

## Kahuna Property Field Camp

<b>Application Type:</b>	New
<b>Project Type:</b>	Camp
<b>Application Date:</b>	11/20/2017 4:45:03 PM
<b>Period of operation:</b>	from 0001-01-01 to 0001-01-01
<b>Proposed Authorization:</b>	from 0001-01-01 to 0001-01-01
<b>Project Proponent:</b>	Chris Taylor Dunnedin Ventures Inc. 1110, 1111 West Georgia St. Vancouver BC V6E 4M3 Canada Phone Number:: 778 327 5799, Fax Number:: 778 327 6675

## DETAILS

### Non-technical project proposal description

English: Dunnedin Ventures Inc. Kahuna Property is located between the communities of Rankin Inlet (Kangiqtiqiniq) and Chesterfield Inlet (Igluigaarjuk) in the Kivalliq Region of Nunavut. The property comprises 145 mineral claims encompassing 166,463 hectares and extends north, south, east and west between Latitudes 62°58' and 63°19' North and Longitudes 90°44' and 92°13' West. A total of 82 mineral claims have surface rights covering 87,570 Ha that are within, or partially within, the boundaries of surface Inuit Owned Land parcel CI-15. Exploration activities on the Kahuna Property are currently permitted under INAC Land Use Permit N2015C0019, KIA Land Use Licence KVL315B01, KIA Land Use Licence KVR16F01 and NWB Water Licence 2BE-KDP1722. Project amendment documents are being submitted to NPC and NIRB and then distributed to INAC, KIA and NWB, to authorize a temporary field camp and a fuel cache on Crown Lands under INAC Land Use Permit N2015C0019, and to authorize domestic water use for the temporary field camp under NWB Water Licence 2BE-KDP1722. The temporary camp will be used to support planned 2018 exploration activities that are currently authorized by Dunnedin's existing permits and licenses. The planned 2018 exploration program includes rock, till and soil sampling, prospecting and geological mapping, ground geophysical surveying, diamond drilling and reverse circulation drilling. Work will start in mid-February with an overland haul of equipment and supplies on Dunnedin's permitted overland winter trail from Rankin Inlet to the property using Caterpillar Challengers and cargo sleds. Camp construction will commence in late February upon arrival of the camp supplies. The drill program will operate from March to mid-May. Ground based prospecting and sampling activities will follow in mid-June once the land is free from snow and the property surface is fully accessible. Members of the Chesterfield Inlet HTO provided assistance and recommendations for the site selected by Dunnedin for the proposed field camp location. More than 10 different sites were investigated. A large, flat topped esker feature was recommended as the best the location. The site is on Crown Lands approximately 40 kilometres northeast from Rankin Inlet and 50 kilometres southwest from Chesterfield Inlet at 575,975mE and 6,990,875mN in Zone 15, UTM NAD83. The new camp will operate seasonally from March through September and will accommodate up to 20 people. The camp will include: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 1 core logging tent, 7 supplementary sleep tents, a Pacto latrine facility, a small generator shed, an incinerator and 2 arctic grade containment fuel berms. Structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood sheds. The field camp will be fully closed and dismantled completely once exploration activities cease. The site will then be reclaimed and restored to its original state. Dunnedin's existing permits and licenses include authorization for 3 fuel caches that together contain an aggregate of 75 drums (205L each) of jet fuel and 120 drums of diesel fuel. Dunnedin requests an increase in the amount of fuel to be cached on the Kahuna Property to support the field camp, the proposed 2018 winter drill program and the summer 2018 exploration program. A main fuel cache will be established on the east side of the new field camp facilities at 576065mE 6990845mN UTM Zone 15, UTM NAD83. Fuel to be cached on the site will include: 150 drums (205L each) of diesel fuel, 150 drums of jet fuel, 10 drums of gasoline and 20 cylinders (100 lbs. each) of propane. Dunnedin Ventures Inc. is committed to conducting its exploration programs in a socially and environmentally responsible manner.

**French:** The proposed project will not affect the city of Iqaluit.

[illegible]

Inuinnaqtun: The proposed project will not affect the communities of Cambridge Bay, Kugluktuk, Bay Chimo or Bathurst Inlet.

### Post-Closure Phase: from to

## Activities

### Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Temporary Field Camp Location	Camp	Crown	No known history. The proposed field camp is 4 km west of the PST diamond occurrence.	An archaeological survey was conducted by Golder Ltd. in 2016. Low level aerial passes along the 46 km long overland winter trail did not identify any archaeological features at the site. There are no archaeological features evident in high resolution air photos collected over the camp area in 2017. A ground examination was conducted by H. Aggark (Mayor Chesterfield) and J. Misheralak (HTO) in September 2017. There were no archaeological features noted. Both men recommended the camp location.	The proposed field camp is 40 km from Rankin Inlet and 50 km from Chesterfield Inlet.

### Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Chesterfield Inlet	Simeonie Sammurtok, Mayor of Chesterfield Inlet	Hamlet Council of Chesterfield Inlet	2017-11-10
Rankin Inlet	L.Manzo, J.Tulugak, B.Osmond (KIA).	Kivalliq Inuit Association	2017-10-26
Rankin Inlet	L.Manzo, J.Tulugak, B.Osmond (KIA). J.Tattuinee, B.Sigurdson, H.Towtongie, C.Beardsall (CLARC). C.Tartak (HTO Manager)	Kivalliq Inuit Association. Community Lands and Resources Committee. Aqiggiag HTO.	2017-10-27
Chesterfield Inlet	S.Sammurtok (Mayor). P.Kattegatsiak, P.Kadjuk, L.Mimialik, A.Kadluk, H.Aggark (CLARC). V.Ipkarnerk (KIA). R.Mullins, D.Kattegatsiak, L.Autut (Hamlet). J.Misheralak, J.Aggark, M.Arnauyok (HTO).	Community Meeting: CLARC, KIA, Hamlet of Chesterfield Inlet, Aqigiq HTO and members of the community.	2017-10-25
Rankin Inlet	G.Karlik, J.Tulugak, L.Manzo (KIA)	Kivalliq Inuit Association	2017-09-30
Chesterfield Inlet	H.Aggark (Deputy Mayor of Chesterfield Inlet), J.Misheralak (Aqigiq HTO)	Hamlet of Chesterfield Inlet, Aqigiq HTO	2017-09-29
Chesterfield Inlet	S.Sammurtok (Mayor), R.Mullins, D.Kattsegatsiak (Hamlet)	Community Meeting: Hamlet of Chesterfield Inlet and members of the community.	2017-08-17
Chesterfield Inlet	S.Sammurtok (Mayor), R.Mullins, D.Kattsegatsiak, J.Krako, L.Autut (Hamlet),	Hamlet of Chesterfield Inlet, Aqigiq HTO	2017-08-16

	H.Aggark (HTO Chair), S.Autut		
Chesterfield Inlet	S.Sammurtok, R.Mullins, D.Kattsegatsiak (Hamlet)	Hamlet of Chesterfield Inlet	2017-08-16
Chesterfield Inlet	T.Sammurtok (MLA), P.Kattegatsiak, V.Ipkarnerk (KIA), S.Sammurtok (Mayor), H.Aggark (Deputy Mayor/HTO Chair)	Community Meeting: Hamlet of Chesterfield Inlet, Kivalliq Inuit Association, Aqigiq HTO and members of the community.	2017-06-20
Chesterfield Inlet	S.Sammurtok (Mayor of Chesterfield Inlet), J.Misherlak (HTO)	Site Visit: Hamlet of Chesterfield Inlet, Aqigiq HTO	2017-06-20

## Authorizations

### Indicate the areas in which the project is located

Transboundary

Kivalliq

## Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Indigenous and Northern Affairs Canada	N2015C0019. Class A Land Use Permit for Mining (Exploration) for rock, till and soil sampling, prospecting and geological mapping, ground geophysical surveying, diamond drilling, reverse circulation drilling and bulk sampling.	Active	2015-07-16	2019-07-17
Kivalliq Inuit Association	KVL315B01. Land Use License for Staking & Prospecting, Exploration, Drilling, Bulk Sampling on Inuit Owned Land Parcel CI-15.	Active	2017-07-14	2019-11-02
Kivalliq Inuit Association	KVRW16F01. Right of Way Land Use License for an Overland Winter Trail from Rankin Inlet to the Kahuna Property.	Active	2017-04-02	2018-04-02
Nunavut Water Board	2BE-KDP1722. Type B Water Licence for the use of water on the Kahuna Project. Quantity of water use not to excess: one hundred (100) cubic metres per day.	Active	2017-06-01	2022-05-31
Indigenous and Northern Affairs Canada	An INAC amendment application has submitted to NIRB and upon screening decision will be submitted to INAC to add a temporary field camp on Crown Lands under N2015C0019.	Applied, Decision Pending		
Nunavut Water Board	A NWB amendment application has submitted to NIRB and upon	Applied, Decision Pending		

	screening decision will be submitted to NWB to authorize domestic water use not exceeding three (3) cubic metres per day for the temporary field camp under Water Licence 2BE-KDP1722.			
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#### Project transportation types

Transportation Type	Quantity	Proposed Use	Length of Use
Air	0	Helicopter-supported	
Land	0	Caterpillar Challengers with sleds, snowmobiles	

#### Project accommodation types

Temporary Camp

## Material Use

### Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Helicopter Long Ranger (or similar)	1	12.9m x 3.1m	Transportation and drill moves.
Water Pumps	2	0.5m x 0.3m x 0.3m	Provide water for the temporary field camp.
Snowmobile	4	3m x 1m x 1m	Transportation
Caterpillar Challenger	2 to 4	3m x 5m	Mobilization/Demobilization of drill, fuel & equipment
Generators	2	1m x 2m	Power generation

### Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Aviation fuel	fuel	150	205	30750	Liters	Fuel helicopters
Diesel	fuel	150	205	30750	Liters	Power generators, heating and drilling.
Gasoline	fuel	10	205	2050	Liters	Fuel for water pumps and snow mobiles.
Propane	fuel	20	100	2000	Lbs	Fuel for kitchen stoves and dryer.
Hydraulic/Motor Oil	hazardous	10	4	40	Liters	Lubricant for generators, helicopters, etc.
Solvents	hazardous	20	1	20	Liters	Cleaning products

### Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
3	Portable, gasoline-powered water pump. Refer to the attached NWB Amendment Application under the documents tab for detailed description of the water retrieval methods.	Refer to the attached NWB Amendment Application under the documents tab for detailed description of the water retrieval locations.

## Waste

### Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Camp	Combustible wastes	~0.05m3/day	Duel-walled fuel-fired incinerator	Ash collected and removed from site for authorized disposal.
Camp	Greywater	<3m3/day	Greywater sump	Sump backfilled upon final closure.
Camp	Hazardous waste	0.005m3/day	Collected in sealed and labelled drums.	Removed from site to a registered hazardous waste receiver.
Camp	Non-Combustible wastes	0.05m3/day	Collection	Transported off site for authorized recycling/disposal.

Camp	Sewage (human waste)	0.05m3/day	Incinerated and ash collected.	Ash transported off site for authorized disposal.
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### **Environmental Impacts:**

Camp activities are not likely to significantly impact the permafrost, soil and sediment quality. Camp structures will be elevated to prevent permafrost thaw. Soil quality can be impacted by hazardous materials spills and waste discharge and will be treated as per the Spill Prevention and Response Plan. The camp grey water sump will be outfitted with a grease trap and screen to ensure food grease and solids do not enter the waste water sump. No contamination of the water supply is predicted. Upon final closure, the sump will be infilled and re-contoured. The camp location was chosen in a location with minimal vegetation to reduce the need for clearing. Due to the short duration of the program and the remote location of the field camp, measurable impacts to the air quality are not anticipated. Noise quality may be effected by helicopters and generators which can disturb wildlife. Helicopters are to maintain a minimum altitude of 610 metres where wildlife is observed to mitigate impacts by noise. The predicted impacts to wildlife due to the presence of the Kahuna Property field camp include attracting wildlife and habitat disturbance. Dunnedin will discourage attracting wildlife by minimize all waste and properly storing attractants until they can be removed from camp. Habitat disturbance from the field camp is temporary and upon final closure the site will be reclaimed and restored to its original state. Camp layout will be designed to minimize its footprint and limit its impact. No birds, eggs or nests are to be disturbed. Flight restrictions are in place where colonies of birds are observed. Positive socioeconomic impacts are anticipated from employment opportunities for local Inuit and increased business for northern companies and services. Please see the Environmental and Wildlife Management Plan and other management plans included in the project documents for additional details.

## **Additional Information**

### **SECTION A1: Project Info**

### **SECTION A2: Allweather Road**

### **SECTION A3: Winter Road**

### **SECTION B1: Project Info**

### **SECTION B2: Exploration Activity**

### **SECTION B3: Geosciences**

### **SECTION B4: Drilling**

### **SECTION B5: Stripping**

### **SECTION B6: Underground Activity**

### **SECTION B7: Waste Rock**

### **SECTION B8: Stockpiles**

### **SECTION B9: Mine Development**

### **SECTION B10: Geology**

### **SECTION B11: Mine**

### **SECTION B12: Mill**

### **SECTION C1: Pits**

### **SECTION D1: Facility**

### **SECTION D2: Facility Construction**

### **SECTION D3: Facility Operation**

### **SECTION D4: Vessel Use**

### **SECTION E1: Offshore Survey**

### **SECTION E2: Nearshore Survey**

### **SECTION E3: Vessel Use**

### **SECTION F1: Site Cleanup**



## **SECTION G1: Well Authorization**

## **SECTION G2: Onland Exploration**

## **SECTION G3: Offshore Exploration**

## **SECTION G4: Rig**

## **SECTION H1: Vessel Use**

## **SECTION H2: Disposal At Sea**

## **SECTION I1: Municipal Development**

### **Description of Existing Environment: Physical Environment**

The Kahuna Property is located within the Maguse River Upland Ecoregion within the Southern Arctic Ecozone. This ecoregion is an area that is often referred to as the “barren lands.” This name reflects the largely treeless nature of the Ecozone as most of it lies to the north of the tree line. Glaciation released a huge volume of soil and rocks debris creating a bouldery moraine and long sinuous eskers which may extend up to 100km. Occurring less frequently are outwash aprons of crudely sorted sand and gravel and raised beaches along pre-existing shorelines. The resulting undulating terrain is studded with abundant interconnected lakes and ponds. Local relief varies between 80 and 240 metres above sea level. Permafrost occurs continuously throughout the Southern Arctic Ecozone. Lying sometimes just a few centimeters below the surface, permafrost acts as a dam that stops the downward flow of water. Even though there is little precipitation, the soils are often waterlogged or frozen. Repeated freezing and thawing of these soils create surface features such as cell like polygons, bulging hummocks and bare mud boils where the soil is so active that no plants can take root. Intense frost heaving often splits apart the underlying bedrock and forces large angular boulders to the surface. Occasionally emerging through the thick mantle of glacial till is the Canadian Shield. The current limits of the Kahuna claim group lie almost exclusively within the west trending metasedimentary paragneiss belt consisting of metasedimentary rocks including semipelite/psammite with garnet + biotite +/- aluminosilicate schist/paragneiss and the weakly to well foliated, biotite-muscovite Leucogranite unit made up of biotite-muscovite Leucogranite, in part contains xenocrystic garnet and includes layered tonalite gneiss and garnet-kyanite-sillimanite schist paragneiss. Water, soil and air quality remain in a pristine state, affected only by global factors. There are no national, territorial or wildlife parks or sanctuaries within or closely bounding the boundaries of the Kahuna Diamond project. Of special interest to the communities of Chesterfield Inlet and Rankin inlet is the Char bearing habitat of Josephine Lake located in the northeast quadrant of the Kahuna claim group. Josephine Lake is the only lake within the claim group which is deep enough to supply fresh water during the winter months and is one of only a few lakes within the claim group that does not freeze to bottom. Although this area is typically characterized by long, cold winters and continuous permafrost, climate change is rapidly altering the arctic environment. In the future climate in the north could continue to trend towards warmer temperatures and decrease of summer ice.

### **Description of Existing Environment: Biological Environment**

Vegetation within the Southern Arctic Ecozone is adapted to short, cold growing seasons; high persistent winds and acidic soils over permafrost. The Ecozone is bounded to the south by the tree line, a broad ecological division between the taiga forest and the treeless arctic tundra. Low precipitation and extremely low winter temperatures are among the factors that discourage tree growth. The near continuous blowing of cold, dry winds and the presence of permafrost also restricts plant growth. Low shrubs such as the Shrub Birch, Willow and Labrador Tea are well adapted to these conditions. On the most exposed sites, low shrubs give way to mats of lichens, mosses, and ground-hugging shrubs such as Mountain Cranberry and Least Willow. Low biological productivity, a short growing season, and extremely cold long winters are demanding on wildlife so those found in the area are well adapted to arctic living. Wildlife includes Muskox, Caribou, Wolf, Barren Land Grizzly Bear, Polar Bear (Coastal Regions), Arctic Fox, Wolverine, Arctic Ground Squirrel and Brown Lemming. The Kahuna Property is within range of the Qamanirjuaq and Lorillard Caribou Herds, but outside critical migrating, calving and crossing areas. According to Key Migratory Bird Terrestrial Habitat Sites in the Northwest Territories and Nunavut (2008), published by the Canadian Wildlife Service, there are no critical migratory paths or nesting areas within the Kahuna Property. Freshwater aquatic species common to the Kivalliq Region of Nunavut include Arctic Char, Lake Trout and Arctic Grayling. The network of lakes and rivers provide abundant habitat for fish. The Species at Risk Act protects certain listed mammals, reptiles, amphibians, molluscs and plants on federal lands and certain listed birds and fish on all lands of Canada. Species that are legally protected under SARA are those listed as endangered or Threatened and are listed in Schedule 1 of the act.

### **Description of Existing Environment: Socio-economic Environment**

The Kahuna Property field camp is located 40 kilometres northeast of Rankin Inlet and 50 kilometres southwest of Chesterfield Inlet. There are no roads in the project area, minimizing the potential for local or regional traffic except during the winter months. Transportation in remote areas such as the Kahuna Property is conducted by helicopter access and during the winter months by Caterpillar Challenger and snowmobiles. Local employment opportunities are generally with the Government of Nunavut, local Hamlets, the Northern Store, the Co-op as well as with Agnico Eagle's Meadowbank Gold Mine near Baker Lake and their Meliadine

Project near Rankin Inlet. No human health factors are known for this region. Dunnedin Ventures contracted Golder and Associates to conduct a preliminary archaeological assessment for the purpose of identification, avoidance and planning purposes, including the winter trail route and is aware of the culturally significant arctic char fish habitat located at Josephine Lake utilized by the communities of Chesterfield Inlet and Rankin Inlet. To mitigate daily helicopter transits to and from Rankin Inlet, and for safety reasons associated with winter work conditions, Dunnedin is seeking authorization for a temporary field camp located centrally on the Kahuna Property. Basing operations out of a field camp will create additional employment opportunities for local communities. Dunnedin will be supporting the local economy by utilizing local businesses for goods and services.

### **Identification of Impacts and Proposed Mitigation Measures**

Camp activities are not likely to significantly impact the permafrost, soil and sediment quality. Camp structures will be elevated to prevent permafrost thaw. Soil quality can be impacted by hazardous materials spills and waste discharge and will be treated as per the Spill Prevention and Response Plan. The camp grey water sump will be outfitted with a grease trap and screen to ensure food grease and solids do not enter the waste water sump. No contamination of the water supply is predicted. Upon final closure, the sump will be infilled and re-contoured. The camp location was chosen in a location with minimal vegetation to reduce the need for clearing. Due to the short duration of the program and the remote location of the field camp, measurable impacts to the air quality are not anticipated. Noise quality may be effected by helicopters and generators which can disturb wildlife. Helicopters are to maintain a minimum altitude of 610 metres where wildlife is observed to mitigate impacts by noise. The predicted impacts to wildlife due to the presence of the Kahuna Property field camp include attracting wildlife and habitat disturbance. Dunnedin will discourage attracting wildlife by minimizing all waste and properly storing attractants until they can be removed from camp. Habitat disturbance from the field camp is temporary and upon final closure the site will be reclaimed and restored to its original state. Camp layout will be designed to minimize its footprint and limit its impact. No birds, eggs or nests are to be disturbed. Flight restrictions are in place where colonies of birds are observed. Positive socioeconomic impacts are anticipated from employment opportunities for local Inuit and increased business for northern companies and services. A strict no drugs or alcohol policy will be enforced to ensure the safety and well-being of employees. Please see the EWMP and other plans included in the project documents for additional details.

### **Cumulative Effects**

The Kahuna Property field camp operates for a short duration seasonally and is a temporary fixture. All potential environmental effects associated with the camp are considered minor, localized effects that can be mitigated. No significant residual impacts to the environment are expected to occur as a result of the camp activities.

## Impacts

## Identification of Environmental Impacts

Construction																									
Camp		-	-	N	-	-	-	-	-	N	-	N	M		N	N	N	-	-		P	-	-	-	-
Operation																									
Camp		-	-	N	-	N	-	-	-	N	-	N	M		N	N	N	-	-		P	-	-	-	-
Decommissioning																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)