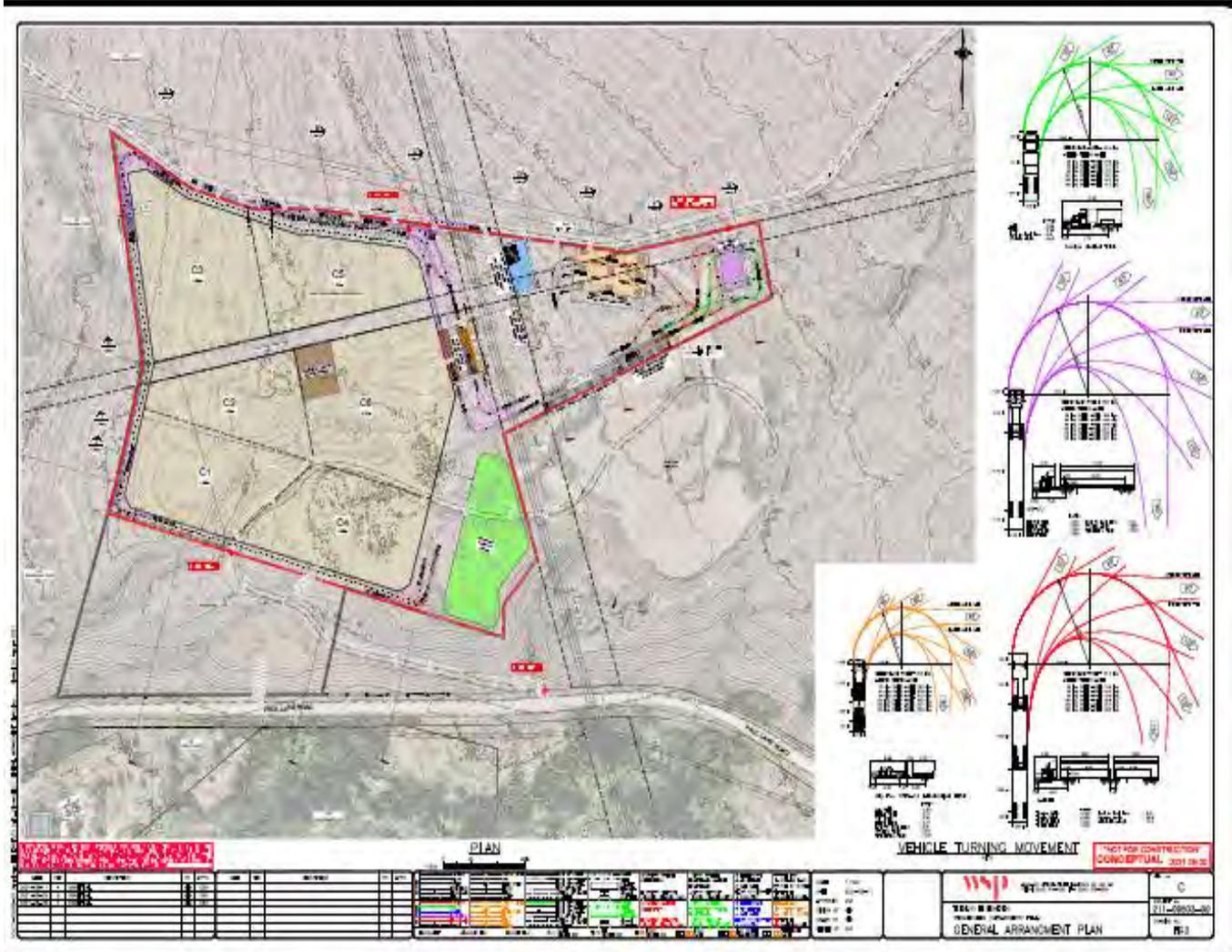
# Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility

Figure 1. Google Earth Map showing Project Location



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Figure 2. Schematic of project design.



**Environmental Screening Report for Tk'emlups te Secwepemc  
Engineered Waste Management Facility**

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**Appendix I. CDC Species Report**



**BC Conservation Data Centre: Species Occurrence Report**  
**Shape ID: 86238**

**Scientific Name:** *Taxidea taxus*  
**English Name:** American Badger

**Identifiers**

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**Occurrence ID:** 11703  
**Shape ID:** 86238  
**Taxonomic Class:** mammals  
**Element Group:** Vertebrate Animal

**Status**

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**Provincial Rank:** S2  
**BC List:** Red  
**Global Rank:** G5  
**COSEWIC:** E (NOV 2012)  
**SARA Schedule:** 1

**Locators**

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**Survey Site:** THOMPSON VALLEY  
**Directions:** This occurrence generally follows along the South Thompson River east to Little Shuswap Lake and then south to south of Kamloops to approximately Stumway Lake. To the west the occurrence roughly follows Kamloops Lake and the Tranquille River to Deadman River and north along the North Thompson River to Clearwater.  
**Biogeoclimatic Zone:**  
**Ecosection:** NTU;GUU;NIB;TRU;SHB;NSH;CAP;THB

**Area Description**

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**General Description:**

A mix of lowland bunchgrass grasslands, upland forests, river valley, urban, suburban and agricultural habitats. The upland areas are Interior Douglas Fir and some Montane Spruce.

**Vegetation Zone:**

**Min. Elevation (m):** **Max. Elevation (m):**  
**Habitat:** TERRESTRIAL: Grassland/Herbaceous, Shrubland, Forest Needleleaf, Cropland/Hedgerow

## Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility

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### Occurrence Information

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**First Observation Date:** 1990

**Last Observation Date:** 2012

**Occurrence Data:**

The Thompson Badger population unit encompasses 352 records from between 1990 and 2012: sightings, road-kills and burrows, (SPI database 2012, Weir and Davis 2012) and 495 radiolocations collected between 1999-2002 (Weir, R. D., H. Davis, and C. S. Hoodicoff. 2003). The population estimate is 35-50 adults (COSEWIC 2012).

# Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility

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## Occurrence Rank and Occurrence Rank Factors

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**Rank:** BC : Good or fair estimated viability

**Rank Date:** 2012

### Rank Comments:

Females capable of producing 2-4 kits per year, but survival of offspring to adulthood is low. Roads are significant mortality source of both adults and young. Local occupancy affected by habitat suitability (soil conditions, prey), mortality risk (roads, persecution) and proximity to other occupied areas.

### Condition of Occurrence:

There are roads and highways in the region which are a great risk (R. Packham, pers. comm. 2010).

### Size of Occurrence:

35 to 50 adults 366,537 ha

### Landscape Context:

## Version

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**Version Date:** 2013-05-27

**Version Author:** Ramsay, L.

## Mapping Information

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**Estimated Representation Accuracy:** Very Low

### Estimated Representation Accuracy Comments:

**Confident that full extent is represented by Occurrence:** N

**Confidence Extent Definition:** Confident full extent of EO is NOT known

**Additional Inventory Needed:** Y

### Inventory Comments:

# Environmental Screening Report for Tk'emlups te Secwepemc Engineered Waste Management Facility

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## Documentation

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### References:

COSEWIC. 2012b. COSEWIC status report on American badger (DRAFT). Committee on the Status of Endangered Wildlife in Canada. Ottawa, ON. XX pp.

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B.C. Conservation Data Centre. 2014. Occurrence Report Summary, Shape ID: 86238, American Badger. B.C. Ministry of Environment. Available: <http://maps.gov.bc.ca/ess/hm/cdc>, (accessed Sep 22, 2021).