

Traditional Knowledge Study Summary Report Pine Point Pilot Project

Hay River, NWT

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1.0 INTRODUCTION

Tamerlane Ventures Inc. is a publicly traded mining company engaged in the exploration and development of mineral properties in North America and internationally. The company proposes to construct and operate a Zn/Pb pilot plant. The proposed project is referred to as the Pine Point Pilot Project (PPPP). The PPPP will confirm the potential to conduct full-scale underground mining of the remaining 34 known deposits. The proposed project will produce a bulk sample from the R190 deposit of approximately 1,000,000 metric tonnes of lead-zinc ore over the course of 12-15 months.

The Pine Point Pilot Project (PPPP) property is located 48 km (30 miles) east of Hay River, 140 km (87 miles) west of Fort Resolution and ~0.5 km north of Territorial Highway 5. Territorial Highway 5 links the communities of Hay River and Fort Resolution. The property encompasses an area of approximately 6 hectares (14.8 acres). The proposed PPPP includes a footprint area of approximately 2.5 hectares (6.2 acres).

The Hay River community is recognized as a key stakeholder in the proposed PPPP project. The community's Metis people have utilized the South Great Slave Region, including the proposed PPPP area, since time immemorial. The town of Hay River includes approximately 3,825 residents. Approximately 46% of the residents are Aboriginal. Fifty-two percent of the population is comprised of men while the other 48% are women (Source: NWT Bureau of Statistics, 2005).

The purpose of this study was to obtain traditional knowledge from the Hay River community's Metis Aboriginal residents. The information was collected for continued planning and incorporation into Tamerlane's Developer's Assessment Report (DAR) as required by the Mackenzie Valley Environmental Impact Review Board's (MVEIRB) Environmental Assessment Process.

The study was conducted by consulting research analyst Sara Swisher, B.S. & M.S. Communication, for Tamerlane Ventures Inc. The Traditional Knowledge study was conducted in general conformance with the traditional knowledge guidelines issued by the Mackenzie Valley Environmental Impact Review Board (MVEIRB). The collection of the data for the study was made possible through the efforts and assistance of several individuals in the Hay River Metis Council (HRMC) and Northwest Territory Metis Nation (NWTMN) communities. These key individuals include President Vern Jones (HRMC), Paul Harrington (HRMC) and Cec Heron, IMA Coordinator (NWTMN).

1.1 Research Communications

Initial communication regarding the traditional knowledge study took place via telephone the week of September 11, 2006. Tamerlane contacted President Vern Jones (HRMC) and requested permission to conduct a traditional knowledge study in collaboration with the Hay River Metis community the week of October 16, 2006. Verbal agreement and permission to conduct the study was obtained from President Vern Jones. Tamerlane requested President Vern Jones to identify a Community Representative to work in

concert with Sara Swisher, the consulting research analyst for the study. Danny Beck (HRMC) was recommended for the role.

An introductory letter from Sara Swisher, including a draft copy of the study proposal and survey, was faxed to President Vern Jones (HRMC) and President Robert Tordiff (NWTMN) for review and comment September 25, 2006. Direct feedback and survey edits were provided by Cec Heron (NWTMN). All requested edits were made and the final proposal was faxed to Cec Heron (NWTMN) October 3, 2006. Sara Swisher called Cec Heron (NWTMN) October 6, 2006, to obtain any final feedback prior to commencement of the study.

The study's methodology was modified October 10, 2006. The Hay River Metis sample size was increased from 5-6 participants to 8-12 participants in order to maintain consistency with the Metis sample identified in the Fort Resolution Traditional Knowledge Study.

A final change was made to the study proposal October 16, 2006. Scheduling conflicts precluded Danny Beck from being the Community Representative for the study. President Vern Jones recommended Paul Harrington as the Community Representative replacement. A copy of the final traditional knowledge study proposal is included in Appendix A.

2.0 METHODOLOGY

2.1 Design and Population

Qualitative interviews were used as the method of observation for the traditional knowledge study. Individuals aged 45 years or older in the community were the primary focus of the study. Metis elders and individuals with extensive land-use experience and knowledge of the South Great Slave Region were the preferred sample population.

Study participants were identified, contacted and scheduled for the qualitative interviews by the Community Representative: Paul Harrington (HRMC). In addition to contacting participants, the Community Representative conducted introductions, clarified questions, and provided context for questions where necessary. The study's final sample included 12 Hay River Metis individuals. See Table 2.1-1.

Table 2.1-1
Hay River Traditional Knowledge Study Participants

Affiliation	Name
Hay River Metis Council	Alex Lafferty Bernadette Mandeville Frederick Mandeville Michael Mandeville Paul Harrington Danny Beck Frederick Beaulieu Sandra Gilbert Anthony Beck George Lafferty Collin Lafferty Sonny Collins

2.2 Data Collection

2.2.1 Background

The Traditional Knowledge Study's scientific research permit application was completed and submitted to the Aurora Research Institute October 11, 2006. Cec Heron, IMA Coordinator for the Northwest Territories Metis Nation wrote and faxed a letter of support to the Aurora Research Institute October 12, 2006. The scientific research permit was approved and granted by Dr. Andrew Applejohn, Director of the Aurora Research Institute, October 13, 2006. The study's qualitative interviews were conducted October 17-19, 2006. A copy of the scientific research license, letter of support and related correspondence are included in Appendix B.

2.2.2 Qualitative Interview Protocol

The traditional knowledge interviews were conducted in the Hay River Metis Council Office in Hay River. Tamerlane provided refreshments. The interviews were conducted by Sara Swisher, consulting research analyst, in collaboration with the Hay River Metis Community Representative: Paul Harrington.

Prior to each interview, the Community Representative introduced the research analyst to the interview participant. Once introductions were made, each participant was given a prior informed consent form that was explained by the Community Representative and/or research analyst. Participants were asked to sign the form if they were comfortable with the information and voluntarily wanted to continue participation in the study. A copy of the prior informed consent form is included in Appendix C. The study participants' signed original prior consent forms are included in Appendix D.

Participants were asked at the start of each interview if they were familiar with Tamerlane's proposed Pine Point Pilot Project. If participants indicated that they were familiar with the project, the interview continued. If not, a brief description of the project was provided. Two maps were used to orient participants to the location of the proposed project and to facilitate the interview questions. One map (86.4 x 111.8 cm) illustrated the footprint area of the proposed project. The other map (21.6 x 27.9 cm) denoted the major landmarks and water bodies in the South Great Slave Region. Scaled-down copies of both maps are included in Appendix E.

Once oriented, participants were asked a series of qualitative questions by the research analyst. All responses were recorded on the survey instrument with hand-written notes. Throughout the course of each interview, the research analyst's written responses were read back to the participants for approval, editing and/or clarification. Each interview lasted approximately 1 ½ to 2 hours in duration. A participant honorarium was paid in cash at the conclusion of each interview.

2.3 Measures

Questions included in the qualitative interview were loosely structured to encourage conversation and designed to gather participants' 1) knowledge about the environment, 2) knowledge about the use and management of the environment, and 3) values about the environment. The interview explored information specific to the proposed project area and information applicable to the entire South Great Slave Region. The questions explored seven specific topics of inquiry:

- Terrain
- Climate
- Vegetation (berry picking areas)
- Wildlife (hunting and trapping)
- Water (fishing)
- Significant Sites (culturally important sites)
- Traditional Use

2.4 Analysis

The data collected from the qualitative interviews were entered into a spreadsheet and organized categorically. Once completed, the draft report was submitted to the Community Representative, Paul Harrington (HRMC), for content review. Mr. Harrington provided feedback and approved the report without edits. The report was finalized following Mr. Harrington's input. Upon completion, the original surveys with notes were returned to the Hay River Metis community for their archival records. The following section anonymously reports the results of the qualitative interviews by theme and/or category.

3.0 RESULTS

The traditional knowledge study was conducted in Hay River October 17-19, 2006. A total of 12 Hay River Metis individuals were interviewed. All of the study participants indicated having lived in the South Great Slave Region for either most or all of their lives and noted extensive familial roots in the region. The study participants ranged in age from 30-77 years old with an average age of 57 years. All but two study participants were male.

Participants were asked about their current personal and historical familial use of the proposed project area. All of the study participants indicated that either they or their families currently frequent the proposed project area and/or the greater general area in which the project site is located. When asked how long they and/or their families have used the area, participants indicated historical use ranging from approximately 26 years to many generations. Study participants identified the following list of activities they participate in when using the project area. See Table 3.0-1.

Table 3.0-1
Participant Activities in Proposed Project Area

Activities		
 Hunt Trap Pick Berries	Collect PlantsCut Firewood	

3.1 Terrain

Study participants were asked about their knowledge of the terrain in both the South Great Slave Region and the proposed project area. Eleven of the 12 participants said they have walked or traveled through the proposed project area in recent years. Eleven participants also said they actively snowmobile in the South Great Slave Region for work-related activities including: trapping, hunting, cutting firewood and collecting syrup. Specific knowledge regarding past fires, earthquakes, land disturbance and natural hazards was explored.

3.1.1 Fires

All of the respondents had knowledge of past fires in the South Great Slave Region. Participants generally noted that the South Great Slave Region typically experiences multiple fires each year. The most frequently mentioned fires included the Pine Point Fire (early 1970's) and the Hay River/Pine Point Fire (early 1980's) that burned from Alberta to the Great Slave Lake and from Hay River to Pine Point. A list of all fires mentioned by participants is included in Table 3.1-1.

3.1.2 Earthquakes

None of the study participants had specific knowledge of earthquakes in the South Great Slave Region. However, seven of the participants noted feeling slight tremors in the greater Hay River and Dawson Landing areas during recent history. Participants reported tremors on separate occasions during the 1970's, 1980's and 1990's. According to one participant, the epicenter of at least one of the tremors was located west of Fort Simpson in the Mackenzie Mountains. See Table 3.1-1

3.1.3 Land Disturbance

Participants were asked about their knowledge of land disturbance in the proposed project area. The most frequently cited sources of land disturbance were cut lines and exploration/drilling activity. Other identified land disturbance in the proposed project area included roads, gravel quarries, and evidence of hunting and trapping activity. See Table 3.1-1.

3.1.4 Natural Hazards

Several study participants identified natural hazards in the proposed project area that may pose a danger to work crews and/or equipment. One participant indicated that workers should be aware of hunters that use the area. Swampy areas and hanging ice on the creeks and rivers may also pose a danger. One participant noted that the old railway line has numerous dug-outs that are not bermed and could be dangerous. Another participant indicated that workers should be aware of the potential presence of artesian wells in the project area. Black bears, cougar and insects including wasps and bees were also identified as potential hazards. Finally, the project area was identified as hosting large areas of jack spruce and pine. The trees are a fuel source for potential fires. See Table 3.1-1.

Table 3.1-1
Terrain Response Summary by Location

Terrain Elements	Comments
Past Fires South Great Slave Region	 Mission Island Fire (1940's) Dawson Landing Fire (1970) Pine Point Fire (early 1970's) Small fire near Pine Point (1970's) Hay River/Pine Point Fire (early 1980's) Small fire between Polar Lake & Project Area (~2001) Fire near Fort Smith Junction (~2003)
Earthquakes South Great Slave Region	 No specific knowledge of earthquakes in region. Tremors in Hay River (incidents in 1970's, 1980's & 1990's) Tremors in Dawson Landing (no date)
Land Disturbance Proposed Project Area	 Cut Lines Exploration/Drilling Activity (rod stems) Roads (specifically the old Hay River Road) Gravel Quarries Hunting Activity (moose blind and other camps outside area) Trapping Activity
Natural Hazards Proposed Project Area	 Swampy Areas Hanging Ice (on regional creeks and rivers) Dug-Outs on Old Railway Artesian Wells Black Bear Cougar Insects (wasps, mosquitoes & bees) Fires (abundant fire fuel located in project area)

3.2 Climate

Participants were asked to share their observations regarding climate in the South Great Slave Region. Questions regarding freeze/thaw patterns, severe wind, flooding and climate changes over-time were explored.

3.2.1 Ground Freeze and Thaw

Respondents indicated that the ground in the region generally starts to freeze in October and is frozen hard sometime between November and December. It was noted that the time of year when the ground freezes is largely dependent on the amount of snow. Regarding spring thaw, respondents reported that the ground typically thaws between March and June.

3.2.2 Severe Wind Weather

All of the study participants reported severe wind weather in the region. Participants indicated that severe wind typically occurs in the fall and spring. March ("big wind" in chipewyan), August, September and November were the months most frequently associated with severe wind. Four participants said that severe wind weather is common on the lake in the fall with winds up to 40-50 km. Two participants indicated that wind storms also occur during the summer, often in conjunction with thunderstorms. One participant noted a specific multi-day wind storm during the 1980's in Fort Resolution.

3.2.3 Flooding

When asked about flooding, all but three of the participants reported seasonal spring flooding in specific areas of the South Great Slave Region. No flooding was identified in the proposed project area. However, participants identified several specific flood events in recent history including Hay River in 1951 and 1963, the West Channel of Hay River in ~1972, Birch Creek in ~1980, and Big Buffalo River in ~2000. Identified seasonal flood areas are listed in Table 3.2-1.

Table 3.2-1
Identified Flood Areas by Season

Season	Location	
Spring	Slave RiverHay RiverBirch Creek	
Summer	Taltson River (dam controlled)	

3.2.4 Climate Changes Over-Time

Almost all of the study participants indicated that freeze and thaw patterns in the South Great Slave Region have changed during their lifetimes. While participant's specific comments varied, the general consensus was that winters in the South Great Slave Region are shorter and warmer than in the historical past. One participant said that Tamerlane's proposed project may receive a significant amount of snow due to the winter "lake effect." Participants' specific climate change observations are listed in Table 3.2-2.

Table 3.2.-2 Warming Trend Observations Summary

Participant Observations

- There is more snow now than in the past; it keeps the ground from freezing.
- In the past kids were able to play hockey on the ice in September.
- Winters during the 1940's and 1950's were colder, windier and had more snow.
- The ground was historically frozen solid by the first part of October.
- The ground in Snow Drift thawed around June in the historical past.
- Winter weather was historically often below -32°C; now it is not.

3.3 Vegetation

Participants were asked to identify the trees, plants and berries located in the proposed project area. The project area vegetation was generally described as consisting of mostly marsh with small trees. One participant noted that the area does not have as many berries as it did in the historical past. The trees, plants and berries identified by participants are listed by their local names in Table 3.3-1. Participants also identified poisonous/harmful plants located in the South Great Slave Region. These plants are listed in Table 3.3-2.

3.3.1 Medicinal Plants

Medicinal plants were also discussed. All of the participants indicated having knowledge of medicinal plants in the South Great Slave Region. When asked, participants indicated that medicinal plants are located in the project area. Labrador tea and another plant resembling a low-bush cranberry were specifically identified as being present in the project area. All of the participants also indicated that medicinal plants are used in the community. One participant noted that medicinal plants are currently used at the jail in Hay River as part of a healing program.

Table 3.3-1 Identified Vegetation in Proposed Project Area

Vegetation Type	Local Name
Trees	 Jack Pine Spruce White Spruce Poplar Birch Willows Juniper Tamarack
Plants and Berries	 Raspberries Gooseberries Strawberries Cranberries/Low Bush Mooseberries/High Bush Cranberries Blueberries Saskatoons Chokecherries Bearberries Juniper Berries Currants (red and black) Sourberries (not official name) Orangeberries (not official name) Low-Growing Swamp Berries (not official name) Whiskey Jack Berries (jelly berry) Snakeberries Rose Hips Labrador Tea

Table 3.3-2 Identified Poisonous Plants in South Great Slave Region

Local Name		
BearberriesOrangeberries (not official name)Snakeberries	Poison IvyVarious Mushroom Species	

3.4 Wildlife

3.4.1 Harvesting

All of the participants indicated that they harvest animals in the South Great Slave Region. See Table 3.4-1. While specific harvesting practices varied, participants indicated that fur-bearing land animals are typically harvested from November to mid-March, fur-bearing aquatic animals are generally harvested from mid-October to mid-May, waterfowl are typically hunted in the spring, game birds are normally hunted in the fall and winter, and game animals are generally hunted year-round.

All of the participants also indicated that animals are harvested in the project area and/or greater general area, but noted that it was difficult to ascertain the exact location of the project area because it is viewed as part of a larger area used for hunting and trapping. Animals identified as being harvested in the general project area included moose, woodland caribou, buffalo, whitetail deer, bear, lynx, wolf, wolverine, coyote, marten, fisher, mink, weasel, fox, rabbit, squirrel, beaver, muskrat, mice, upland game birds (including prairie chicken, spruce chicken and ptarmigan) and waterfowl.

Table 3.4-1
Birds and Animals Harvested in South Great Slave Region

Туре	Local Name
Birds	WaterfowlUpland Game Birds
Game Animals	 Buffalo Moose Woodland Caribou Barrenland Caribou Musk Ox Bear Whitetail Deer
Fur-Bearing Land Animals	 Marten Lynx Mink Wolf Colored Foxes Wolverine Squirrel Fisher Rabbit Coyote Porcupine
Fur-Bearing Aquatic Animals	MuskratBeaverOtter

3.4.2 Migratory Animals and Birds

Participants were asked to identify the animals and birds that migrate through or within the South Great Slave Region. See Table 3.4-2. Participants generally indicated that naming all of the migratory birds and animals in the region was an impossible task. However, several species were identified as being "new" to the region including whitetail deer, mule deer, cougar, arctic fox, marten (they are moving to the East Arm), pelicans and magpies.

Participants were also asked about animals and birds that migrate through the proposed project area. Specific animals and birds were identified including: woodland caribou, moose, wolf, marten, mink, coyote, fox, rabbits, ducks, cranes and chickens.

Table 3.4-2 Migrating Birds and Animals in South Great Slave Region by Type

Type	Local Name
Waterfowl	 Geese Swans Ducks Whooping Cranes Sandhill Cranes Loons Sandpipers Bitterns Seagulls Pelicans (new species to area)
Upland Game Birds	PtarmiganGrousePrairie ChickenSpruce Chicken
Other Birds	 Eagles Mosquito Falcons Peregrine Falcons Robins Snowbirds Magpies (new species to area)
Game Animals	 Moose Woodland Caribou Barrenland Caribou (east of Fort Resolution) Whitetail Deer (new species to area) Mule Deer (new species to area)
Fur-Bearing Land Animals	 Rabbits Marten (new species to area) Arctic Fox (new species to area) Cougar (new species to area)

3.4.3 Dens

Participants identified a number of animals that den in the South Great Slave Region (See Table 3.4-3). Participants were also asked if they had knowledge of den animals located in the project area.

Five of the 12 participants indicated that marten, lynx, fox, weasel and coyote have dens in the project area. Two participants said they were not aware of any dens in the project area. The other five participants indicated that they did not know of any specific animal dens in the project area, but that it was possible and/or likely that animals including squirrels and bear den there. These participants generally indicated that animals "aren't picky" and that the project area was likely habitat for animal dens.

Table 3.4-3
Identified Den Animals in South Great Slave Region

Local Name		
 Bear Lynx Wolf (many dens near Birch Creek) Wolverine Coyote Fox 	 Weasel Squirrel Mink (den in old beaver lodges) Fisher Skunk Groundhog 	
Marten	• Mice	

3.4.4 Beaver Dams

Beaver dam areas are prevalent throughout the South Great Slave Region. Participants identified specific dam areas along Paulette Creek and Twin Creek as well as in the water pit southwest of the project area. When asked if they knew of any beaver dams located specifically in the project area, nine of the participants said "no." The other three participants did not have specific knowledge of dams in the project area but indicated that if the project area contains any amount of water, beaver dams would likely be found in it.

3.4.5 Animal Harvesting Changes Over-Time

All 12 of the participants indicated that harvesting practices have changed during their lifetimes. The most frequently mentioned change was the fluctuation and cycle of animal populations over-time. Some participants noted increased populations for specific species and areas while others noted decreases. Participants also made several observations regarding changes in harvesting lifestyles and methods, as well as the economics of traditional harvesting. A summary of participant observations organized by theme is included in Table 3.4-4.

Table 3.4.-4
Animal Harvesting Changes Over-Time: Summary by Theme

Theme	Participant Observations
Lifestyle and Method	 The traps have changed. Trapping techniques are more humane now as compared to the historical past; the quick-set kill is more humane but makes it harder to catch the animal sometimes. Modern technology has made trapping better and easier.
Economics	 Fewer people harvest for fur, likely due to lower fur prices in recent years. During the last ~15 years, the trapping volume declined but seems to be increasing again as fur prices increase.
Animal Populations and Cycles	 Animal populations have diminished within the last 25-30 years; in particular, the woodland caribou, barrenland caribou and moose seem to have declined during the last 5 years. The Pine Point area was a prime area for marten and woodland caribou before the historic Pine Point Mine; the populations are slowly starting to come back. The marten, muskrat, rabbit, duck and geese populations cycle. Lynx and rabbit have seven year population cycles; the muskrat population cycles too. There were many muskrats a year ago; now there aren't as many. There were many marten and lynx three or four years ago; now there are not as many. Industrial activity, including the Pine Point Mine and Taltson Dam, influenced animal populations including beaver, muskrat and marten. It seems like all of the animal populations are depleting, especially mink and marten. The historic Pine Point Mine killed a lot of the beaver (they were flooded-out) in the creeks leading into Sulphur Bay. There are not as many ducks as compared to ~10 years ago. The ptarmigan and chicken populations seem to have moved. There are more porcupines now than in the historical past.

3.4.6 Project Effects on Wildlife

Participants were asked if they thought the proposed project would affect the area's wildlife. All 12 participants indicated that they thought the project's activities would drive the animals and birds away. Within this group eight participants identified noise as a primary effect. Four participants identified other potential effects including the 24/7 schedule, project development, increased traffic, road conditions, chemical use, loss of habitat, vibration, air quality, sediment and water quality.

3.5 Water

3.5.1 Project Area Water Quality

Participants were asked about the water quality in the project area. Three of the participants said that the water is or probably is drinkable if boiled. The other participants generally indicated that the water in the proposed project area is poor. The project area was described as being typical of muskeg in the area with sulfurous, undrinkable water.

3.5.2 Project Area Spills/Contamination

Participants were asked if they knew of any spills that may have contaminated the water at the proposed project site. None of the participants indicated knowledge of any spills.

3.5.3 Fish Harvesting

Fish are traditionally harvested throughout the South Great Slave Region. All of the interviewed participants indicated that they either historically or currently harvest fish in the region. A list of the identified fish is included in Table 3.5-1. Participants were also asked to identify the fish harvested in Big Buffalo River, Twin Creek and Polar Lake respectively.

Among the three water bodies, Big Buffalo River was identified as a primary harvesting location. In particular, it was noted as the number one place for inconnu harvesting in the late 1940's; specifically 1948.

When asked about Twin Creek, three of the 12 participants indicated that they did not use it as a harvesting area. The other nine participants identified a number of fish that were noted as being primarily located at that the mouth of Twin Creek.

Participants indicated that Polar Lake contains some jack fish and is stocked with rainbow trout. One participant noted that the lake historically contained pickerel and lake trout. Participants generally indicated that it was not used for traditional harvesting. A complete list of fish identified for the three water bodies is included in Table 3.5-2.

Table 3.5-1
Fish Harvested in South Great Slave Region

Local Name		
• Cisco		
• Burbot		
• Maria		
 Rocky Mountain Whitefish 		
Grayling		
• Tullibee		
• Chub		
• Mullet		

Table 3.5-2
Fish Identified in Regional Water Bodies by Local Name

Big Buffalo River	Twin Creek	Polar Lake
 Whitefish Inconnu Pickerel/Walleye Northern Pike/Jack Fish Dog-Face Salmon Suckers Maria Tullibee Cisco Lake Trout 	 Whitefish Inconnu Pickerel/Walleye Northern Pike/Jack Fish Dog-Face Salmon Suckers Maria Tullibee Cisco Lake Trout 	 Rainbow Trout (stocked) Jack Fish Pickerel (historically present) Lake Trout (historically present)

3.5.4 Fish Harvesting Changes Over-Time

Participants were asked if fish-harvesting has changed during their lifetimes. Nine of the 12 participants cited specific changes. Like animal harvesting, the most frequently mentioned change was the area's fish populations over-time. Participants generally indicated that current fish populations are lower than in the historical past. One participant identified several factors that have contributed to the fish populations including commercial fishing, mine activity, available food and global warming. Another participant indicated that fish harvesting has changed during his lifetime but that it was hard to identify the specific changes without studies being conducted. A summary of participant observations by theme is listed in Table 3.5-3.

Table 3.5-3
Fish Harvesting Changes Over-Time: Summary by Theme

Theme Participant Observations	
Lifestyle and Method	 Modern technology has made fishing easier as compared to ~35 years ago.
Fish Populations and Cycles	 The lake trout seem to have moved further out into the lake as compared to the historical past. The fish populations in all areas were more plentiful ~40 years
	 Four hundred fish could be caught in two nets in Fort Resolution in 1945; now that many fish cannot be caught in 10 nets.
	• Commercial fishing practices have depleted the populations with too many nets, especially during the summers. The cullage is very high and fish are wasted.
	• The fish populations are starting to rebound since the East Arm Fishery Zone has been closed.
	• Since the Pine Point Mine shut-down, the trout are returning to Resolution Bay.

3.5.5 Project Effects on Fish Harvesting

Participants were asked if they thought the proposed project would affect traditional fishing activities. Seven of the participants said they did not think the project would impact fishing. Within this group, participants indicated that the absence of fish in the project area and the inland location of the proposed project would preclude impacts on traditional fishing activities. Another participant said that he did not think the project would impact fish harvesting because fishing was not affected during the historic Pine Point Mine operations.

Three participants said they "did not know" if the project would affect fish harvesting and two participants indicated that the project "may" affect fish harvesting. Participants in these two groups generally indicated that fishing effects would depend on how effluent, mine water and/or wastewater and dust are handled during the project. Participants' overriding concern was potential water contamination of the area's waterways.

3.6 Significant Sites

Significant sites in the proposed project area were discussed. Participants were asked if they were aware of any people who historically lived in the proposed project area. Eight of the participants responded "no." The other participants generally indicated that while

they did not specifically know of anyone living in the project area, that it was possible that someone did at one time because "people go everywhere."

Participants were also asked if they were aware of any areas of cultural significance in the proposed project area. Nine of the 12 participants responded "no," two participants indicated that they "did not know," and one participant responded "yes." No specific cultural sites were identified in the proposed project area. However, three of the twelve participants clearly stated that traditional harvesting grounds are considered to be cultural sites within the Metis community and culture. Moreover, these individuals indicated that as part of the larger area, the proposed project area is recognized by the Metis as a cultural site used for traditional harvesting activities.

3.7 Traditional Use

All participants indicated that they depend on the South Great Slave Region for their income. Each person interviewed said that they historically or currently hunt and trap as a source of income. In addition to traditional income, employment in industry was cited as a source of income, including two participants who said they had worked at the historic Pine Point Mine.

As critical stakeholders in the South Great Slave Region, participants were asked to share their opinions and thoughts about Tamerlane's proposed project. Based on their knowledge of the proposed project at the time of the interviews, participants were asked a series of questions that explored individual impacts, community impacts, employment impacts and social effects.

3.7.1 Individual Impacts

Based on their knowledge of the proposed project at the time of the interviews, participants were asked how the project would personally impact their life. Each participant had at least one response. The answers generally aligned with one of six themes. In order of frequency, the themes included:

- Access/Harvesting
- Environment
- Traffic/Road Condition
- Population
- Employment
- No Impacts

Ten participants indicated that the project would restrict theirs or their children's ability to access and/or harvest in the general project area. Four participants indicated that the noise and activity associated with the project may drive away wildlife in the immediate area.

Two participants indicated that increased traffic associated with the project would damage the roads and/or pose a hazard. Within this group one participant suggested that Tamerlane use the old railway instead of the highway.

Two participants said that population increases resulting from the project may increase the cost of living and limit their access to Hay River resources including schools, hospitals and city services. One participant expressed interest in potential job opportunities and wanted to pursue employment associated with the project. One other participant said that the project would not personally affect him because he no longer hunts or traps.

3.7.2 Community Impacts

Community impacts were also discussed. Participants were asked how they thought the project would impact their people and community based on their present knowledge of the proposed project. Participants' responses regarding community impacts generally covered the same subject matter as the individual impacts. All of the participants made at least one comment that generally aligned with five themes. In order of frequency, the themes included:

- Access/Harvesting
- Population
- Traffic/Road Condition
- Environment
- Employment

Nine of the participants indicated that the project would restrict access to harvesting activities in the general project area and require harvesters to travel further to hunt and trap. Within this group, one individual noted that hunters who use the highway year-round would be particularly affected. Four participants noted that population increases associated with the project would increase the cost of living in Hay River and place a strain on the community's schools, hospitals and city services.

Four participants noted that increased traffic associated with the project may damage the roads and pose a hazard to people coming to Hay River from Fort Resolution and Fort Smith to shop. Within this group, one individual expressed concern that any road damage resulting from project-related activities would cost area tax payers money.

Two participants indicated that the wildlife in the immediate area would be driven away due to noise generated by the proposed project's activity and traffic. One other participant said that the community would likely be interested in project-related employment or some benefit if the project is financially viable.

3.7.3 Employment Impacts

When asked, eight of the 12 participants indicated that they thought job opportunities would result from the project. Within this group, individuals generally indicated that project-related employment opportunities are desired and would be beneficial to the Hay River community.

Three other participants indicated that "it depends" or that they "did not know" if employment opportunities would result from the project. Within this group, participants noted that employment opportunities would depend on the types of job and/or contract opportunities offered and Tamerlane's willingness to hire local people.

3.7.4 Social Effects

Participants were asked if they foresaw social effects resulting from the proposed project. Eleven of the 12 participants had at least one response and one individual indicated that he "did not know." Participants' answers generally aligned with one of six themes. In order of frequency, the themes included:

- Drugs and Alcohol
- Population
- Employment/Benefits
- No Effects
- Traffic/Road Condition

Six participants noted that more money and outside influence may result in more drugs, alcohol and/or crime in the community. Within this group one participant noted that these effects already exist in the community as a result of the historic Pine Point Mine.

Four participants cited population-related effects. These participants indicated that project-related population growth would increase the cost of living and limit the community's access to Hay River resources. Within this group, one individual noted that an increase in population may result in more doctors coming to the community. Another participant said that any project-related social effects would depend on the people "brought in" to do the work. This individual noted that in-coming people's level of respect for the area would be a critical determining factor.

Three participants cited positive financial social effects. Participants in this group indicated that they thought the project would generate jobs, economic development and increase revenues for existing Hay River businesses.

Two participants generally indicated that they did not foresee any social effects resulting from the project. Within this group, participants noted that adverse effects such as drugs and alcohol are already present in the community. One other individual said that increased traffic associated with the project would be bad for the community.

4.0 CLOSURE

The success of this Traditional Knowledge study is attributed entirely to the Hay River community. Tamerlane is grateful for the opportunity to incorporate the study's results into its planning and development throughout the Environmental Assessment Process.

The participants are again thanked for their thoughts, concerns and contributions to the study. In particular, the writer thanks the Hay River Metis Community Representative, Paul Harrington (HRMC). Mr. Harrington played a critical role during the interviews. His generous hospitality, efforts and cooperation created the positive working environment for the study.

The writer of this report believes that all of the Traditional Knowledge comments associated with the study's qualitative interviews have been represented appropriately in the manner in which they were discussed and intended. Should you have any questions or concerns, please contact the undersigned.

Respectfully,

Sara Swisher, B.S. & M.S. Communication

Jana Birsher

Consulting Research Analyst for Tamerlane Ventures

(360) 332-4653



Traditional Knowledge Survey Proposal

Hay River, NWT

Prepared by:

Sara S. Swisher for Tamerlane Ventures Inc.

October, 2006



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APPENDICES

Appendix A Qualitative Interview Questionnaire Appendix B Additional Notes Sheets

1.0 Introduction

Tamerlane Ventures Inc. is a publicly traded mining company engaged in the exploration and development of mineral properties in North America and internationally. The company proposes to construct and operate a Pb/Zn pilot plant. The proposed project is referred to as the Pine Point Pilot Project (PPPP). The PPPP will confirm the potential to conduct full-scale underground mining of the remaining 34 known deposits. The proposed project will produce a bulk sample from the R190 deposit of approximately 1,000,000 metric tonnes of lead-zinc ore over the course of 12-15 months.

The Pine Point Pilot Project (PPPP) property is located 48 km (30 miles) east of Hay River and 140 km (87 miles) west of Fort Resolution. The property encompasses an area of approximately 6 hectares 14.8 acres. The PPPP footprint area will encompass approximately 2.5 hectares (6.2 acres). The property's R190 deposit is ~0.5 km north of Provincial Highway 5. The highway links the towns of Hay River and Fort Resolution.

The town of Hay River is a mid-sized community in the South Great Slave Lake region. In 2005, the NWT Bureau of Statistics recorded 3,825 individuals residing in the community. Twenty-nine percent of the population was aged 45 years or older.

The purpose of this study is to obtain traditional knowledge from aboriginal Hay River residents. Individuals aged 45 years or older in the community will be the primary focus of the study. The information will be used for continued planning and will also be incorporated into Tamerlane's Developer's Assessment Report (DAR) as required by the Mackenzie Valley Environmental Impact Review Board's (MVEIRB) Environmental Assessment Process.

Tamerlane Ventures Inc. recognizes the importance of resource development in the Northwest Territories and the need for balance between those activities and the aboriginal peoples' traditional lifestyles. The Company acknowledges these responsibilities and is committed to maintaining the area's natural qualities and providing economic opportunities to the area's peoples.

2.0 Methodology

The study will be conducted by consulting research analyst Sara Swisher, B.S. & M.S. Communication, for Tamerlane Ventures Inc. The Traditional Knowledge study will be conducted in general conformance with the traditional knowledge guidelines issued by the Mackenzie Valley Environmental Impact Review Board (MVEIRB).

2.1 Method

Qualitative interviews will be utilized to collect the traditional knowledge in this study. A brief description of Tamerlane's proposed project will be given at the beginning of each interview and will be followed by a series of qualitative questions. A copy of the interview questionnaire is included in Appendix A. Each interview will require

approximately 1 hour 45 minutes, and will be conducted by the research analyst with the assistance of a Community Representative. The Community Representative's essential functions will be to identify interview candidates, coordinate meeting times, translate where necessary and review interview notes with the research analyst at the end of each day. The Community Representative will be recommended by the Hay River Metis Council and compensated by Tamerlane. Interviews will be held in a mutually agreed upon location; preferably a comfortable and private location rented by Tamerlane from the Hay River Metis Council. Hand-written notes will be taken throughout each interview.

2.2 Population

The sample population for the qualitative interviews will be identified by the Hay River Metis Community Representative and will include 8-12 Metis individuals. Elders and/or individuals with extensive land-use experience and knowledge of the South Great Slave region are the preferred sample population for this study. Study participants should be representative of the entire community and come from different families with different experiences in order to avoid biased results. Tamerlane will provide \$100.00 in compensation to each interview participant and \$250.00 per day to the community representative.

2.3 Measures

The questions included in the questionnaire are loosely structured to encourage conversation and designed to gather participants' 1) knowledge about the environment, 2) knowledge about the use and management of the environment, and 3) values about the environment. Six specific topics of inquiry will be explored.

- Terrain
- Climate
- Vegetation (berry picking areas)
- Wildlife (hunting and trapping)
- Water (fishing)
- Significant Sites (culturally important sites)
- Traditional Use

2.4 Reporting

Once the data is collected, the research analyst will develop a final report for the Metis community. The data will be compiled and reported using standard qualitative research practices. Participant names will be noted in the "participant" section of the final report. However, all comments and results will be reported confidentially. To this end, Tamerlane will destroy its copy of the survey instruments upon completion of the study. The Metis office will retain a copy of the participants' survey instruments for archival purposes. The original final report will be sent to the Metis. Tamerlane will retain a copy of the report for incorporation and use throughout the Environmental Assessment process.

Tamerlane Ventures Inc. Traditional Knowledge Collection Process Qualitative Interview Survey

How long have you lived in the South Great Slave region? How long has your family lived in the South Great Slave region? What type of activities do you do in the South Great Slave region (e.g. camp, picn. hunt, trap etc.)? Do you or your family frequent the proposed project site (show map)? Yes No If so, how long has your family frequented the site? What type of activities do you do at the project site (e.g. camp, picnic, hunt, trap e	c,
What type of activities do you do in the South Great Slave region (e.g. camp, picm hunt, trap etc.)? Do you or your family frequent the proposed project site (show map)? Yes No If so, how long has your family frequented the site?	c,
hunt, trap etc.)? Do you or your family frequent the proposed project site (show map)? Yes No If so, how long has your family frequented the site?	c,
Yes No If so, how long has your family frequented the site?	
Yes No If so, how long has your family frequented the site?	
Yes No If so, how long has your family frequented the site?	
If so, how long has your family frequented the site?	
What type of activities do you do at the project site (e.g. camp, picnic, hunt, trap e	
	c.)?
Do you harvest in the South Great Slave region? Yes No	
If so, what do you harvest (e.g. animals, plants, birds, fish)?	

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Are you aware of any past fires in the South Great Slave region? YesNo
If so, where and when were they?
Are you aware of any past earthquakes in the South Great Slave region?
Yes No
If so, where and when were they? What was the magnitude?
Have you walked the proposed project site in recent years? Yes No
If so, when?
Please describe your knowledge of any land disturbance in the proposed project area.
Do you know of any natural hazards for work crews and equipment near the proposed project site (e.g. sink holes, dangerous terrain, etc.)?
Yes No
If so, what and where are they?
Do you snow mobile? Yes No
If so, where do you go and for what reason (e.g. hunting or recreation)?
11 so, where do you go and for what reason (e.g. numing of recreation):

Climate

Q1:	Are you aware of any flooding in the South Great Slave region?
	Yes No
	If so, where and when did the flooding occur?
Q2:	When does the ground freeze in the South Great Slave region?
Q2.	
	In your experience have you seen this change over time?
Q3:	When does the ground thaw in the South Great Slave region?
	In your experience have you seen this change over time?
Q4:	Does the South Great Slave region experience severe wind weather (e.g. wind sheers, etc.)?
	YesNo
	If so, at what time of year and with what frequency does it typically occur?
Veget	tation
Q1:	In your experience, what types of trees are present in the proposed project site?
Q2:	In your experience, what types of plants and berries are present in the proposed project site?

Q3:	Are you aware of any plants or berries that are harmful to people or animals in the South Great Slave region?		
	Yes No		
	If so, what are they? If you are willing, please indicate where they are located on the m	ap	
Q4:	Do you know of any medicinal plants in the South Great Slave region?		
	YesNo		
	Are any of the plants located in the proposed project area?		
Q5:	Do you know if any of the medicinal plants are still used? Yes No Please describe.		
Wildl	fe		
Q1:	What animals are harvested and/or trapped in the South Great Slave region?		
	In what season(s) are these animals harvested?		
	Do you know if any of these animals are harvested and/or trapped in the proposed proje area?	ct	
	YesNo		
	If so, please describe.		
Q2:	In your experience, has animal harvesting changed? YesNo		
	If so, please describe.		

Q3:	What animals and/or birds do you know of that migrate through the South Great Slave region?		
	Do you know if any of these animals migrate through the proposed project area?		
	YesNo		
	If so, please describe.		
Q4:	Are you aware of any animal dens in the South Great Slave region?		
	YesNo		
	What type of dens are they?		
	Without being specific, can you tell me if they are they located within the proposed project area?		
	YesNo		
Q5:	Are there known Beaver dam areas in the South Great Slave region?		
	Are you aware of any in the proposed project area?		
Q6:	In your opinion, will this project affect wildlife in the area? YesNo		
	Why or why not?		
Water			
Q1:	Please describe the water quality in the proposed project area.		

Q2:	Do you know of any spills that my have contaminated the water at the proposed project site?
	Yes No
	If so, please describe where they occurred.
Q3:	What types of fish are harvested in the South Great Slave region?
	Are any of these fish harvested from the Big Buffalo River, Twin Creek or Polar Lake? YesNo
	If so, please describe.
Q4:	In your experience, has fish harvesting changed? YesNo If so, please describe
Q5:	In your opinion, will this project affect fishing in the area? YesNo Why or why not?
Signi	ficant Sites
Q1:	Are you aware of any people who historically lived in the proposed project area? Yes No
	If so, please describe.

Yes No If so, how do you think they will be impacted by the project?
If so, how do you think they will be impacted by the project?
is so, no was you united with so impacted by the project.
onal Use
Do you depend on the South Great Slave region for your income? Yes No
If so, please describe.
How will this project impact your life?
How do you think this project will impact your people?
Do you see job opportunities as a result of this project? Yes No If so, please describe
What social affects do you see resulting from this project?
Do you have a favorite story about the South Great Slave region? Yes No
If so, please tell me.

Descriptive Participant Information

Q1:	Current Date
Q2:	Age
Q3:	Gender
Q4:	Place of Birth
O5:	Name

INTRODUCTION / RAPPORT BUILDING

Question:	Additional Notes:

TERRAIN

Question:	Additional Notes:

CLIMATE

Question:	Additional Notes:

VEGETATION

Question:	Additional Notes:

WILDLIFE

Question:	Additional Notes:
_	

WATER

Question:	Additional Notes:

SIGNIFICANT SITES

Question:	Additional Notes:
_	

TRADITIONAL USE

Question:	Additional Notes:

SCIENTIFIC RESEARCH LICENCE

Licence # 14080N File # 12 410 685

ISSUED BY: Aurora Research Institute - Aurora College

Inuvik, Northwest Territories

ISSUED TO: Ms. Sara S Swisher

441 Peace Portal Drive Blaine, WA 98230 Tel: (360) 332-4653

ON: 12-Oct-06

TEAM MEMBERS: Sara S. Swisher; Danny Beck

AFFILIATION: Tamarlane Ventures Inc.

FUNDING: Tamarlane Ventures Inc.

TITLE: Hay River Metis Traditional Knowledge Survey for the Pine Point Pilot Project.

OBJECTIVES OF RESEARCH:

The purpose of this study is to obtain traditional knowledge from Hay River Metis aboriginal residents focussing on individuals aged 45 years or older. The information will be used for planning, and incorporated into the Developer's assessment Report (DAR) as required by the Mackenzie Valley Environmental Impact Review Board's (MVEIRB) Environmental Assessment Process.

DATA COLLECTION IN THE NWT: DATE(S): October 12 to 31, 2006

LOCATION: Hay River

Licence# 14080 expires on December 31, 2006

Issued at the Town of Inuvik on Thursday, October 12, 2006

Andrew Applejohn

Director, Aurora Research Institute





Aurora Research Institute - Aurora College

P.O. Box 1450 Inuvik NT X0E 0T0
Phone 867-777-4029 Fax 867-777-4264 Email: licence@nwtresearch.com

12410685

Thursday, October 12, 2006

NOTIFICATION OF RESEARCH

Scientific Research Licence No. 14080

I would like to inform you that Scientific Research Licence No. 14080 has been issued to:

Ms. Sara S Swisher Independent Consultant for Tamerlane Ventures Inc. 441 Peace Portal Drive Blaine, WA 98230 United States

98230 United States Phone: 360-332-4653

Email: sswisher@centurymining.com

to conduct the following study: "Hay River Metis Traditional Knowledge Survey for the Pine Point Pilot Project".

Please contact the researcher if you would like more information.

SUMMARY OF RESEARCH:

The purpose of this study is to obtain traditional knowledge from Hay River Metis aboriginal residents focussing on individuals aged 45 years or older. The information will be used for planning, and incorporated into the Developer's assessment Report (DAR) as required by the Mackenzie Valley Environmental Impact Review Board's (MVEIRB) Environmental Assessment Process.

Interviews will be utilized to collect the traditional knowledge and will include 8-12 Metis individuals. Elders and individuals with extensive knowledge of the South Great Slave region are preferred for this study. A brief description of the project will be given, followed by a series of questions. Each interview (approx. 1 hr. 45 min.) will be conducted by the research analyst with the assistance of a Community Representative. The Community Representative's functions will be to identify interview candidates, coordinate times, translate where necessary and review interview notes. The Community Representative will be recommended by the Hay River Metis Council. Interviews will be held in a mutually agreed upon location rented from the Metis.

Questions included in the survey will explore participants knowledge of: terrain, climate, vegetation (berry picking areas), wildlife (hunting and trapping), water (fishing), significant sites (culturally important sites) and traditional use. Participants representative of the entire community, from different families with different experiences, will be chosen in order to avoid biased results. Compensation of \$100.00 will be provided to each interview participant. Danny Beck will be employed as a Community Representative for the study, and will be paid \$250.00 per day for his expertise.

Information obtained from the interviews will be summarized into a final report for the Metis community and will be the property of the Metis community for future use and community research.

12410685

Thursday, October 12, 2006

NOTIFICATION OF RESEARCH

Scientific Research Licence No. 14080

The study will be conducted at Hay River

Sincerely,

Valerie Tomlenson for Karen Heikkila

Manager, Scientific Services

DISTRIBUTION:

President, Hay River Métis Council, 102-31 Capital Drive, Hay River NT X0E 1G2

Chief, West Point First Nation, 1-47031 Mackenzie Highway, Hay River NT X0E 0R9

Mayor, Town of Hay River, #73 Woodland Drive, Hay River NT X0E 1G1

Deh Cho First Nations, P.O. Box 89, Fort Simpson NT X0E 0N0

Lands and Resources, Hay River Dene Band/Katlodeeche First Nation, P.O. Box 3060, Hay River Reserve NT

X0E 1G4

IMA Coordinator, NWT Metis Nation, P.O. Box 720, Fort Smith NT X0E 0P0

NORTHWEST TERRITORY METIS NATION



October 11, 2006

BY FAX: (867) 777-4264

Karen Heikkila Manager, Scientific Services Aurora Research Institute P.O. Box 1450 Inuvik, NT X0E 0T0

Dear Karen:

RE: TAMERLANE VENTURES INC. RESEARCH APPLICATION
TRADITIONAL KNOWLEDGE STUDIES IN HAY RIVER & FORT RESOLUTION

The Northwest Territory Metis Nation have no opposition to granting research licenses to the above noted for the Traditional Knowledge Studies in the communities of Fort Resolution and Hay River for the period noted in their application.

We have reviewed the research procedures and find them to be ethically acceptable.

Should you have any questions, please do not hesitate to contact me at (867) 872-2770.

Sincerely,

Cec Heron IMA Coordinator

INA Cooldinator

Cc: IMA Steering Committee

BOX 720 • FORT SMITH, NT CANADA • X0E 0F0 PHONE: (867) 872-2770 • FAX: (867) 872-2772



Interview Date:		
Interviewee Name:		
Language: English Chipewyan		
Affiliation: Hay River Metis Council		
Research Analyst / Interviewer: Sara Swisher		
Community Representative: Danny Beck		
\$100.00 Honorarium Paid at Conclusion of Interview		
Participant Prior Informed Consent		
This study is being conducted to assist with Tamerlane Ventures Inc.'s Environmental Assessment for the proposed Pine Point Pilot Project.		
The knowledge and information obtained from this qualitative interview will be incorporated into a final report for the Metis community. The data will be compiled and reported using standard qualitative research practices. Participant names will be noted in the "participant" section of the final report. However, all comments and results will be reported confidentially. To this end, Tamerlane will destroy its copy of the survey documents upon completion of the study. The Metis will retain a copy of the participants' survey instruments for archival purposes. The original final report will be sent to the Metis. Tamerlane will retain a copy of the report for incorporation and use throughout the Environmental Assessment process.		
Participation in the study is voluntary. Tamerlane will provide \$100.00 in compensation to each interview participant.		
I voluntarily agree to participate in this traditional knowledge study based on the methodology described above. I understand that the traditional knowledge and information disclosed during this qualitative interview will be used by Tamerlane throughout the Environmental Assessment process for the Pine Point Pilot Project.		
Signature:		
Date:		



