Project Proposal

Star-Orion Diamond Project Saskatchewan

Prepared by: Shore Gold Inc.
with assistance from AMEC Earth and Environmental

For Submission to the Saskatchewan Ministry of Environment

Shore Gold Inc.

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Canadian Environmental Assessment Agency

3 November 2008

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1.0 Introduction

1.1 Potential Development Summary

The proposed Star-Orion South Diamond Project (“the Project”) (consisting of the Star Diamond Project and the Orion South Project) includes the excavation of an open pit at the Star Kimberlite and potentially, a second open pit at the Orion South Kimberlite, construction of processing facilities and construction of associated infrastructure to commercially extract diamonds from these kimberlites. The potential development (the “Site”) is located at approximately NAD 27 UTM coordinates Zone 13/E 515000 / N5897000 (Figure 1). The Project footprint is estimated to be between 3,000 and 4,000 hectares (ha) (or 2.3 to 3.0% of the Fort à la Corne Provincial Forest), depending on the inclusion of Orion South.

A National Instrument (“NI”) 43-101 compliant resource estimate for the Star Kimberlite was published on June 9, 2008. The Orion South Kimberlite is currently undergoing advanced exploration, with the goal of establishing a NI 43-101 compliant resource estimate during the anticipated Environmental Impact Assessment (EIA) schedule. The results contained within the Orion South resource estimate will determine if the potential development of the Orion South Kimberlite is included in the final EIA.

Feasibility studies are on-going for the Star Kimberlite, and, depending on results from the Orion South exploration program, will be expanded to include the Orion South Kimberlite. The feasibility studies will be completed prior to submission of the final EIA and prior to making a production decision.

1.2 Owner and Key Personnel

This proposal pertains to activities related to the potential development of the Star Kimberlite and Orion South Kimberlite.

The key participants in the project area are Shore Gold Inc. (“Shore Gold”), a Canadian based corporation engaged in the acquisition, exploration and potential development of mineral properties, and the participants of the Fort à la Corne (FalC) Joint Venture, a joint venture between Kensington Resources (a wholly owned subsidiary of Shore Gold Inc.) with 60 percent and Newmont Mining Corporation of Canada Limited (“Newmont”; a subsidiary of Newmont Mining Corporation) with 40 percent. Newmont Mining Corporation is an international gold mining company with operations and exploration projects in North and South America, Africa, Australia and Indonesia.

The project area encompasses a series of mineral dispositions held by Shore Gold or the FalC Joint Venture. Shore Gold is the owner-operator of the Star Diamond Project with 100% ownership of the majority of the Star Kimberlite. The western portion of the Star Kimberlite (Star West) and the Orion South Kimberlite are controlled by the FalC Joint Venture.

The FalC Joint Venture also holds mineral dispositions over other kimberlites in the FalC area. The other kimberlites in the FalC area are undergoing advanced exploration to confirm the value of the resources in those kimberlites.

In this project proposal, all references to Shore Gold include it as operator of both the Star and Orion South kimberlites, on its own behalf (Star) and on behalf of the FalC Joint Venture (Star West and Orion South).

The Project Manager is Mr. Bill van Breugel and the Manager of Environment is Mr. Ethan Richardson. All correspondence related to this project description should be addressed to Mr. Richardson.

1.3 Project Schedule

Based on guidance received from the Saskatchewan Ministry of Environment (MoE), the Environmental Impact Assessment (EIA) and corresponding Statement (EIS) are expected to be complete by the 1srt quarter of 2010 and a production decision will follow. If the production decision is positive, construction and other required permit applications will be submitted upon receipt of approval of EIS. Construction is expected to take approximately two to three years. The length of operation would depend upon final plant size and the feasibility of Orion South. A detailed proposed project schedule, including mining sequence (i.e., if Orion South is mined first, second or concurrently with Star), will be included in the EIA once a decision is made concerning Orion South. The Project would utilize progressive reclamation during mine operations to assist in reducing final closure and reclamation efforts, which are currently forecast to take at least five years, including post closure monitoring.

1.4 Benefits of the Potential Development

If developed, the Project would positively increase Canada's importance in world diamond markets. The potential development would bring much needed economic development and diversification to the area, result in employment and development of job skills that would outlast the mine, provide tax and royalty revenues to government, and provide business opportunities for local businesses.

Successful approval, permitting, construction, and operation of the Project would encourage further exploration and development of diamond business ventures in Saskatchewan, and investment in other diamond mining projects in Saskatchewan.

2.0 Background

2.1 Company

Shore Gold Inc.

Shore Gold is a Canadian based, publicly-traded corporation engaged in the acquisition, exploration, and potential development of mineral properties. Shore Gold has been active in Saskatchewan since 1995. The Company's mineral property portfolio consists of diamond properties, the most advanced being the Star Kimberlite deposit. Its corporate head office address is:

Shore Gold Inc.
300, 224-4th Ave. S.
Saskatoon, Saskatchewan
Canada, S7K 5M5

Directors of the corporation are:

James R. Rothwell – Chair
Kenneth E. MacNeill
Harvey J. Bay
Arnie E. Hillier
Robert A. McCallum
A. Neil McMillan
William E. Stanley
Brian H. Menell

Officers of Shore Gold are:

Kenneth E. MacNeill	- President & CEO
Harvey J. Bay	- Chief Financial Officer and Chief Operating Officer
George H. Read	- Sr. Vice President of Exploration and Development
Pieter I. Du Plessis	- Vice President Exploration
Duane D. DeRosier	- Vice President Administration
Eric H. Cline	- Vice President Corporate Affairs
Terri L. Uhrich	-Corporate Secretary

Newmont Mining Corporation of Canada Limited

Newmont Mining Corporation of Canada Limited ("Newmont") is a subsidiary of Newmont Mining Corporation, headquartered in Denver, Colorado. Founded in 1921 and publicly traded since 1925, Newmont Mining Corporation is one of the largest gold companies in the world and employs approximately 15,000 people, the majority of whom work at Newmont Mining Corporation's core operations in the United States, Australia, Peru, Indonesia, and Ghana. Newmont Mining Corporation is the only gold company listed in the S&P 500 index and in the Dow Jones Sustainability Index-

World. Newmont Mining Corporation's industry leading performance is reflected through high standards in environmental management, health and safety for its employees, and creating value and opportunity for host communities, employees and shareholders.

2.1.1 Exploration and Determination of the Resource Estimate

Shore Gold has been exploring the Star Kimberlite since 1996 with the intent of proving the resource and determining its potential to mine. The primary activities that have been undertaken to determine the resource are:

- core drilling;
- large diameter drilling (LDD); and
- bulk sampling from underground activities, such as shaft sinking and drifting.

Core drilling was conducted on an approximately 100 metres (m)[1] grid over the Star Kimberlite to define the geology and determine kimberlite thickness and tonnage. Where the results of the core drilling justified the collection of additional information by further sampling, LDD was conducted. The LDD obtained 'mini-bulk' samples of kimberlite and recovered a sufficient sample volume to estimate diamond grade and quality at depth across the kimberlite body.

The preparation of a NI 43-101 compliant resource estimate and the estimation of diamond prices require the collection and assessment of a large amount of diamonds. To facilitate this large sampling requirement, an underground bulk sampling program consisting of sinking a 4.5 m diameter shaft (the "Star shaft") into the kimberlite and excavating approximately 75,000 tonnes of kimberlite from the vertical shaft and underground drifts was started in 2003. This tonnage was required to recover sufficient diamonds to determine a statistically valid estimate of diamond grade, quality, and price. The shaft, with lateral development, also allowed Shore Gold to gain an accurate 3-D impression of the variability and type of kimberlite intersected over a wide area. Sampling from the Star shaft was completed in April 2007.

As a key component of exploration, Shore Gold constructed an exploration dense media separation (DMS) bulk sample plant to recover diamonds from the kimberlite collected from the LDDs and the underground bulk samples. The fines management area (FMA), located in close vicinity to the DMS plant, contains fine processed kimberlite (FPK). The DMS and FMA have been operating since 2003, and have processed all of the kimberlite extracted to date.

[1] Boreholes spaced on a grid 100 metres apart in each direction.

The exploration DMS plant is a scaled-down version of the proposed production plant. Kimberlite is crushed, washed, sorted by size and then by density to separate diamonds from the rock. Inputs are kimberlite, water, and ferrosilicon.

The DMS plant produces two by-products: FPK, and low density, coarse processed kimberlite (CPK). The FPK (mostly clay and silt) is deposited in the FMA while the CPK is stored to allow access for future assessment and additional sampling if required. With the exception of ferrosilicon, all materials released by the DMS plant occur naturally in the kimberlite or process water.

All of the exploration activities have been undertaken according to the terms and conditions of the following types of permits:

- surface exploration permits;
- forest product permits;
- temporary work camp permits;
- aquatic habitat protection permits; and
- approval to operate a pollutant control facility (for the DMS, the Star shaft and the Orion South shaft).

All of the exploration done to date has provided valuable information about the potential effects of full scale development on the environment. For example, ground and surface water monitoring results, as discussed in Section 4.2.3, provide actual data for use in impact predictions.

The NI 43-101 compliant mineral resource estimate for the Star Kimberlite is the basis for planning described herein.

Exploration on the Orion South Kimberlite follows the same methodology as described above, but is not as far advanced.

2.1.2 Corporate Approach

Shore Gold is committed to developing, and, in the event of a positive production decision, mining the Star Kimberlite, and potentially the Orion South Kimberlite, in an environmentally responsible manner; safety and environmental protection are of paramount importance to the Company in all its operations. Shore Gold has drafted the following environmental policy statement to guide all its operations:

> *"Shore recognizes and respects the inherent value of our environment, and is committed to reducing our effects on the environment through strategic planning, implementation of best management practices and innovation, while striving to continually improve the quality of our environmental practices."*

In this proposal, and throughout the early stages of the EIA, several options will be presented and discussed. Shore Gold is committed to meaningful engagement with provincial and federal regulators, the Aboriginal community, and other surrounding communities. Shore Gold intends to learn from this engagement and, in conjunction with analyses performed as part of the EIA and feasibility studies, determine preferred options for final analysis in the EIA.

A conceptual safety, health and environmental management system (SHEMS) is in development. The framework for this is based on Shore Gold's existing safety, health, and environmental procedures for on-going exploration. The SHEMS would provide the umbrella structure for environmental protection plans which would include, but are not necessarily limited to, the following:

- health and safety plan;
- waste management plan;
- water management plan;
- hazardous and industrial waste management plan;
- spill and emergency response plan;
- site emergency response plan;
- explosives management plan;
- closure and reclamation plan; and
- monitoring plan.

Parallel to development of a SHEMS, Shore Gold will work with First Nations, Métis Nation members and other local communities to build upon existing relationships to develop effective outreach programs whereby concerns can be vetted and resolved and those directly affected kept informed of key developments and results of monitoring programs.

2.2 Context

2.2.1 Diamond Mining in Canada

Diamonds are most commonly found in volcanic rocks called kimberlite. The FalC area in Saskatchewan hosts one of the most extensive kimberlite fields in the world.

Currently there are four diamond producing mines in Canada: Ekati, Diavik and Snap Lake, all located in the Northwest Territories, and the Victor Mine in Northern Ontario. The Jericho Mine in Nunavut ceased operations in early 2008. One other project, Gahcho Kué in the Northwest Territories, has entered the regulatory approval process. Canada's diamond industry has now become an industry worth more than $2 billion per year with indicators pointing to potential future growth. Canadian diamond production was approximately 17.0 million carats in 2007 and 13.2 million carats in 2006.

The technology and processes to remove diamonds from kimberlite being proposed for the Project are the same as those used in all Canadian diamond mines. Table 1 summarizes key project components for existing, proposed, and closed diamond mines.

Table 1: Canadian Diamond Projects

Mine	Plant Type	Plant Capacity (tonnes per day)	Mine Type	Projected Life of Mine (Years)	Fine Processed Kimberlite (FPK) Management	Water Management
Ekati	DMS	13,000	Open Pit / Underground	25+	Unlined facility on bedrock followed by a polishing pond prior to discharge	All contact water to a PKCF[a]; diluted discharge to environment
Diavik	DMS	3,000	Open Pit / Underground	25+	Unlined facility on bedrock	All contact water to a PKCF; filtered for suspended solids and phosphorus and discharged to environment
Jericho[b]	DMS	2,000	Open Pit / Underground	N/A	Unlined facility on bedrock, followed by a polishing pond prior to discharge	All contact water to a PKCF; diluted and discharged to environment
Snap Lake	DMS	6,000	Underground	20	Paste FPK to on land storage for ultimate disposal underground	All contact water to treatment pond; filtered for suspended solids, discharged to environment
Victor	DMS	7,000	Open Pit	12	FPK discharged to an unlined facility on bedrock; followed by a polishing pond prior to discharge	Discharge of pre-mining groundwater directly to the environment; during mining all contact water will flow to a settling pond prior to discharge

Notes: [a] PKCF- Processed Kimberlite Containment Facility. [b] Ceased production in early 2008.

2.2.2 Mining Industry in Saskatchewan

Mining is Saskatchewan's third largest industry in terms of value of sales (after oil & gas and agriculture). The total value of mineral sales in 2007 was $4.6 billion (Government of Saskatchewan, 2008); potash accounts for approximately three quarters of production value. Saskatchewan has a wealth of untapped mineral resources including diamonds, platinum and palladium, rare earth elements, copper, zinc, nickel, sodium and potassium sulphates and mineralized brines. Saskatchewan's mining industry leaves a very small footprint utilizing approximately 0.1% of available land in the province.

Other mining activities involve potentially hazardous chemicals, mill reagents, or emissions which can present significant tailings, water, waste management, and air quality issues. While these are successfully managed and carefully monitored in Canada and Saskatchewan, we note that diamond processing employs only non-hazardous reagents.

3.0 Potential Development Description

3.1 Location

The Star-Orion South Diamond Project is located in central Saskatchewan within the Fort à la Corne (FalC) provincial forest, approximately 60 kilometres (km) east of the City of Prince Albert (Figure 1). The kimberlites are located immediately north of the Saskatchewan River, and downstream of the convergence of the North and South Saskatchewan Rivers. All land within the provincial forest is property of the Crown.

3.2 Resource Description

The Star Kimberlite was formed by five distinct Cretaceous age eruptive events, which produced five different diamond-bearing kimberlites. The kimberlites have different diamond grades, and the diamonds from each kimberlite have distinct shape, size and quality distributions. Those five eruptive kimberlites, listed in order from youngest (uppermost) to oldest (lowermost), are:

- Late Joli Fou (LJF ; estimated 100 million years ago);
- Middle Joli Fou (MJF);
- Early Joli Fou (EJF);
- Pense; and
- Cantuar (estimated 104 million years ago).

Details of the Star Kimberlite resource estimate are summarized in Table 2.

Table 2: Summary of the Star Kimberlite Resource Estimate[1]

Resource Category	Kimberlite Lithology	Dry Tonnes (x1,000)	Grade (cpht)	Carats (x1,000)	Price (US$/carat)
Indicated	Cantuar	10,521	13.4	1,410	420
Indicated	Pense	6,273	13.6	853	126
Indicated	EJF	90,240	14.9	13,446	216
Indicated	MJF	15,653	6.0	939	152
Indicated	LJF	0	3.5	0	152
Indicated	**Total**	**122,687**	**13.6**	**16,648**	**225**
Inferred	Cantuar	2,777	13.3	369	420
Inferred	Pense	2,769	14.6	404	126
Inferred	EJF	24,640	12.9	3,179	216
Inferred	MJF	88	4.9	4	152
Inferred	LJF	0	2.8	0	152
Inferred	**Total**	**30,274**	**13.1**	**3,956**	**226**

Notes: [1] from June 9, 2008 Shore Gold News Release and supporting Technical Report. cpht: carats per 100 tonnes.

A resource estimate for Orion South has not yet been made but is expected to be completed during the anticipated EIA schedule. This project proposal is designed to allow the flexibility to include Orion South in the EIA.

Feasibility studies are ongoing for the Star Kimberlite, and, depending on results, will be expanded to include the Orion South Kimberlite. The feasibility studies will be completed prior to submission of the final EIA and prior to making a production decision.

3.3 Current Facilities

The area occupied by current exploration activities is approximately 70 ha. The exploration program has required the construction of a number of temporary facilities associated with various activities and infrastructure on the project:

- fenced operational area;
- temporary offices, camp and mine dry;
- workshops;
- core/sample storage shed;
- DMS processing facility (Coverall™ Building);
- fines management area;
- generators;
- fuel storage tanks;
- used oil storage tanks;
- hazardous waste and dangerous goods storage container; and
- exploration shafts and underground bulk sampling at Star (completed) and Orion South (currently under way).

3.4 Construction

The construction phase would begin as soon as a positive production decision is made and all required permits are received. The proposed site construction activities described in this section include:

- removal and decommissioning of existing exploration facilities at Star and potentially at Orion South;
- site clearing and timber removal;
- construction of an access corridor;
- construction of a power line;
- construction of a natural gas line;
- overburden removal and excavation of up to two starter pits, one at Star and one potentially at Orion South;

- construction of a production DMS plant with a capacity of 40,000 tonnes or more per day; the exact capacity will be determined during the feasibility studies and finalized prior to submission of the EIA (Section 3.5.2);
- construction of a 50 tonne per hour sample DMS plant;
- construction of administrative buildings and a maintenance shop;
- construction of security facilities;
- construction of a helicopter landing pad;
- construction of explosives mixing and storage facilities;
- construction of fuel storage and distribution facilities; and
- installation of a temporary construction camp.

Details of the following activities that bridge the construction and operations phases, as well as additional details regarding the production and sample DMS plants, are provided in Section 3.5:

- construction of other mine support facilities (e.g., internal roads and conveyors);
- construction of dewatering facilities and installation of dewatering wells and/or dewatering trenches/collectors;
- construction of overburden piles and a coarse processed kimberlite (CPK) pile;
- potential gravel screening and washing facility;
- construction of containment facilities for mine water, process water and fine processed kimberlite (FPK); and
- construction of surface water diversion channels.

3.4.1 Decommissioning of Existing Facilities

Existing facilities (listed in Section 3.3) would be removed and decommissioned prior to construction. Useful material would be recycled, reused for construction, or sold if possible. In addition, the Lars Road fire tower, operated by the Saskatchewan Ministry of Environment (MoE), lies within the proposed overburden pile and would be relocated or removed depending on MoE needs.

Any petroleum contaminated soil would be removed to a certified landfill.

3.4.2 Site Clearing and Timber Removal

The construction site would be prepared by site clearing and timber removal where needed. Within the project area, trees would be left on site whenever safe to do so to break up sight lines, reduce wind speeds, and assist with dust control. All merchantable timber would be scaled according to the applicable permits, and sent for processing where possible. Other beneficial uses of slash and non-merchantable timber will be investigated.

3.4.3 Access Corridor

An access corridor encompassing a roadway, communication lines and potentially a railroad and a natural gas pipeline is proposed. It would extend from Highway 55 near Smeaton south to the proposed mine site (Figure 2 and Figure 4). The road would be constructed along existing rural municipality rights of way, with approximately 10 km built over existing provincial grid roads, and approximately 16 km built through the Fort à la Corne forest. Provincial secondary highway grade standards would be followed for the construction of this highway. The access corridor would cross an existing high pressure natural gas line south of Highway 55, the White Fox River at the northern boundary of the forest and English Creek. The White Fox crossing would be a single span bridge or series of culverts based on site specific characteristics.

The potential railroad would be extended from Choiceland to the access corridor along a pre-existing railroad alignment and then parallel the proposed access corridor. Construction of the access corridor would begin as soon as the required permitting is in place, as completion would be necessary to support other contemplated construction activities. The length of the new access corridor would be approximately 26 km, and would require acquisition of land not previously used as a railway. The railroad would be designed according to specifications required by regulations. All material required for the proposed project would be delivered to site either by road or rail. In the absence of a railroad to site, rail would still be used to deliver material to Choiceland, and delivered to site by truck.

3.4.3.1 Production Power Line

SaskPower is evaluating three conceptual supply options to provide required electrical power to the site (Figure 4). One option would involve a 16 km line connection from an existing power line in the forest, southeast of the site across the Saskatchewan River. Other options include a line north of the Saskatchewan River from the Codette Dam (approximately 65 km) and a route straight north from Beatty (approximately 45 km). The route north of Beatty crosses the James Smith Cree Nation Reserve, and will be pursued only if fully supported by the James Smith Cree Nation. Future power supply from other potential developments along the Saskatchewan River is also under consideration. Shore Gold estimates it would require a minimum of approximately 68 megawatts (MW) for production. Final power requirements would depend on the final plant size.

3.4.3.2 Gas Pipeline Corridor

There are currently three options for natural gas supply (Figure 4). Two of the options connect to an existing natural gas line originating south of Kinistino. One of these two options contemplates the construction of a pipeline through the James Smith Cree Nation Reserve; the second contemplates construction around the First Nation. Both options involve the installation of a 30 centimetre (cm) pipe and crossing or going beneath the Saskatchewan River and terminating at the plant site. The route that crosses the James Smith Cree Nation reserve will be pursued only if fully supported by the James Smith Cree Nation.

A third option proposes the use of a smaller natural gas line from the north, using the proposed access corridor. This option may be feasible, depending on the results of preliminary work currently underway to evaluate the effectiveness of heat recovery from pumped groundwater for use in building heating and cooling.

3.4.4 Starter Pits

Overburden would be removed from the Star Kimberlite and potentially the Orion South Kimberlite to construct starter pits. The starter pits would be constructed to confirm assumptions made during pit design, optimize further excavation, and expose sufficient kimberlite ore to commence diamond mining and processing. Overburden would be placed in a stockpile west of the Star open pit to reduce transportation costs and eliminate unnecessary fuel consumption and emissions from haul trucks. Pit preparation would commence early in the construction phase and carry into the early operations phase. Placement of the Orion South overburden would depend on the results of future studies.

The construction of these starter pits would probably require some potential earthwork and surface water diversion (discussed in more detail in Section 3.5.1.2) and some water management (discussed in more detail in Section 3.5.8).

3.4.5 Plant Site

Construction of the production DMS plant, the sample DMS plant, administrative, maintenance, and security buildings, domestic sewage treatment, and the helipad would be constructed within the plant footprint. Details of the DMS plants are contained in Section 3.5.2. Buildings proposed are summarized in Table 3. The total footprint of the plant site and associated buildings would be approximately 75 ha.

Table 3: Proposed Buildings

Structure	Type	Style	Floor Area (m^2)
Main Security Gate Office	Steel Frame, Site Built	Metal Siding, Commercial Finish	60
Secondary Security Gate Office	Steel Frame, Site Built	Metal Siding, Commercial Finish	153
Administration / Mine Dry	Pre-engineered Steel Frame	Metal Siding, Commercial Finish	2,842
Warehouse / Receiving	Pre-engineered Steel Frame	Metal Siding, Commercial Finish	4,692
Maintenance Shop	Pre-engineered Steel Frame	Metal Siding, no interior finish	7,654
Wash / Lube Bay	Pre-engineered Steel Frame	Metal Siding, no interior finish	2,315
Process Plant Secondary Crusher Building	Pre-engineered Steel Frame	Metal Siding, no interior finish	2,004
Process Plant Tertiary Crusher Building	Pre-engineered Steel Frame	Metal Siding, no interior finish	668
Process Plant Screening Building	Pre-engineered Steel Frame	Metal Siding, no interior finish	13,719
Process Plant Feed Preparation Building	Pre-engineered Steel Frame	Metal Siding, no interior finish	3,781
Process Plant DMS Building	Pre-engineered Steel Frame	Metal Siding, no interior finish	5,742
Process Plant Recovery Building	Pre-engineered Steel Frame	Metal Siding, no interior finish	1,980
Process Plant Water Treatment	Steel Frame, Site Built	Metal Siding, no interior finish	1,190
Process Plant Thickeners	Surface Tanks	Steel Wall, Concrete Base	3,322

3.4.5.1 Explosives Mixing and Storage Facilities

As with other mining activities in Saskatchewan, the mining of the FalC kimberlites would involve the use of explosives, estimated at 70 tonnes per week for Star alone. To ensure safe transportation of explosives, the components of the explosives (ammonium nitrate and fuel oil consisting of prills and diesel fuel) would be delivered to an on-site facility which would serve as the basis of operations for vehicles that would deliver explosives directly down hole. This facility would be in place for the duration of the project and would require an explosive factory license.

A magazine license would be required to store the components of the explosives on site. The exact storage requirements, and therefore the exact location of the storage facility have not yet been determined, but the storage is expected to contain up to two weeks of explosives at any time (140 tonnes for Star only). If Orion South is included, then an additional storage facility of similar size would be required. These facilities would be located according to all relevant regulations and permits as determined by the feasibility studies.

3.4.5.2 Fuel Storage and Distribution

Fuel storage is planned on site at a tank farm consisting of double walled above-ground tanks located within the plant footprint. Fuel would be transported to site either by rail or road, and transfer systems would be designed accordingly. There would be re-fuelling stations both at the plant site and in-pit to increase truck efficiency and to reduce fuel consumption. A reinforced pipeline is proposed parallel to the conveyor to transport fuel in-pit. Total fuel storage capacity would depend on the mining method selected.

If a rail line is constructed, fuel storage could, upon receipt of the appropriate approvals, be located on a rail siding with incorporated containment, which could eliminate the need for a tank farm.

3.4.5.3 Temporary Construction Camp

A temporary construction camp, composed of mobile trailers, may be required to accommodate up to 1,000 people. This camp would be in place only for the duration of construction and would be removed once construction was complete.

3.4.6 Construction Phase Wastes and Emissions

3.4.6.1 Construction Wastes

Wastes from construction activities would include brush from land clearing and the usual generation of inert and industrial wastes associated with heavy industrial construction. Inert industrial wastes such as unusable scrap metal, wood and other construction debris would be collected and shipped off site for recycling or to a waste handling facility. Other industrial wastes would be segregated and shipped off site by an appropriate contractor. Recycling practices for scrap metal, wood, paper, and recyclable plastics, started at the exploration phase, would continue through construction and operation. Potential economic uses of non-merchantable timber and logging slash would be investigated throughout the EIA.

3.4.6.2 Construction Emissions

Emissions during construction would be limited to dust generated by earth moving and exhaust emissions, including nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO) and carbon dioxide (CO_2), from mobile and stationary internal combustion engines. Water would be used where appropriate to control dust.

Equipment would be maintained to manufacturers' specifications to limit exhaust emissions to the extent practical. All vehicles would use provincially approved low-sulphur fuel. An emissions inventory will be completed as part of the EIA.

3.5 Mine Operation

3.5.1 Operation of the Open Pit(s)

Two open pits are proposed (one at Star and one at Orion South) to allow access to and excavation of the kimberlite. The total footprint of the proposed open pit at Star would be approximately 3 km in diameter (approximately 700 ha). The depth of this pit has not been finalized but is expected to be approximately 320 m below ground surface (including 100 to 150 m of overburden (sands, silts and tills)). The dimensions of the open pit at Orion South are expected to be similar to that of Star. These preliminary estimates of pit size are conceptual and would be finalized throughout the feasibility studies.

The conceptual outline and project layout are shown on Figure 2. This figure may not reflect the final configuration of the required facilities because the options analyses and feasibility studies are on-going. For example, the overburden pile and coarse processed kimberlite (CPK) pile footprints are presented based on a volume estimate for Star only. If Orion South is included in the EIA, these facilities would increase in size.

The proximity of the Star Kimberlite to the Saskatchewan River along the south eastern boundary of the proposed pit creates two geotechnical engineering issues. The first involves engineering the pit wall to maintain worker safety and maximize resource extraction, and the second involves the risk of earth movement or sloughing of the existing river bank into the Saskatchewan River. In order to mitigate both of these risks, Shore Gold is proposing to modify the land adjacent to the south eastern boundary of the Star pit to improve the geotechnical stability of the landform. This could be accomplished by widening the East Ravine valley (Figure 2) while still maintaining approximately a 200 m setback from the Saskatchewan River.

3.5.1.1 Mining Method

Three mining method options are being evaluated as part of the on-going pre-feasibility study:

- truck and shovel with semi-mobile crusher / conveyor out of the pit;
- mobile crushers; and
- truck and shovel.

All three options have similar project footprints and infrastructure requirements. The preferred option for the ore at this time is truck and shovel with an electric semi-mobile crusher with conveyors out of the pit. With this option (and the mobile crusher option, preferred for the overburden), most of the power required to mine would be electric rather than diesel. Electric shovels would load diesel trucks in-pit. The trucks would then take the ore to the semi-mobile crusher, also located in the pit, where ore would be crushed and placed on an electric conveyer to the plant. For the overburden, electric shovels would load directly in the hoppers of electric mobile crushers, which would in turn transfer sized overburden material on conveyors to the overburden pile. The overburden conveyors from the fully mobile crusher would be moved once a 70 m wide strip of overburden is removed.

3.5.1.2 Potential Earthwork and Surface Water Diversion

Development of the open pit(s) would require additional earthworks outside of the pit boundaries. This could include the development of an access ramp into the open pits, diversion of surface water, and contouring the grade of land between the south eastern Star pit boundary and the Saskatchewan River.

The access ramp for the Star pit may use natural topographic features such as the East Ravine to reduce the overall project footprint. Surface runoff currently flowing into the East Ravine would require diversion. The preliminary plan is to divert water flowing into the East Ravine further east of the proposed pit. Little surface run-off is expected from the remainder of the area due to the sandy soils. A perimeter drain around the pit is proposed to manage any additional surface water, with discharge into the Saskatchewan River. A small embankment across the outlet of the East Ravine is proposed to manage any potential for flood water from the Saskatchewan River into the open pit. Additional surface water diversions will be required if Orion South is included in the EIA.

3.5.2 Kimberlite Processing

3.5.2.1 Production Plant

The kimberlite processing plant would use DMS, as described in Section 2.1.1, to separate the diamonds and other materials with similar densities from the kimberlite.

The final capacity of the production DMS plant would depend on the results of the feasibility studies and the inclusion of Orion South in the EIA. It is currently estimated that the minimum capacity would be about 40,000 tonnes per day (Star only), with a maximum capacity of about 120,000 tonnes per day (including Orion South).

Kimberlite processing produces three types of material:

1) coarse processed kimberlite (CPK) consisting of material greater than 1 millimetre (mm);
2) fine processed kimberlite (FPK) consisting of material less than 1 mm; and
3) dense media concentrate which contains the extracted diamonds.

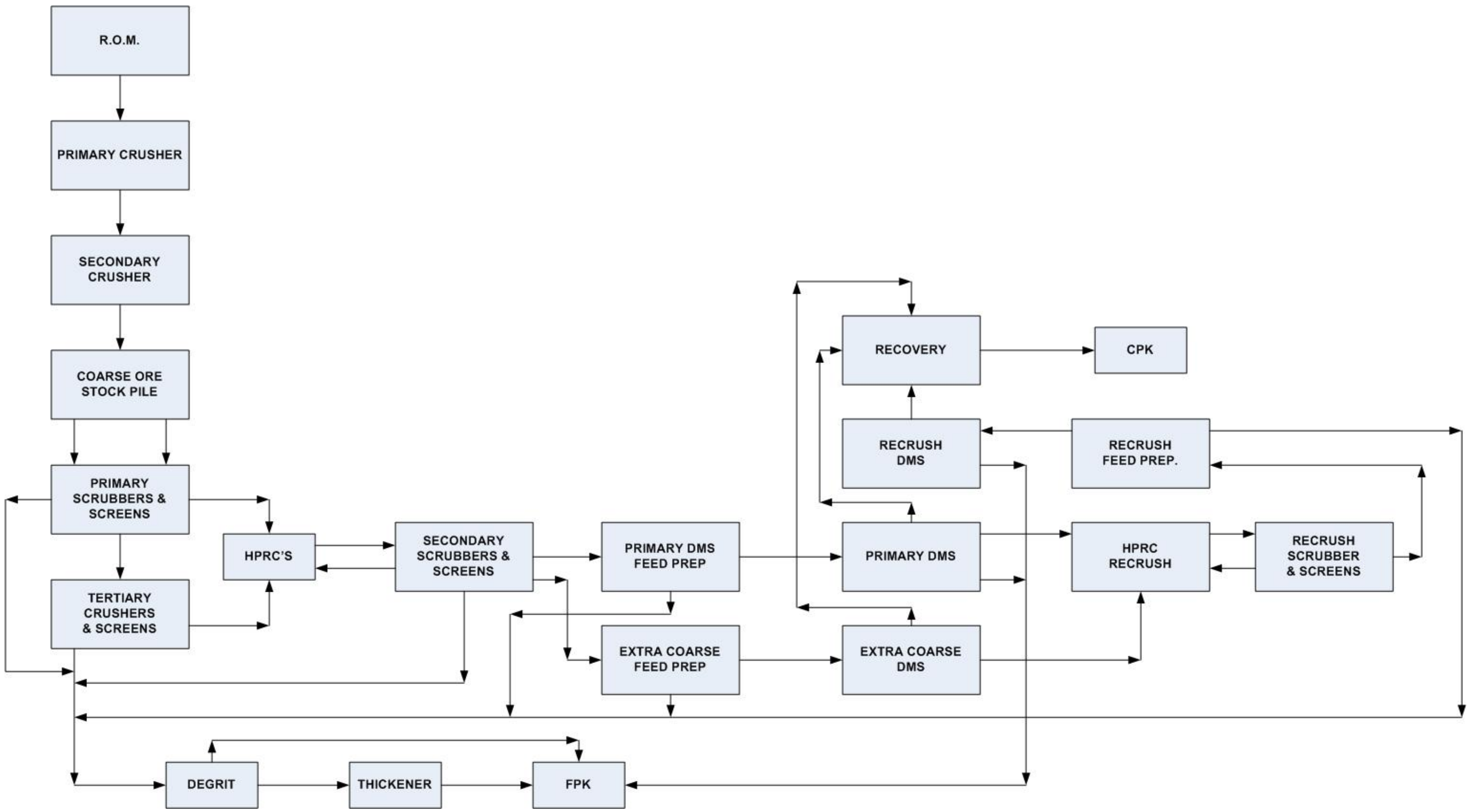
Once diamonds are recovered from the dense media concentrate, the remaining material would be stored in a separate pile for future re-processing near the end of the mine life to recover any diamonds missed during the original recovery process. This pile would have a relatively small footprint compared to the others because the concentrate typically makes up less than one percent of the overall plant feed. Inputs into the DMS plant would be ferrosilicon, which is used as a dense medium, flocculants (if necessary) and water. All other materials released from the DMS occur naturally in the kimberlite or in the process water.

A schematic of the production DMS operation is shown in Figure 3.

3.5.2.2 Sample DMS Plant

Shore Gold proposes to construct a 50 tonne per hour DMS (similar to the one currently permitted at the site) to support continued kimberlite exploration activities in the FalC area, to serve as an audit facility and to process kimberlites from other projects located outside of the FalC project area. It would be Shore Gold's intention to permit the proposed sample plant as a commercial operation to allow Shore Gold the flexibility to process material from its other (current and future) exploration projects, joint ventures, and other operators. The sample plant would use the same processed kimberlite containment facility (PKCF) as the production plant. CPK could be stockpiled separately for auditing purposes, and eventually either placed in the production CPK pile or returned to the owner depending on specific requirements of the batch.

Figure 3: Schematic Diagram of the DMS Plant Operation



3.5.3 Overburden Storage

Overburden, consisting of sands, silts and till, would be placed directly on native sand in a pile to the west of the proposed Star open pit to minimize energy consumption, emissions and transportation costs. The preliminary size and shape of the overburden pile is shown on Figure 2 and would be approximately 1,300 ha. The area would be much larger if Orion South is included in the EIA. The final dimensions of the stockpile would also depend on geotechnical properties of the material and potential planning for end land use (i.e., recreation, wildlife etc). Approximately 550 million cubic metres (m^3) of overburden will be excavated from Star based on the ultimate pit. The volume of overburden excavated at Orion South is expected to be considerably less based on the reduced overburden thickness and preliminary geotechnical estimates. The volume of overburden at Orion South will be determined by future feasibility studies.

The overburden characteristics indicate favourable engineering construction properties that may be suitable for application in future local developments, including a potential hydro-electric power dam on the Saskatchewan River, and local road maintenance undertaken by the surrounding rural municipalities. These potential developments are not part of this proposal or related in any way to the proposed Star-Orion South Diamond Project, but are mentioned as possible synergistic opportunities that may be derived from the mining activity. If gravel within the overburden can be recovered economically, then separate gravel storage areas would be constructed and the overburden pile footprint may be expanded.

3.5.4 Processed Kimberlite Containment Facility (PKCF)

The slurry from the DMS plants, consisting of 15 to 30% fine processed kimberlite (FPK) and 70- to 85% process water, would be piped to a PKCF.

The preliminary design of the PKCF includes staged cell construction using either native sand or overburden to construct starter benches on native sand. These benches would be raised as needed and additional cells constructed throughout the life of the proposed mine. Once the FPK has settled out, water would be redirected to a recovery area for re-use as make-up water in the DMS.

The preliminary footprint of the PKCF would be approximately 480 ha (based on Star only), and it may potentially be larger if Orion South is included in the EIA.

3.5.5 Storage for Coarse Processed Kimberlite (CPK)

Coarse processed kimberlite (CPK) would be conveyed from the plant to a separate CPK management area constructed on native sand which would allow reprocessing of the CPK at a future date if warranted. The CPK storage area would be approximately

260 ha based on Star only and significantly larger if Orion South is included in the EIA.

3.5.6 Unprocessed Kimberlite Stockpile

As previously indicated, the Star kimberlite consists of five eruptive events, each with variable diamond grade and quality. There is also variation in the diamond grade internally within these units, meaning that there may be areas or eruptive units that would be less economical to process. As a result there would be a need for an unprocessed kimberlite (low grade ore) stockpile near the DMS plant to store low grade ore for future processing. The low grade ore stockpile area would be approximately 50 ha based on Star only and significantly larger if Orion South is included in the EIA.

3.5.7 Conveyor System

Conveyors would be used as much as possible to move material, to increase production efficiency and to reduce diesel fuel consumption. Conveyors would be used to move:

- overburden from the pit to the overburden pile;
- kimberlite ore from the pit to the DMS plant or low grade stockpile;
- low grade ore from the stockpile to the DMS; and
- CPK from the plant to the CPK pile.

Conveyors require a cleared corridor and maintenance road for operation.

3.5.8 Water Management

All process water would be expected to come from pit dewatering or from surface run-off collection. Current plant water use is estimated at 21,100 m^3 per day, but could be as high as 60,000 m^3 per day depending on the final plant size and the amount of water recycling with the plant. No other water withdrawals will be required.

Water management would focus on two sources of water: groundwater and DMS plant water (process water).

There would be two separate sources of groundwater from pit dewatering:

- relatively high quality surficial groundwater in the overburden (with total dissolved solids [TDS] <1,000 milligrams per litre [mg/l]); and
- lower quality groundwater from bedrock aquifers (with TDS approximately 4,400 mg/l).

The proposed plan is to de-water the overburden separately from bedrock because water from the overburden and bedrock would be produced at different stages of operation. The overburden would likely be de-watered using an in-pit water collection system (estimated to be approximately 9,000 m^3 per day). The water from the bedrock aquifers would mainly be from Mannville Group which is deep (approximately 250 m from surface) and surrounds the kimberlite. The Mannville Group forms a confined aquifer and is expected to produce large quantities of water. This deep aquifer may need to be depressurized to improve the geotechnical stability of the pit slopes, and reduce or remove the possibility that water could flow through the kimberlite into the pit. Towards the end of mining, it is expected that approximately 22 pumping centres would be required to depressurize the country rock for Star. It is estimated that approximately 90,000 m^3 per day of water may have to be pumped from the country rock to lower water levels sufficiently for safe mining in the Star pit. If Orion South is included in the EIA, additional dewatering requirements would be contemplated and depend upon the results of the feasibility studies. Any water pumped to the surface could be used in the DMS plant or released using one of the options described below.

Process water mixed with FPK would be disposed of in the PKCF. The FPK is expected to be free draining, and the PKCF would be designed to allow settled water to be re-used in the DMS plant.

There are several options currently being assessed for release of water pumped from the pit and process water pumped from the DMS to the PKCF. One or more of these options could be used. Final selection of preferred water management options will be part of the EIA process.

The water from the pit(s) would include both overburden groundwater and precipitation. This water is expected to be high quality and would be piped to a reservoir proposed to be constructed in the East Ravine. The water from this reservoir would either be discharged into the Saskatchewan River if water quality objectives are met, or used in the DMS plant if needed.

The water from the DMS plant would flow with FPK into the PKCF. Some of the water would be recovered from the PKCF and be reused in the DMS plant as make-up water. The current plan for handling water from dewatering wells with high TDS is to pump the water into a reservoir constructed in the East Ravine (this will be reviewed as part of the EIA). The water from both the process plant and the bedrock wells would be managed using one of the following options:

- direct discharge to the Saskatchewan River using either existing waterways or through a diffuser in the river;
- infiltration ponds to allow for mixing of released water with groundwater; or
- filtration or settling of the release water to remove suspended solids and discharge of the water to the Saskatchewan River.

3.5.9 Gravel Extraction

A considerable amount of gravel would be required for infrastructure development, including construction of access roads, rail bed, haul roads, and site foundations. Geotechnical information from both Star and Orion South indicate that the overburden contains significant amounts of gravel, and it is possible that gravel contained within the overburden may be economically recoverable. If so, it is reasonably foreseeable that the gravel operation may use water from pit de-watering for gravel washing. Additional facilities, located within the project footprint, may be required to wash and extract gravel from the overburden for commercial sale.

3.5.10 Products

Products expected from this project are:

- diamonds;
- sand, clay and gravel from the overburden; and
- other products from the kimberlite and concentrate.

3.5.11 Wastes and Emissions

3.5.11.1 Operation Phase Wastes

The principal wastes generated from diamond mining would be non-hazardous natural materials: overburden removed from the pit(s), FPK and CPK.

The mining process would also produce smaller quantities of inert industrial wastes including scrap metal, cardboard, paper, glass, metal, plastic and Styrofoam containers, and scrap wood. A certain amount of industrial wastes would also be produced including drained and discarded oil filters, unserviceable lead acid batteries, contaminated soil from accidental spills, etc.

As a general principle, wastes would be recycled to the extent practical. Industrial wastes would be collected in a dedicated lined area or a building with adequate secondary containment, and shipped to an approved off-site location by a licensed waste contractor.

Nitrates are expected as waste material as a result of explosives use, and are expected to pass through the plant and into the PKCF.

Shore Gold has developed a comprehensive Hazardous Wastes and Dangerous Goods Management Plan to support current exploration activities, which has been reviewed by the Ministry of Environment. This plan would be updated as required to accommodate the operating guidelines of a commercially sized plant.

More detailed lists of the expected industrial wastes will be provided in the description of the physical project chapter of the EIS.

3.5.11.2 Operation Phase Emissions

The principal emission from the mine would be fugitive dust generated by mobile equipment, handling of waste and ore and crushers. In addition, particulate matter, nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO) and carbon dioxide (CO_2) emissions would occur in the exhaust from mobile and stationary internal combustion engines. To reduce exhaust emissions at site, electrical power would be used whenever safe and economically feasible. Finally, a small amount of volatile organic carbon (VOC) emissions would accrue from storage of petroleum on site.

All significant emissions expected to result from mine operations will be quantified in an emission inventory prepared for the EIA. The inventory would also serve to highlight areas where the company could improve efficiencies and reduce emissions and operating costs.

3.5.12 Site Management

3.5.12.1 Security

The main entrance to the mine would be gated and all traffic into and out of the mine would pass through this area. The security post would be staffed continuously. Visitors and employees would be required to sign in and sign out. All areas will be restricted to personnel with appropriate security clearance and identification. Shore Gold has developed a security program to support exploration activities, and intends to update this program for any future mining.

3.5.12.2 Health and Safety

The health and safety of employees and the general public visiting the site are of paramount importance to Shore Gold. A formal Occupational Health and Safety (OH&S) Program has been developed to support the company's exploration activities. This program details the roles of employer and employees as well as contractors working on the site. As required by *Workers' Compensation Act*, a Health and Safety Committee composed of employee and management representatives is in place.

All employees, contractors and visitors are required to attend safety orientation sessions run by qualified Shore Gold employees. Visitors are always accompanied by an employee escort.

All employees are given Workplace Hazardous Materials Information System (WHMIS) training upon engagement, and Material Safety Data Sheet (MSDS) stations have been set up at key locations. All employees are expected to be familiar with MSDS that pertain to their work. The company supplies, and requires the use of, personal protective equipment. Employees are not permitted to operate any equipment unless trained to do so.

Qualified first aid and medical personnel are on site 24 hours a day, 7 days a week. A dedicated first-aid equipped vehicle is available at all times. First-Aid rooms are kept clean and well stocked with supplies. All employees, contractors and visitors are informed where these stations are located as part of initial site orientation.

This existing OH&S Program will be adapted to cover all potential activities associated with any future mining.

3.5.12.3 Environmental Management

Environmental technicians employed by Shore Gold have developed environmental management systems and protocols to support Shore Gold's exploration activities. These existing programs will be the basis of Shore Gold's environmental management system (EMS) for any mining operations. The duties of the environmental technicians are to monitor activities to ensure the environmental plans developed under the EMS are being followed, to collect environmental samples, and to provide reports to government regulatory agencies as required by the applicable permits and licenses.

At least one technician will be on site whenever the mine is operating.

3.6 Decommissioning, Closure and Reclamation

Once mining and processing had been completed, all infrastructure and equipment would be removed from the site or buried (inert waste only), sold as used equipment or scrap where possible and the land returned to an acceptable end-land use as determined by the EIA. All industrial wastes would be either returned to suppliers or removed from site for disposal by a licensed waste contractor. Further discussion can be found in Section 7.

Areas that were not progressively reclaimed during mine life would be made physically and chemically stable. The areas would be revegetated with native vegetation with an aim of restoring the site to vegetation communities found in other parts of the FalC forest. Further discussion of the reclamation efforts can be found in Section 7.

The open pit(s), which would naturally fill with groundwater, the processed kimberlite pile, and the overburden pile would remain as changed features of the landscape.

4.0 Description of the Environment

4.1 Biological Environment

4.1.1 Study Areas

Two study areas, a local study area (LSA) and a regional study area (RSA) have been defined to facilitate biophysical investigations. The LSA includes the project footprint and an appropriate buffer around the area (approximately 500 m). This area will receive the most intensive study. The LSA boundary is shown on Figure 2. A broader area (the RSA, shown on Figure 4) which encompasses most of the Fort à la Corne (FalC) forest, may be influenced by the project indirectly, and will receive less intense scrutiny.

The LSA is centered in the portion of the FalC forest that was burnt in the Henderson Fire of 1989. The area is generally covered by a regenerating jack pine community.

4.1.2 Soils and Vegetation

Soil surveys in the LSA were completed in 2008, and will form the basis of a detailed baseline report. In general, the dominant soil series within the Fort à la Corne forest are Brunisol and Regolsolic soils (Pine association) and Gray Luvisols (La Corne and Porcupine Plain associations). Other soil orders are present such as Gleysolic (Meadow association) and Organic Fen and Bog soils. Pine soils are the most common and widely disturbed soil type in the FalC forest. The Pine association consists of Brunisoilic and Regosolic soils that have developed in coarse textured, weakly to non-calcareous, sandy glaciofluvial, glaciolacustrine and aeolian deposits.

Ecosite mapping and vegetation surveys were conducted in 2007 and 2008 and will form the basis of a detailed baseline report. In general, the vegetation within the FalC forest consists of jack pine dominated ecosite phases on well drained sites, with black spruce, tamarack larch, and trembling aspen found in areas that are poorly drained. Wetlands are often dominated by willows. Riparian vegetation, (i.e., along the banks of the Saskatchewan River and neighbouring tributaries) can include balsam poplar and white spruce.

4.1.3 Rare Plants

A rare plants survey was conducted in the Star kimberlite area in 2005. A total of 295 vascular plants were observed in the survey area during the field surveys. No rare plants were recorded during the May survey; nine provincially rare vascular plants were recorded during the July and August surveys: narrow triangle moonwort, common moonwort, matricary grape-fern, 'Michigan' grape-fern, mignan moonwort, leathery grape-fern, long-bracted green orchid, western wood lily and many-flowered wood-rush. Shore Gold has recently documented large white flowered ground cherry on recently disturbed areas.

Additional rare plants surveys in the LSA were conducted in 2008 and the results of these surveys will form the basis of a detailed baseline report.

4.1.4 Wildlife

The following studies were completed in 2007 and 2008 in the LSA and the RSA:

- aerial ungulate surveys;
- winter track surveys;
- food habitat surveys;
- aerial waterfowl and beaver surveys;
- amphibian and reptile surveys;
- owl surveys; and
- breeding bird surveys.

The results of these surveys will be presented in a detailed baseline report as part of the EIA. The following information is based on a review of existing studies, and will be updated based on the results of the baseline surveys.

The Fort à la Corne forest is an island forest surrounded by open agricultural land, with pockets of forested land, and pasture that provide suitable habitat for a wide variety of wildlife species. The occurrence of a number of species is largely due to the proximity of the Saskatchewan River, and its associated tributaries and riparian habitats that provide travel corridors for wildlife. The forest is habitat for a wide variety of mammalian species, including a number of economically important game species such as elk, white-tailed deer, moose, black bears, and furbearers such as beaver and muskrat. Other mammals that may be commonly found include red fox, raccoon, coyote, red squirrel, and northern short-tailed shrew.

Saskatchewan Environment conducted an aerial elk survey across the FalC area in February 2006. A total of 620 elk (number per square kilometre: 0.29) and a total of 488 moose and wolves (number per square kilometre: 0.22) were observed during the survey. The results exceeded expectations for these populations.

The FalC area is classified as having a high capability for the production of ungulates. Thermal cover offered by the open canopy of coniferous or mixed wood forest in the FalC forest provides prime ungulate bedding habitat. Due to the open canopy in these areas, sunlight is permitted to penetrate, keeping the bases of the trees void of snow. Re-growth of short shrubs such as willows, alder, and aspen in the recent burn areas provides significant browsing for ungulates.

Bird species found in the FalC forest are dependent on the time of the year and status of the habitat. Winter resident birds that have been found include northern goshawk, sharp-tailed grouse, ruffed grouse, spruce grouse, great horned owl, common raven, blue jay, gray jay, woodpecker species, boreal chickadee, black-capped chickadee, red-breasted nuthatch, white-breasted nuthatch, red crossbill, white-winged crossbill, common redpoll, pine siskin, pine grosbeak, and evening grosbeak.

Raptors that have been found in the FalC forest include red-tailed hawk, broad-winged hawk, northern harrier, bald eagle, osprey, northern goshawk, northern hawk-owl, great gray owl, great-horned owl, northern saw-whet owl, and boreal owl (Smith, 1996). Similar to other bird species, the species of raptor found in the area is dependent on the specific habitat type. For example, mature stands of trembling aspen provide suitable nesting and foraging habitat for broad-winged hawks, but are not suitable for northern harriers.

Although not common, there are small wetland bogs in the FalC forest. If open water is present, bird species utilizing this habitat may include pied-billed grebe, red-necked grebe, mallard, blue-winged teal, green-winged teal, lesser scaup, common goldeneye, and bufflehead. Species associated with the wetland edge may include solitary sandpiper, lesser yellowlegs, common snipe, common yellowthroat, savannah sparrow, Le Conte's Sparrow, song sparrow, swamp sparrow, and red-winged blackbird.

Six amphibian and reptile species may be found in the FalC forest (Secoy and Vincent, 1976; Knopf, 1995). Those that may be widely distributed include the boreal chorus frog, wood frog, and Canadian toad, while species that are locally distributed, less abundant, or uncommon are the tiger salamander, northern leopard frog, and red-sided garter snake. The majority of these species that may be found in the FalC forest, in particular the boreal chorus, wood and leopard frogs, are found in association with temporary or permanent water bodies (i.e., wetlands, streams, or drainage areas).

4.1.5 Fish and Fish Habitat

The Saskatchewan River and English Creek are known fish-bearing waters (Saskatchewan Parks and Renewable Resources 1991). Table 4 provides a list of fish species found in the Saskatchewan River and English Creek.

Table 4: Fish Species of the Saskatchewan River and English Creek

Common Name	Scientific Name	Saskatchewan River	English Creek
Brook stickleback	*Culaea inconstans*	X	
Brook trout	*Salvelinus fontinalis*		X
Burbot	*Lota lota*	X	
Central mudminnow	*Umbra limi*	X	
Emerald shiner	*Notropis atherinoides*	X	
Fathead minnow	*Pimephales promelas*	X	X
Flathead chub	*Platygobio gracilis*	X	
Goldeye	*Hiodon alosoides*	X	
Lake chub	*Couesius plumbeus*	X	
Lake sturgeon	*Acipenser fluvescens*	X	
Longnose dace	*Rhinichtys cataractae*	X	
Longnose sucker	*Catostomus catostomus*	X	
Mooneye	*Hiodon tergisus*	X	
Northern pike	*Esox lucius*	X	
Northern redbelly dace	*Phoxinus eos*	X	X
Northern redhorse sucker	*Moxostoma macrolepidotum*	X	
Pearl dace	*Margariscus margarita*	X	X
Quillback sucker	*Carpiodes cyprinus*	X	
River shiner	*Notropis blennius*	X	
Sauger	*Sander Canadensis*	X	
Silver redhorse sucker	*Moxostoma anisurum*	X	
Spoonhead sculpin	*Cottus ricei*	X	
Spottail shiner	*Notropis hudsonius*	X	
Troutperch	*Percopsis omisomaycus*	X	
Walleye	*Sander vitreus*	X	
White sucker	*Catostomus commersoni*	X	X
Yellow perch	*Perca flavescens*	X	

Source: SPRR 1991.

The Saskatchewan River supports 26 fish species and English Creek supports five (5) species. All large-bodied fish species inhabiting the Saskatchewan River, except burbot, are spring spawners.

There are several small tributaries of the Saskatchewan River that originate within the FalC forest that have potential to provide fish habitat (Figure 5). In 2006, fish habitat was assessed in tributaries from their confluence with the Saskatchewan River to where the tributary gradient increases sharply making the presence of fish unlikely. Table 5 summarizes habitats found.

The lower reaches of the East Ravine provide spawning habitat for northern white suckers; other Saskatchewan River tributaries may function in a similar manner. White sucker, walleye, and northern pike can be expected to use the lower reaches of these tributaries to spawn. The West Ravine is currently classified as "non-fish" bearing.

Duke Ravine, 101 Ravine, and West Ravine have barriers near their confluences with the Saskatchewan River that prevent fish using these tributaries. Other tributaries in the project area, Caution Creek, and English Creek, are potential spawning habitat for some distance above their mouths. Characteristics of these tributaries are summarized in Table 5.

A spring spawning survey of tributaries East Ravine and English Creek was conducted in 2006. A total of eight white suckers were captured which indicated a limited number of fish using tributaries for spawning. The white suckers captured appeared to be in good health.

Additional fish and fish habitat surveys were conducted in 2007 and are planned for fall 2008 on the upper reaches of these waterways. These results will be included in the EIA.

Table 5: Tributary Fish Habitat Summary

Stream	Length Assessed (m)	Average Depth (m)	Average Width (m)	Dominant Habitat	Dominant Substrate	Fish Observed/ Caught	Habitat Assessment
Caution Creek[1]	500	0.4 (0.7 m maximum in pools)	3	rapids, riffles, and runs	boulder and cobble with small areas of gravel and sand	None	• overhanging vegetation throughout • few areas of potential spawning habitat for coarse substrate spawning fish • numerous obstructions observed in channel • fish passage possible in lower reaches under higher flows
101 Ravine[1]	200	0.4	2	flat	silt in channel, boulders and cobble at outlet	None	• very thick overhanging vegetation, dense shrub canopy • flat/near laminar low velocity flow • steep to vertical slopes • obstruction to fish passage observed 30 m upstream of the confluence with Saskatchewan River • fish passage unlikely
East Ravine[1]	600	0.2	2.5	riffles, rapids, and flats	gravel, sand, and silt in channel with silt at outlet	white sucker in hoop net at outlet	• overhanging vegetation throughout • large amounts of woody debris in stream • shallow to moderate slopes • numerous obstructions observed • fish passage likely restricted to lower reaches of stream

Stream	Length Assessed (m)	Average Depth (m)	Average Width (m)	Dominant Habitat	Dominant Substrate	Fish Observed/ Caught	Habitat Assessment
English Creek [1]	450	0.2 (1 m maximum in pools)	2.5	runs, rapids, and riffles	boulder, cobble, and gravel with silt at outlet	white sucker in hoop net at outlet, and unidentified small-bodied fish in pool at beaver dam	• some small obstructions and cascades along channel • fairly steep slope, but fish passage possible during spring freshet and high flows • upstream area potential spawning habitat for coarse substrate spawning fish • fair to good spawning habitat for spring spawning species in lower reaches
Duke Ravine [2]	300	0.1	1.25	n/a	silt in channel, boulders and cobble at outlet	None	• obstruction to fish passage observed 60 m upstream of the confluence with Saskatchewan River • no in-stream vegetation; forested banks

Notes: m = metre. **Sources:** [1] Golder Associates 2006; [2] Pers. Comm. C. Rees, CanNorth Environmental Services, on fall conditions.

4.2 Physical Environment

4.2.1 Climate and Air Quality

The closest climate station with a long term climatic record is the station at the Prince Albert Airport. The climate of the FalC area can be characterized by long, cold winters with mean January temperature of -19.1ºC and short, hot summers with a mean July temperature of 17.5ºC. The closest established climate station is the English Cabin station operated by the Saskatchewan Ministry of the Environment (MoE). The English Cabin station has operated since about 1998. No winter precipitation is recorded at this station as only a rain tipping bucket gauge has been installed.

In 2006, Shore Gold arranged for the MoE to set up a weather station at the Star site and automated meteorological data collection began in June 2006. This station is scheduled to be removed in 2008. The need for a new climate monitoring station is being evaluated.

An air quality station to measure background particulate matter, oxides NOx and SOx, was established at the site in March 2008.

4.2.2 Topography and Geology

The surficial geology and soil parent material of the FalC forest is comprised of geological deposits of the Pleistocene (1.8 – 0.01 Million years ago) or Recent age (less than 0.01 Million years ago; Anderson and Ellis, 1976). Pleistocene deposits are most common and include the products of glaciation and related lacustrine and fluvial processes. The resulting deposits are referred to as glacial till, glaciolacustrine or lacustrine, and glaciofluvial or outwash materials. The sandy materials of the FalC forest are examples of fluvial-lacustrine deposits and vary in thickness from 12 m to as much as 74 m. These deposits are inter-bedded with silty glaciolacustrine sediments, with silty to clayey materials becoming more prevalent with increasing depth. The fluvial-lacustrine sands are pre-dominantly quartz and feldspar minerals and are weakly to non-calcareous.

After their deposition, many of the sandy fluvial-lacustrine materials were re-worked and blown into sand dunes. Materials deposited since the end of the glacial period are referred to as “Recent Deposits”. The organic material or peat that has accumulated under conditions of poor drainage in depressional areas and in lakes are also recent deposits.

4.2.3 Surface Water Hydrology

Surface hydrology studies were initiated in 2005 (Golder Associates, 2008) on English Creek, Caution Creek, East Ravine, and 101 Ravine (Figure 5). Monitoring of the West Ravine started in 2007. Longitudinal profiles and drainage areas were mapped and water elevation and discharge was measured to determine stage-discharge curves for each water course for May to October. In 2007, monthly average flows in Caution Creek ranged from 0.167 cubic metres per second (m^3/s) to 0.581 m^3/s, in English Creek flows ranged from 0.086 m^3/s to 0.402 m^3/s, in the 101 Ravine flows ranged from 0.021 m^3/s to 0.098 m^3/s, and in the East Ravine flows ranged from 0.083 m^3/s to 0.119 m^3/s. Higher flows were recorded in May for Caution Creek, English Creek and 101 Ravine, and in September for East Ravine.

Flow characteristics of the Saskatchewan River were summarized by CanNorth (2007). The calculated seven day average low flow with a 20 year return period (7Q20) was 149 m^3/s.

The White Fox River forms much of the northern boundary of the FalC forest. This river was evaluated in 2007 as part of a bridge installation on Shipman Trail, approximately 5 km upstream from the likely access corridor crossing. For the White Fox River at Shipman Trail, the peak daily mean flow for a 1:25 year return period was 76.8 m^3/s, and the 1:10 year, 3 day flow was 41.6 m^3/s.

4.2.4 Surface Water Quality

Water has been sampled from a number of sites around the project and from the Saskatchewan River. Surface water sampling dates from 2006 but Saskatchewan River sampling extends back to at least the early 1980s. However, because of the significantly different detection limits used in the earlier data, direct comparison with modern water quality results is not possible. Table 6 provides a summary of the surface water quality data to date.

Table 6 shows that background surface water is moderately hard (188 to 336 mg/l) with a moderate salt content (TDS of 251 to 1,058 mg/l). Metals levels are generally low, with the exception of aluminum, iron, and chromium, with many at concentrations that are below detection levels. Nutrient levels (i.e. nitrogen and phosphorus) are also relatively low (ammonia 0.03 to 0.22 mg/l, nitrate 0.09 to 0.69 mg/l, total phosphate 0.03 to 0.33 mg/l). Some exceedances of Saskatchewan interim surface water quality objectives (EPD 356) have occurred (MoE 2006) in the tested waterways: total aluminum, arsenic, cadmium (laboratory detection limit too high), chromium, iron and potentially mercury (laboratory detection limit too high) (Table 7). Many of these high parameters occur naturally.

Table 6: Water Quality Summary

Parameters	Units	Caution Creek	101 Ravine	East Ravine	English Creek	West Perimeter Ravine	West Ravine	Saskatchewan River Upstream	Saskatchewan River Downstream
Chemical Oxygen Demand	mg/l	45	29	14	20	18	22	24	21
pH	pH units	7.87	8.35	8.36	8.09	6.61	8.47	8.38	8.41
Specific conductivity	µS/cm	516	464	608	461	1698	1883	444	445
Total alkalinity	mg/l	294	254	213	256	248	257	159	161
Total hardness	mg/l	279	260	234	253	336	328	189	188
Total dissolved solids	mg/l	333	297	345	269	980	1058	283	263
Total suspended solids	mg/l	17	20	160	22	12			10
Turbidity	NTU	10	9	12	9	14	3	56	43
Nutrients									
Total Kjeldahl nitrogen	mg/l	1.68	0.58	0.37	0.66	0.83	0.47	0.61	0.72
Ammonia as nitrogen	mg/l	0.11	0.13	0.03	0.22	0.12	0.08	0.13	0.07
Nitrate	mg/l	0.15	0.13	0.15	0.12	0.43	0.31	0.69	0.59
Nitrite+Nitrate, nitrogen	mg/l	0.04				0.12			
Total phosphorus	mg/l	0.05	0.16	0.13	0.11	0.09	0.03	0.17	0.33
Dissolved phosphorus	mg/l		0.14	0.15	0.55	0.20			0.11
Total organic carbon	mg/l	15.5	12.4	5.2	8.3	7.7	7.5	7.2	5.3
Dissolved organic carbon	mg/l	16.0	11.5	4.9	7.9	7.0	6.3	6.8	5.4
Major Ions									
Bicarbonate	mg/l	358	295	255	305	291	287	189	190
Calcium	mg/l	81	72	68	73	99	96	48	47
Carbonate	mg/l		9.5	6.5	10.7	10.0	13.0	5.5	4.7
Chloride	mg/l	3.0	1.3	64	1.3	402	430	7.5	7.4
Fluoride	mg/l	0.13	0.18	0.14	0.14	0.13	0.15	0.14	0.14
Magnesium	mg/l	19	20	15	17	22	21	17	17
Potassium	mg/l	1.9	2.0	1.2	1.8	2.8	3.0	3.9	3.9
Sodium	mg/l	6.0	5.2	37	4.1	235	263	20	20
Sulfate	mg/l	0.8	14.8	16.6	2.3	85	69	65	65
Total Metals									
Aluminum	mg/l	0.196	0.272	0.683	0.343	0.089	0.024	0.745	0.634
Antimony	mg/l								
Arsenic	ug/L	0.600	1.800	1.921	1.626	0.317	2.200	0.850	0.825
Barium	mg/l	0.305	0.164	0.437	0.427	0.251	0.263	0.102	0.104
Beryllium	mg/l					0.0001			
Bismuth	mg/l								
Boron	mg/l	0.020	0.038	0.084	0.032	0.310	0.407	0.038	0.038
Cadmium	mg/l					0.0001			
Cesium	mg/l								
Chromium	mg/l		0.0020	0.0035	0.0020	0.0009		0.0016	0.0015
Cobalt	mg/l	0.001	0.000	0.001	0.000	0.000	0.000	0.001	0.001
Copper	mg/l	0.001	0.001	0.002	0.001	0.001	0.000	0.003	0.003
Iron	mg/l	1.03	0.70	1.18	1.10	0.44	0.19	1.21	0.86
Lead	mg/l	0.0003	0.0003	0.0009	0.0005	0.0022	0.0001	0.0012	0.0010
Manganese	mg/l	1.43	0.07	0.12	0.19	0.09	0.08	0.08	0.06
Mercury	mg/l					0.0014			
Molybdenum	mg/l	0.0010	0.0009	0.0014	0.0012	0.0010	0.0010	0.0010	0.0012
Nickel	mg/l	0.0008	0.0027	0.0021	0.0023	0.0011	0.0007	0.0037	0.0030
Rubidium	mg/l		0.0015	0.0040	0.0021	0.0008			0.0026
Selenium	mg/l		0.0004	0.0011	0.0008	0.0003	0.0001	0.0006	0.0004
Silver	mg/l					0.0001			
Strontium	mg/l	0.19	0.26	0.16	0.22	0.24	0.22	0.37	0.36
Tellurium	mg/l								
Thallium	mg/l								
Tin	mg/l				0.00105				
Titanium	mg/l	0.0035	0.0084	0.0219	0.0103	0.0041	0.0019	0.0150	0.0117
Tungsten	mg/l								
Uranium	ug/L		0.580	0.221	0.220	0.070	0.300	0.700	0.640
Vanadium	mg/l	0.0004	0.0014	0.0025	0.0023	0.0013	0.0007	0.0025	0.0024
Zinc	mg/l	0.012	0.007	0.006	0.012	0.006	0.001	0.009	0.013
Zirconium	mg/l		0.001	0.002	0.001				0.001
Dissolved Metals									
Aluminum	mg/l		0.070	0.030	0.035	0.030			0.030
Antimony	mg/l								
Arsenic	mg/l		0.0017	0.0023	0.0041	0.0021			0.0008
Barium	mg/l		0.16	0.42	0.44	0.13			0.09
Beryllium	mg/l								
Bismuth	mg/l								
Boron	mg/l		0.055	0.090	0.045	0.070			0.050
Cadmium	mg/l								
Cesium	mg/l								
Chromium	mg/l		0.0080	0.0070	0.0065	0.0070			0.0035
Cobalt	mg/l		0.0003		0.0003				
Copper	mg/l		0.001	0.001	0.001	0.003			0.002
Iron	mg/l		0.22	0.02	0.23	0.02			0.03
Lead	mg/l		0.0003	0.0004	0.0003	0.0099			0.0001
Manganese	mg/l		0.0472	0.0413	0.1329	0.0054			0.0110
Mercury	mg/l								
Molybdenum	mg/l		0.0026	0.0013	0.0015	0.0013			0.0014
Nickel	mg/l		0.003	0.002	0.002	0.002			0.002
Rubidium	mg/l		0.001	0.001	0.001	0.001			0.001
Selenium	mg/l								
Silver	mg/l								
Strontium	mg/l		0.237	0.152	0.210	0.208			0.344
Tellurium	mg/l								
Thallium	mg/l					0.0003			
Tin	mg/l					0.0003			
Titanium	mg/l		0.0024		0.0007				0.0017
Tungsten	mg/l								
Uranium	mg/l		0.0010	0.0005	0.0004	0.0003			0.0011
Vanadium	mg/l		0.003	0.003	0.0033	0.0035			0.0025
Zinc	mg/l		0.008	0.014	0.013				

Table 7: Saskatchewan Environment Draft Water Quality Guideline Exceedances

Parameter	Caution Creek	101 Ravine	East Ravine	English Creek	West Perimeter Ravine	West Ravine	Sask. River Upstream	Sask. River Downstream
Total Metals								
Aluminum	X	X	X	X			X	X
Arsenic	X	X	X	X	X	X	X	X
Cadmium	no data	no data	no data	no data	X	no data	no data	no data
Chromium	no data	X	X	X		no data	X	X
Iron	X	X	X	X	X	X	X	X
Mercury	no data	no data	no data	no data	X	no data	no data	no data

Notes: X indicates an exceedance of the Saskatchewan interim surface water quality objectives.

4.2.5 Groundwater

The stratigraphy of the Star Kimberlite area has been defined in detail by Clifton Associates Limited (Clifton) in conjunction with Hydrologic Consultants Incorporated (HCI) of Denver Colorado, on the basis of existing coreholes and new coreholes drilled at the test sites during the 2006 to 2007 hydrogeologic field investigation (Clifton, 2006). The hydrogeology from ground surface down through the top portion of the Souris River Formation can be described as three units or systems, which are described below:

1) A shallow system comprised of the surficial sands, silts, and clays (often referred to as the surficial stratified drift); and
2) A confining layer (sometimes referred to as an "aquitard") comprised of till (formally broken into the Saskatoon and Sutherland Groups by Clifton), locally the Empress Formation, and the Joli Fou shale (also referred to as the Lower Colorado Group); and
3) a deep system comprised of the Mannville Group (including the Pense and Cantuar Formations, the latter further broken into seven members of variable sand, silt, and clay content) and the upper several metres of the underlying carbonates of the Souris River Formation; the latter is an arbitrary thickness selected for the purpose of this investigation.

4.2.5.1 Shallow Groundwater System

The shallow groundwater system includes two fairly distinct hydrogeologic units:

- Surficial Sand: This is an unconsolidated, silty to fine-grained sand which covers most of the project area and which averages about 8 m in thickness. Based on previous testing, it has been noted to possess a relatively high hydraulic conductivity (K) of about 1 m per day. This unit is directly recharged from precipitation and is in direct hydraulic communication with surface water bodies.

Monitoring of the background water quality in the groundwater from the surficial sands at the Star site generally shows that this water has a total dissolved solid (TDS) concentration of 200 to 500 mg/l and has elevated concentrations of aluminum, copper, and iron. There are also a few incidences where there are elevated levels of lead and selenium that appear to be due to naturally occurring conditions.

- Surficial Silt: This is a highly variable unit consisting primarily of silt but with many interbeds of very fine-grained sand and clay. This unit has a thickness of 19 to 28 m at the tested sites. Testing of this unit has shown it to have a *K* in the range of 0.01 to 0.1 m per day, which is significantly lower than the *K* of the overlying sand.

4.2.5.2 Confining Layer

Previous work suggests that the confining layer includes all of the units between the surficial silt and the uppermost Mannville Group (HCI, 2007). This definition includes the till, the Empress Formation where present, and the Joli Fou shale.

The till consists of glacially deposited silt and clay containing variable amounts of sand and gravel-sized particles of overall low *K,* with some sand or gravel interbeds of locally higher *K*. The overall *K* of the till was found to be $3x10^{-3}$ m per day (HCI, 2007). Locally permeable sand or gravel interbeds within the till do not appear to be continuous over significant distances within the till unit and cannot be correlated between test sites.

The Empress Formation consists of sand, gravel, and boulder lag at the base of the till. It is discontinuous throughout the region, and, where present, is an aquifer for domestic and agricultural water supply. It is absent at the South Star and the 147 Kimberlite sites and is about 2 and 4 m thick at the 148 Kimberlite and Gronlid sites, respectively. At the 148 Kimberlite site, the Empress Formation was "dirty" and had essentially the same *K* as the till. At the Gronlid site, it was thin but consisted of a "clean" sand and gravel unit which reportedly produced significant water during drilling and airlift pumping operations (HCI, 2007).

The Joli Fou Formation is an approximately 80 m (ranging from 60 to 90 m) thick sequence of interbedded marine shales and siltstones which overlies the Mannville Group. Based on previous hydraulic testing within the Joli Fou Formation (HCI, 2005b), it has an average *K* of about 2×10^{-4} m per day. Thus, it forms an effective confining layer between the shallow and deep groundwater systems, although it appears to be somewhat "leaky" at the Star South hydrogeological testing site, based on the hydraulic heads in piezometers in the Joli Fou Formation at that site relative to the heads at the 148 site.

The Joli Fou Formation has been locally removed by erosion within parts of the paleochannel located immediately north of Kimberlite 148 (Orion North) which is located approximately 10 km north of Star. The absence of the Joli Fou, together with fluvial layers of sand and gravel replacing the till within this paleochannel results in the deep groundwater system being in direct hydraulic connection with the shallow groundwater system in that area.

Groundwater quality in these confining deposits is quite variable and can have TDS readings that are quite high relative to water quality from the shallow groundwater flow system.

4.2.5.3 Deep Groundwater System

The deep groundwater system is comprised of the Mannville Group and the upper 135 m of the Souris River Formation. The Mannville Group includes the Pense and Cantuar Formations, the latter comprised of seven sandstone members of highly variable amounts of sand and silt (and minor clay) and differences in cementation and occurrences of interbeds of shale and coal. The Pense Formation immediately underlies the Joli Fou shale at the Star South and 147 sites, but is absent at the 148 and Gronlid sites. The Cantuar Formation includes the seven members that correlate well between all boreholes drilled during field investigations.

The Souris River Formation consists of Devonian-age carbonate rocks. The upper several metres of the carbonates are probably fractured and relatively permeable (based on the spinner log testing) and should be considered to be part of the deep groundwater system.

Based on field testing of the Orion South kimberlite conducted in 2005 and 2006, the weighted geomean (the weight assigned based on the hydraulic test method) of K from Mannville Group was estimated to be $1x10^{-2}$ m per day (HCI, 2007). During this same program, HCI found that the K values from the Orion South Kimberlite varied from $1.3x\ 10^{-5}$ m per day to $8.8x10^{-3}$ m per day (HCI, 2005). Based on these results, HCI calculated the weighted geomean for the kimberlite to be K=$2x10^{-4}$ m per day. This weighted geomean value was applied to all kimberlites (including the Orion South, Orion North and Star kimberlites) in a groundwater flow model of the region. It is important to note that the measured K values of the kimberlite are very low.

As described in the 2006 Star Annual Report prepared by Shore Gold for the MoE, the quality of the water that previously flowed into the Star exploration shaft during bulk sampling had TDS concentrations that were very consistent and ranged from 4,130 to 4,540 mg/l. This is also consistent with the results of the groundwater quality samples from the Mannville Group.

4.3 Human Environment

4.3.1 Land Use

The FalC forest is an island forest of 132,502 ha surrounded by agricultural land and is close to several communities (including the cities of Prince Albert and Melfort) and First Nations (Figure 1 and Figure 4). The FalC forest supports a variety of outdoor recreational activities such as snowmobiling, berry picking, skiing, hiking, and a broad range of natural resource uses such as trapping, hunting, fishing, tourism, logging, traditional Aboriginal uses, mineral exploration, and reforestation activities.

An integrated forest land use planning process was initiated in 1999 by Saskatchewan Environment and Resource Management (SERM). A Public Advisory Committee with extensive representation was formed and public and other meetings were held. The planning process has not yet been completed.

The forest is accessed by several all-weather roads; Shipman Trail is accessed via Hwy 55 and Division Road is accessed from Hwy 6 approximately 10 km north of the Saskatchewan River crossing at Wapiti. The roads within the forest are primarily resource roads.

4.3.2 Nearby Communities

The closest community to the proposed project site is the James Smith Cree Nation Indian Reserve 100/100A which is located partially within the FalC forest but mainly on the south side of the Saskatchewan River. The Muskoday First Nation Indian Reserve 99 is the next closest First Nation (Figure 1). To date, the Government of Saskatchewan has consulted with the James Smith Cree Nation, the Muskoday First Nation and Métis Nation regional organizations about activities in the FalC forest.

Other communities within the region, along with their approximate travelling distance from the site and 2006 population are listed in Table 8 below. These communities are designated as cities, towns or villages depending upon their size and other criteria under *The Municipalities Act*. Rural areas are organized as Rural Municipalities (RMs) and their populations are recorded separately.

Table 8: Communities and Rural Municipalities within the Local and Regional Study Areas

Local and Regional Study Areas	2006 Population [a]	Approximate Driving Distance to the Project (km) [b]
City of Prince Albert	34,138	120
City of Melfort	5,192	90
Towns		
Choiceland	346	50
Star City	428	110
Kinistino	643	120
Birch Hills	935	140
Tisdale	2,981	115
Nipawin	4,061	70
Subtotal	**9,394**	**n/a**
Villages		
Valparaiso	20	120
Love	55	70
Beatty	61	105
Ridgedale	66	90
Weirdale	83	70
Aylsham	92	110
Albertville	110	95
Meath Park	179	80
Smeaton	183	40
Zenon Park	192	125
Weldon	205	115
Codette	221	80
White Fox	348	80
Subtotal	**1,815**	**n/a**
Rural Municipalities		
Garden River RM 490	633	n/a
Connaught RM 457	656	n/a
Birch Hills RM 460	701	n/a
Kinistino RM 459	713	n/a
Willow Creek RM 458	719	n/a
Flett's Springs RM 429	736	n/a
Star City RM 428	936	n/a
Tisdale RM 427	938	n/a
Nipawin RM 487	1,166	n/a
Torch River RM 488	1,559	n/a
Prince Albert RM 461	2,918	n/a
Buckland RM 491	3,429	n/a
Subtotal	**15,104**	**n/a**
First Nations		
James Smith First Nation (on reserve)	1,093	95
Muskoday First Nation (on reserve)	533	145
Subtotal	**1,626**	**n/a**
STUDY REGION	67,454	
Saskatchewan	968,157	n/a

Notes: 100 km = ~ 1 hour driving time; [a] Statistics Canada, 2008; [b] Driving distances were calculated using Google Maps Driving Directions between each community and the site, which is located at "53.233710, -104.780670" Google Maps Canada, 2008.

Table 9 below provides a detailed list of the hamlets within the 12 Rural Municipalities that surround the FalC Kimberlites.

Table 9: Hamlets within Rural Municipalities

Rural Municipality	Hamlets
Tisdale RM 427	Eldersley Sylvania
Star City RM 428	Resource Whittome
Flett's Springs RM 429	Ethelton Lipsett Pathlow
Connaught RM 457	Armley Carlea Leacross Runciman New Osgoode
Willow Creek RM 458	Fairy Glen Gronlid Brooksby Thaxted Lenvale
Kinistino RM 459	Brockington
Birch Hills RM 460	Brancepeth Hagen Fenton
Prince Albert RM 461	Davis Red Deer Hill
Nipawin RM 487	Pontrilas
Torch River RM 488	Garrick Shipman Snowden
Garden River RM 490	n/a
Buckland RM 491	Spruce Home Henribourg

The City of Prince Albert, with a 2006 population of just over 34,000, is the largest city in the region and the third largest city in the province. It is a major service and transportation centre, particularly for northern Saskatchewan. Three other key communities, the City of Melfort (5,192) and the towns of Tisdale (2,981) and Nipawin (4,061) are also important service centres with a large combined trading area.

4.3.3 Regional Economy

The regional economy is agricultural and resource-based combined with a sizeable service and transportation sector. The agricultural sector is diverse. The area around Melfort, Tisdale and Nipawin is one of the richest, most productive farmland areas in Canada. Crops such as wheat, barley, canola, peas, flax, lentils, alfalfa, canary seed, rye, various forage crops, spices, and other specialty crops are grown. Livestock such as cattle and hogs and specialty livestock (elk, deer, and wild boars) are also produced. In addition, the area provides important agricultural services such as meat processing, feed mills, seed cleaning plants, the distribution of farm chemicals, and the manufacturing and distribution of farm equipment and grain storage facilities.

The resource sector includes mineral exploration, forestry, and wood processing. The Prince Albert region is central to the Saskatchewan forestry industry, within three hours travel from all producing sawmills in the province. According to a 2006 KPMG Study (PAREDA, 2008), Prince Albert was named one of the Top 20 locations in Canada for cost-effective wood manufacturing, and, until 2006, hosted a large pulp and paper mill that employed approximately 690 workers.

The service sectors include wholesale and retail trade, health, education, and business services. Prince Albert is a major service centre with a large regional hospital, government offices, and post-secondary educational institutions. Nipawin, Melfort and Tisdale have hospitals, and some of the smaller communities have medical clinics. The transportation sector consists of a regional airport in Prince Albert, railways, highways and secondary roads.

A regional tourism economy revolves around a wide variety of outdoor year-round recreational opportunities including cabin rentals, camping, boating, fishing, hiking, golfing, downhill and cross-country skiing, and snowmobiling. Important regional parks and recreational areas are the Wapiti Valley Regional Park, the Nipawin and District Regional Park, the Melfort and District Regional Park, and Tobin and Codette lakes. Other campgrounds and picnic areas are located along the Saskatchewan River. The region is en route to camping, boating, fishing, and cottage destinations in northern Saskatchewan.

4.3.4 Infrastructure

The transportation infrastructure consists of highways, secondary roads, railways, and airports. Several all-weather highways as well as a network of good quality secondary roads serve the region. Highways #2 and #6 are main routes north and south and Highways #3 and #55 are main routes east and west. The railway system includes short and long-haul tracks which are owned by either corporations or communities.

The largest and busiest regional airport is located in Prince Albert while smaller airports are located in smaller communities.

4.3.5 Traditional Use

The area is located within the confines of Treaty #6 and the James Smith Cree Nation, the Muskoday First Nation, Métis, and potentially other Aboriginal groups have asserted traditional uses over the area. Aboriginal people have traditionally used lands within the FalC forest for hunting, fishing, trapping, berry picking, gathering medicinal plants and for traditional and ceremonial pursuits. The FalC forest contains numerous traditional cultural areas, including one burial ground, some of which have been identified by James Smith Cree Nation. Historically, cabins have been erected in the FalC forest and used to support traditional uses.

4.3.6 Non Traditional Land Use

In addition to mineral exploration, the non-traditional land uses in the FalC forest consist of forestry, fisheries, hunting, trapping, and some recreational use. There are no other industrial activities in the FalC forest.

4.3.6.1 Forestry

The *Fort a la Corne Provincial Forest Draft Land Use Plan* (October 1999) states that the land base of the Fort à la Corne Provincial Forest is composed of 79,493 ha (60%) timber producing land, 33,861 ha (25.5%) productive non-forest (i.e., meadows and clearings) and 18,038 ha (13.5%) non-timber producing land. As such, the forest consists of 131,392 ha of land, with the remaining 1,110 ha (1%) under water. Forestry has been actively pursued since the early 1900s. Individuals harvest fuel for personal use, including about 1,600 m^3 of green softwood, 500 m^3 of green hardwood, and 5,100 m^3 of dead dry wood annually.

The FalC forest has a high infestation of dwarf mistletoe, a parasitic plant which causes stem deformation, reduced growth and eventual mortality of jack pine. The disease increases fire intensity through rate of spread, crowning potential, and flammability through resin filled cracks and increased accumulation of dead dry fuels. Other diseases such as jack pine budworm and forest tent caterpillar have been noted in the FalC forest, but neither have had a significant effect on the forest.

Field surveys completed in 1985 found 45% of the pine stands were infected with dwarf mistletoe (SE, 1999). The last two major fires in the area burned 2,760 ha of infected stands. Fire provides a natural opportunity to break the pattern of infection and initiate new growth of trees. Outside of the fire areas, 12,353 ha of jack pine forest remain infected with the disease.

Forest Renewal

To maintain forest sustainability, renewal of disturbed areas is important, either through natural means or by human efforts. In order for a forest to regenerate naturally, good sites with good cone crops are preferred, although planting is the other means of reforestation (SE, 1999). Reforestation has been ongoing in the FalC forest since 1940. Although a number of tree species (e.g., Scots pine, European larch, Manchurian elm and lodgepole pine) were introduced in the FalC forest, natural biodiversity concerns have raised questions about the effects of introducing new species, and this option is no longer practiced (SE, 1999).

As of 1987, nearly five million seedlings had been planted in the FalC forest and 900 ha scarified with site preparation equipment; however, planting success is considered poor compared to the rest of the province. Past reforestation activities neglected to consider the effect of dwarf mistletoe, and residual infected trees were left in the cut area and subsequently infected the new stand.

4.3.6.2 Hunting and Trapping

The FalC forest is located within Wildlife Management Zone (WMZ) 50 and is designated as a Wildlife Management Unit (WMU). Because it is a unique island of extensive habitat, it has its own set of hunting regulations. The FalC WMU offers draw seasons for moose and elk, and regular seasons for white-tailed deer, black bear and game birds (SE, 2007).

The FalC forest is designated under Fur Management Zone (FMZ) P-085. Trapping season dates vary and are species specific.

4.3.6.3 Fisheries

In 1964, Saskatchewan Environment implemented a fish enhancement program and began stocking Bergen, English, Hendrickson, Lars, and Shapytka creeks with trout. Trout stocking was discontinued in these creeks in the late 1980s and early 1990s due to poor survival, reduction of fish habitat and limited angler utilization.

In 1985, a fish rearing pond was constructed near the foot of George Willis Bridge, as part of the construction process of the Francois Finlay Dam. Several problems caused the suspension of the pond’s use until 1998, when changes made to the structure corrected the problems. The rearing pond is operated in cooperation with the Melfort Wildlife Federation. In its first year of operation, the pond was the highest producing pond in Saskatchewan, with a production of 500,000 walleye fingerlings for use in the region.

4.3.6.4 Recreation

The FalC forest and surrounding area is utilized for various recreational activities. There are several cross country ski trails throughout the FalC forest that are maintained by the Melfort Cross Country Ski Club. There are two snowmobile trails: one south of the Saskatchewan River, maintained by the Melfort and District Trail Riders, and one north of the Saskatchewan River, maintained by the Twin Lakes Trail Blazers. In 1984, the Wapiti Valley Regional Park, located just outside the forest boundary, was opened with a downhill ski facility and cottage subdivision.

4.3.7 Archaeology and Heritage Resources

One hundred and fifty eight archaeological sites were identified in baseline surveys conducted between 2004 and 2007 and to date, are the only sites that are on record with the Heritage Resources Branch in the LSA. These sites were documented during assessments completed in the context of diamond exploration activities. The majority of the recorded heritage sites in the RSA are located within the Saskatchewan River valley. Additional heritage surveys and mitigation within the proposed footprint are in progress.

5.0 Potential Environmental Impacts and Mitigative Measures

Shore Gold intends to prepare a comprehensive EIA to support project approval and permitting. This section briefly outlines the areas to be investigated as part of this comprehensive study.

5.1 Potential Impacts to the Biophysical Environment

A number of aspects of the biophysical environment have been identified as potentially affected by mine construction, operation and closure, in the event a positive production decision is made. All of these are important elements of the biophysical environment. The concept of valued environmental components (VECs) is used to designate such elements because VECs play an important role in maintaining environmental integrity. The preliminary VECs identified are similar to those that are important for most mining operations and may include, but are not limited to:

- soils and geology;
- surface water;
- groundwater;
- aquatic biota;
- air quality;
- soils and vegetation;
- wildlife; and
- rare species.

An initial evaluation of the VECs that may be affected follows.

5.1.1 Soil and Geology

A large quantity of overburden, including layers of till, sand and gravel, would need to be removed to mine the kimberlite. All overburden would be placed in an overburden pile which would be designed to be geotechnically stable. Some of this material could be required for construction purposes at the site. Gravel, if economically extractable, may be separated and sold as aggregate if not required for mine purposes.

The geology of the deposit would be permanently altered by extraction of the kimberlite. The constructed landforms would be stabilized, and the open pit(s) would be allowed to fill naturally with water. In the long term, this may serve recreational purposes or other acceptable end land uses after the mine surface facilities are removed as determined through the EIA process.

5.1.2 Surface Water

Several alterations directly or adjacent to local creeks would be required to construct the project. As a result, both the quantity and quality of surface water bodies in the area around the mine site could be affected. These potential alterations include: the re-routing of two creeks, the diversion of flow into local creeks, and construction of creek and river crossings. These changes may affect fish habitat and navigability of the waterways.

5.1.2.1 Alteration of Water Courses

The East Ravine and West Ravine would have to be re-routed to flow around mine facilities. The water in these ravines would still report to the Saskatchewan River, but the drainage system would be altered. The lower reaches of the East Ravine were shown to provide spawning habitat for suckers, which may be lost due to redirection of the flow. The upper reaches of the East Ravine, Duke Ravine, and the 101 Ravine will be filled or covered with site facilities. In addition, some of the other adjacent ravines (i.e., Duke Ravine for process water and the 101 Ravine for water diverted around the facilities) may be used as receiving water bodies as part of the water management strategy. These activities would result in changes to both these local flows and, potentially, also to water quality within the affected creeks. When the flow in the creeks in the area is altered, the effect of flow alterations would be mitigated through the use of bank stabilization, armouring, and bioengineering.

The Saskatchewan River may receive up to approximately 100,000 m^3 per day (or 1.16 m^3/s) of water (from pit de-watering) once operations reach a steady state. Considering the 20 year average seven day low flow of the Saskatchewan River (149 m^3/s), the potential increase in flow is approximately 0.77%.

5.1.2.2 Changes to Water Quality

Changes to surface water quality are also possible as a result of operations. Water flowing from the PKCF, which will include process water from the plant and groundwater from both shallow and deep aquifers, is expected to reach the Saskatchewan River using existing waterways (Duke and 101 Ravines) depending on the water management option selected. This water will have different water chemistry than from the chemistry prior to development. Effects on the Saskatchewan River are expected to be low due to the small relative contribution of this water to the overall low flows of the Saskatchewan River.

5.1.2.3 Waterway Crossings

Several creeks may require crossing in order to construct the proposed natural gas line, power line, and access road corridors. The access corridor would cross the White Fox River (Figure 4), which has been identified as a cold water fishery stream, and English Creek. The White Fox River crossing would either be a clear span bridge or series of culverts as determined by the site-specific pre-construction studies. The crossing of English Creek would use culverts to allow fish and water passage. Construction of all crossings would use standard construction practices to limit sediment export into the stream. In the event stream banks were required to be disturbed, armouring would be applied upon completion of construction, or, if possible, riparian vegetation would be established that would not interfere with the activities within that corridor when mature (e.g., willows along power line corridors). As well, the project may require the installation of a natural gas line beneath the Saskatchewan River, possibly using directional drilling technology, and a power line above it. The power line crossing would require minimal work within the river valley, and would be designed to span the entire width of the river.

5.1.3 Groundwater

As previously discussed in Section 3.5.8, up to approximately 100,000 m^3 per day of groundwater may need to be pumped from either the open pit(s) or from the area adjacent to the open pit(s) to allow for the construction of a mine. The proposed approach to water management has been previously discussed. The aim of the water management strategy would be to limit contamination of receiving water bodies, in this case, the Saskatchewan River and/or tributary creeks. The effect of dewatering of local groundwater systems is currently being assessed. The effects on the shallow groundwater system would likely be very limited as these aquifers are of limited areal extent and tend to close with time. It is expected that the water in the shallow groundwater system would still flow into the Saskatchewan River during operations.

The effect of dewatering the deeper groundwater flow system would be investigated in the EIA. The water in this deep groundwater system is of poorer quality and is not considered potable without treatment. As a result, the use of water from this system by other users is expected to be negligible. No users of the water from this aquifer have been identified in the project area to date.

All contact water, including groundwater, would report to the PKCF, be used in the processing plant, or managed according to one of the options described in Section 3.5.8.

5.1.4 Aquatic Biota

As previously indicated, there would need to be several alterations directly or adjacent to local ravines and creeks via the re-routing of the East and West ravines and the diversion of flow into Duke and 101 ravines and creek and river crossings. These alterations may affect the aquatic biota in the area around the proposed mine site.

The East and West ravines would be largely removed by construction of the open pit. The lower reaches of the East Ravine have been identified as a spawning area for northern white suckers. Fish habitat in the East Ravine may be lost. Under the Department of Fisheries & Oceans (DFO) "No Net Loss Policy", any disturbed or lost fish habitat must be replaced with equivalent or better habitat. If necessary, a habitat compensation plan would be negotiated with the DFO in a process parallel to the EIA. The upper reaches of Duke and 101 ravines will also be lost due to the proposed development. Fish habitat studies are on-going on the upper reaches of these ravines; however, it is unlikely that fish passage from the Saskatchewan River is possible due to blockages in the stream bed. No fish have been observed to date in the West Ravine.

The water diverted from the East and West ravines, and potentially water from the PKCF and/or East Ravine reservoir, may be discharged into either Duke or 101 ravines through the proposed diversion channels. These discharges, if not managed, could affect the aquatic biota in these waterways through introduction or production of sediment and/or changes in water quality. The introduction of sediment would be controlled at the discharge points by using control structures and/or diffusers to limit the velocity of the discharges. Production of sediment would be managed through the assessment of the increased flows on the stability of the banks, armouring of the banks and promotion and establishment of riparian vegetation.

Construction of waterway crossings (see Section 5.1.2.3) may affect aquatic biota. The specific stream crossing locations will be assessed in consultation with DFO once selected.

5.1.5 Vegetation and Wildlife Habitat

The proposed mine layout is estimated to disturb approximately 3,000 to 4,000 ha, or 2.3 to 3.0 % of the Fort à la Corne (FalC) forest. All vegetation would be removed from disturbed areas. The FalC forest is characterized by fires on an approximately 20-year cycle (SE, 1999). Disturbance is part of the natural ecology of the area. In the natural cycle, frequent, low intensity burns would rarely return the forest to a primary succession sequence, as seeds and root propagules would be expected to remain viable after such a fire.

The EIA would provide an inventory of vegetation and wildlife habitats that would be disturbed by mining. At closure, final reclamation objectives would be to restore the disturbed area to a productive ecosystem consistent with the surrounding FalC forest, as determined in the EIA.

5.1.6 Wildlife

Wildlife habitat in the FalC forest would be temporarily reduced in the mine footprint throughout the mine life. The project area may provide some nesting habitat for breeding birds and denning habitat for small mammals. Wildlife studies were conducted in 2007 and are planned for 2008. The results of these studies will be included in the EIA. There have been no critical habitats identified to date in the project area (e.g., over-wintering areas that are not commonly found elsewhere in the FalC forest); however, a thorough inventory will be carried out as part of the EIA. Should critical habitat be encountered, it would be avoided to the extent possible by incorporating changes to the project. Equipment operators would be provided orientation training to make them aware of the possibility of collisions with wildlife in order to reduce accidents. To the extent necessary, a “no hunting” area would be established for safety reasons around the mine. Progressive reclamation in areas that were no longer active would help early re-establishment of wildlife habitat for breeding birds and small mammals.

At closure, final reclamation objectives would be to restore the mined area to a productive ecosystem consistent with the surrounding FalC forest or other end land use as determined by the EIA.

5.1.7 Rare and Endangered Species and Biodiversity

A number of plant species are near their northern or southern extent in the FalC forest and thus are uncommon in the project area. Based on surveys to date, there is the potential for occurrences of rare species of plants in the project area, particularly in ravine habitats. A rare plants survey was conducted in 2005 (see Section 4.1.3) which identified nine provincially rare plant species in the area. This survey will be updated for the EIA. To the extent possible, disturbance of identified rare plants would be avoided. Where this would not be possible, mitigation measures would be developed in the EIA and implemented as needed.

As a general recommendation, the Saskatchewan Conservation Data Centre (2003) suggests a 50 m buffer from rare plant populations in areas subject to high intensity activities such as mining. When avoidance is not possible, mitigation strategies can include salvaging topsoil, rare plant seed collection, and transplanting. Mitigation recommendations, where appropriate, for rare plants vary depending on the species and location and will be investigated in the EIA.

5.1.8 Air Quality

The principal effect on air quality is expected to be dust generated by mobile equipment, loading and placement of overburden, crushing of ore and blasting. More minor emissions would arise from mobile and stationary internal combustion engines.

As part of the environmental assessment, a complete emission inventory would be taken including all exhaust sources, an estimate of dust from operation of mobile equipment and crushers, and an estimate of dust from loading and placement of waste. All sources would be modelled to produce an estimate of the extent of changes to ambient air conditions. Mitigation measures such as use of water on unpaved roads would be considered as part of a comprehensive air quality management plan.

5.2 Potential Impacts to the Human Environment

The Human Environment section of the EIA would include five distinct but interdependent disciplines: (i) Socio-Economics, (ii) Human Health, (iii) Traditional Knowledge and Traditional Land Use, (iv) Archaeological and Heritage Resources and (v) Non-Traditional Land and Resource Use.

5.2.1 Socio-Economic

Socio-economic impacts are likely to be focused on the following:

- population and demographics;
- employment and training;
- economic activity and income;
- health, social and public safety services;
- education;
- community well-being;
- infrastructure and traffic; and
- language and culture.

It is expected that there would be effects in each of the above categories throughout construction, operation, and closure phases. These effects would mainly be positive, but in some cases could be negative. A major positive effect would be an increase in local employment and training opportunities which could particularly affect young and Aboriginal people who want to remain in the region. There may be an influx of transient workers during construction, which might be considered a negative effect. Shore Gold would develop and implement mitigative measures to reduce the impact of transient workers as appropriate.

Communities around the project area (rural, semi-rural, and urban) are expected to be affected differently. The City of Prince Albert, for example, may experience a larger number of in-migrants than smaller communities such as the Village of Love or the Town of Choiceland but, due to its size and available services, the City of Prince Albert would not be affected as much as smaller communities.

Overall, it is expected that effects would be positive. Mitigation and enhancement measures would be determined throughout the assessment process in consultation with local communities, government officials and other stakeholders. The public consultation process and development of a socio-economic baseline report will provide valuable information about the effects of the project.

5.2.1.1 Population and Demographics

Population and demographics would likely change as a result of the project. These changes may be particularly noticeable in small communities close to the project site. The EIA will provide a description of population using the same communities and area as described in Table 9 and using 2006 Statistics Canada numbers to establish a baseline and to predict the potential effects of the project on population.

5.2.1.2 Employment and Training

Shore Gold is participating in a variety of programs (i.e., Northern Career Quest - Aboriginal Skills and Employment Partnership (ASEP), Representative Workforce Strategy and Job Horizons 2) to assist Aboriginal people in accessing industry related training. Shore Gold is also supporting programs to target Aboriginal people for recruitment and assist in their retention. These programs take a partnership approach involving industry, learning institutions, First Nations, and Métis organizations. Industry plays a pivotal role by identifying current and future human resource requirements. Industry provides input as to the type of training that is required and the number of employees required. At the end of training sessions, graduates are expected to move into upcoming job vacancies within industry. In November 2007, 60 First Nations and Métis individuals were working at Shore Gold's site. This number includes those working directly for Shore Gold and those working for Shore Gold's contractors.

The EIA would evaluate potential changes in employment and training as a result of the project. Shore Gold is committed to hiring locally whenever possible and strives to develop a workforce representative of the geographic areas surrounding the company's projects.

5.2.1.3 Economic Activity and Income

Recently, value added and other economic benefits resulting from the mining industry were among the top ten contributors to the GDP in Canada (Mining Innovation Study, Nov. 2001). Mining production and investment generate direct demand in supplier industries and additional demand as ensuing rounds of expenditure work their way through the economy. Every dollar spent directly by a mining company means more dollars spent indirectly through jobs and services.

The EIA will describe current economic activity level in the area (as defined in Tables 8 and 9). The changes to economic activity would be assessed based on the number, type, and duration of the jobs created by the proposed project and associated spin-off opportunities. Income from direct, indirect, and induced economic activity would be considered in the EIA.

5.2.1.4 Community Well-being

The EIA will compile a profile of social conditions in communities in the study area, and, if appropriate, predict potential changes due to the project.

5.2.1.5 Health, Social and Public Safety Services

The EIA will provide an inventory of existing health facilities and services, social services and public safety services in the study area and assess changes to these services as a result of the proposed development. Public safety services include fire, ambulance, and law enforcement.

5.2.1.6 Education

The EIA will provide an inventory of existing educational institutions in the study area and assess changes to these services as a result of the proposed development.

5.2.1.7 Infrastructure

The EIA will provide a description of roads, railway lines, airports (and air strips), housing stock, recreational facilities, water treatment, power and other infrastructure and describe the influence of the project development on infrastructure (e.g., increase in housing stock). The EIA would describe current traffic levels and the potential increase in vehicular traffic.

5.2.1.8 Language and Culture (First Nations and Métis)

The baseline description of the current language and culture of First Nations and Métis communities in the study area would be based on available census data (e.g., Stats Can 2006) and potential changes in language and culture due to project development will be assessed.

5.2.2 Traditional Knowledge and Traditional Land Use

Traditional knowledge and traditional land use studies are planned as part of the EIA. It is Shore Gold's intention to incorporate existing or recently completed traditional knowledge studies into the EIA and to conduct these studies in collaboration with First Nations and Métis people, if needed. These studies can identify important environmental, biophysical, social or cultural issues and features, such as hunting areas, fishing areas, berry patches, cabins or camping areas, culturally significant sites, animal health and behaviour and others. The information would be used to understand the effects on traditional land use (such as changes to wildlife habitat, berry picking areas, noise, traffic and use of trail networks) affected by the project.

Traditional knowledge is also often integrated into other sections of an EIA, providing valuable information to the understanding of project effects and insights into mitigation and enhancement measures.

5.2.3 Human Health

The human health section of the assessment would identify potential impacts on health and well-being through changes in physical and social conditions in nearby communities as a result of the project.

Human health effects would likely focus around the following:

- health benefits of employment and income;
- demand of work on time (shift work and commute);
- increase in traffic on public safety;
- occupational health and safety (noise, air quality, safety); and
- impact on forest and country foods.

First Nations and Métis would be considered in terms of their unique perspective on human health.

Positive effects would include those from employment and increased income. Negative effects may include an increase in accidents as a result of heavy traffic flow on local roads.

Mitigation and enhancement measures would be developed in consultation with local communities and government representatives, if appropriate. It is not expected that there would be any significant direct, long term impact on human health as a result of the proposed project.

5.2.4 Non-Traditional Land and Resource Use

The non-traditional land and resource use assessment would focus on the FalC forest. The following uses would be examined for effects from the project:

- historical land use;
- current use of the area by the local residents (i.e. camping and skiing);
- future land use plans for the area;
- local hunting, fishing and hiking;
- local businesses (i.e. forestry and eco-tourism);
- linkages with current tourism opportunities; and
- changes to access and traffic in the area.

Mitigation and enhancement measures would be developed in consultation with local communities, user groups, and government representatives.

5.2.5 Archaeological and Heritage Resources

Considerable archaeological and heritage work has been completed for the proposed project.

Heritage Resource Impact Assessments associated with kimberlite exploration activities within the FalC forest have been ongoing since 2004. These assessments were completed under Archaeological Resource Investigation Permit Numbers 04-102, 05-038, 05-87, 06-064, 06-103, 07-053, 07-245, 07-259, 07-292, 07-305, and 07-341.

These assessments cover portions of the current project footprint. Additional field surveys were conducted in 2008 to complete the inventory for the project footprint. Further, the Heritage Resources Branch of the Ministry of Tourism, Parks, Culture and Sport, requires that all heritage resources found in conflict with the proposed Star-Orion South Diamond Project be mitigated. A mitigation strategy is currently being implemented in consultation with the Heritage Resources Branch.

6.0 Monitoring

Monitoring serves as a check on environmental assessment predictions for issues that cannot be determined without a large amount of uncertainty. Where required, the EIA for the project would develop conceptual monitoring plans for key components of both the biophysical and human environments that are likely to be affected by the project.

6.1 Biophysical Environment

Aspects of the biophysical environment that have been identified as potentially affected by mine development and operation include: air quality, surface and ground water quality and flows, soils, vegetation, wildlife and wildlife habitat. As well, the physical stability of facilities including the PKCF, overburden, and CPK stockpiles would be routinely monitored to ensure integrity. This preliminary list, based on general mining experience, would be refined through the assessment and consultation process to identify key concerns that would require monitoring in order to mitigate uncertainty in the assessment.

6.2 Human Environment

A socio-economic monitoring program would be developed and implemented upon commencement of mine operations, if required. Monitoring programs are conducted to assist in identifying the effectiveness of mitigation and enhancement measures and to understand if the project's socio-economic and cultural effects are as predicted. Information from the monitoring program would be used to inform management, government, and communities. There may be times when the appropriate party to respond would not be Shore Gold, but a community or government. Adaptive management strategies would be developed. Adequate resources (human, financial and technical) would be in place to ensure quality monitoring, as determined in the EIA.

7.0 Decommissioning, Reclamation, and Closure

7.1 Decommissioning

Once it is determined that no further mining operations are feasible, buildings, equipment and materials would be removed, sold for scrap or demolished and buried on site after removal of all industrial wastes. No industrial wastes would be left on site. Any contaminated soil on site at decommissioning would either be remediated on site or containerized and shipped off site as hazardous waste. Concrete foundations would be broken to below ground level, the footings buried and the waste material landfilled on site.

7.2 Reclamation and Closure Plan

7.2.1 Approach

A conceptual reclamation and closure plan would be developed as part of the EIA. The plan would detail short and long-term actions to be taken to ensure the site is chemically and physically stable after mining ceases and that the land can be returned, to the extent feasible, to an appropriate end land use as determined through the EIA.

Progressive reclamation would be implemented, where possible, once facilities or disturbed areas are no longer active in order to minimize the project footprint.

The end land use plan developed in the EIA would provide context for the conceptual closure and reclamation plan. Actions to be taken would differ, depending on the end use. However, certain commonalities apply. For final closure and reclamation, where feasible, slopes created during mining would be graded to blend into the natural surroundings as much as possible, compacted surfaces would be scarified, top dressing of overburden would be applied where erosion of top dressing is not problematic and the prepared surfaces planted with native species. Water treatment ponds would be breached or removed and revegetated. The PKCF would be reclaimed to a dry cover and vegetated.

During operations, reclamation trials would be carried out in areas targeted for progressive reclamation to determine which treatments and vegetation successfully return areas to a productive state. Experience gained during the project operating life would be applied on final closure. Post closure monitoring would be carried out for a number of years in conjunction with other post closure environmental monitoring to ensure the land is returned to productivity, as determined by the end land use, without further intervention.

8.0 Stakeholder Engagement

8.1 Engagement to Date

Shore Gold has maintained an active communications strategy to inform local community members of its various activities. The Diamond Development Advisory Committee (DDAC) has a mandate to be an effective and trusted liaison between the company and stakeholder communities (those communities identified as potentially being impacted by exploration activities in the FalC area). The Committee has held regular meetings since its inaugural meeting of January 20, 2007.

The DDAC represents all the local communities (urban and rural) including elected Métis Nation representation (Métis Nation Eastern Region II and Métis Nation Western Region II). All neighbouring Aboriginal communities are invited to attend and there is also a member from the Fort à la Corne Development Corporation (FCDC), the economic development arm of the James Smith Cree Nation. The FCDC also serves as the Diamond Liaison Office for the region and it is in that capacity that it provides representation to the DDAC.

Shore Gold has maintained regular contact with band members and band employees of the James Smith and Muskoday First Nations since early 2007, and the Director, Community Relations, and Vice-President, Corporate Affairs, are focused on continuing to build strong relationships with Aboriginal people. Meeting invitations are extended on a regular basis.

Shore Gold has made commitments to hire locally, and to secure contracts and services locally, providing this can be undertaken on competitive terms. Employees are hired and services procured outside the impact area when local opportunities are not reasonably available, or when needs cannot be met through local businesses. Shore Gold sends out its “request for quotes” to all appropriate local businesses and Aboriginal organizations, ensuring they are aware of all contracts being put out to tender by Shore Gold.

Shore Gold works diligently to build positive relationships with all local communities and these communities are very supportive of the idea of a new industry to provide economic activity.

Since the beginning of 2008, Shore Gold has actively participated in two partnership programs which are discussed in Sections 9.1.1 and 9.1.2 to enhance local Aboriginal participation in employment and business development. These programs have a co-operative approach that includes the participation of First Nations and Métis organizations, training institutions, industry, and governments.

In late March 2008, Shore Gold secured the services of a media monitoring agency and began actively monitoring radio, TV, and print coverage. Key words include "diamonds" and "Shore Gold." As a consequence, some articles are specific to Shore Gold, some mention Shore Gold in a cursory way, and others are about diamond activities unrelated to Shore Gold. Since the implementation of media monitoring there have been 30 articles pertaining to Shore Gold and the tone of the articles has been categorized by an internal assessment as 25 positive, two neutral and three negative. This information can be used to gauge public opinion of the project.

8.2 Future Stakeholder Engagement

Once the EIA process is formally underway, Shore Gold would supplement its ongoing community relations activities with a formal engagement strategy designed to solicit stakeholder input specifically on environmental assessment matters.

8.2.1 Objectives

The objectives of the proposed stakeholder engagement plan are to:

- inform all interested stakeholders and the general public about the environmental assessment process, related project information and opportunities for input;
- identify and evaluate all relevant information related to the potential effects the project could have on the region's environment, economy, society, heritage and health;
- ensure decisions on the project take into account and are responsive to the interests of all potentially affected parties; and
- modify the project, if feasible, in response to stakeholder concerns before irreversible project design and construction decisions are made.

8.2.2 Stakeholders

Shore Gold would engage the following stakeholder groups in the EIA process:

- First Nations and Métis;
- land and resource users;
- local governments and communities;
- special interests (e.g., Canadian Parks & Wilderness Society, Saskatchewan Chapter);
- general public;
- provincial government; and
- federal government.

8.2.3 Methodology

8.2.3.1 Notification and Information Distribution

Shore Gold would utilize a number of communication tools to keep interested stakeholders and the general public apprised of progress and opportunities for input. These tools include:

- **Project newsletters**: issued at key milestones throughout the EIA process, beginning with the launch of the process.
- **Presentations**: project and EIA updates to select audiences and upon request.
- **Web page**: web page in Shore Gold web site with EIA-related information to accommodate time and geographic constraints.
- **Contacts**: Shore Gold phone number, email address, postal address, and website for individual contact.
- **Public Repositories**: hard copies of the EIS in its entirety available at locally convenient locations, e.g., library, municipal offices, once the EIA is complete and filed with the Ministry of Environment.

8.2.3.2 Issues Scoping

Shore Gold would host a series of open houses and workshops as an opportunity for interested stakeholders to provide input on potential benefits and issues, as well as to provide access to more detailed information and experts. The DDAC would continue to play a key role in representing community interests.

In addition to the open houses and workshops, people trained in individual disciplines such as socio-economic, human health, land and resource use would be available to directly engage with potentially affected parties on matters specific to their subject area.

8.2.4 Provincial and Federal Agencies

Discussions would be ongoing with provincial and federal regulatory agencies regarding the EIA scope, level of assessment, process, permitting requirements, issues scoping and the governments' duty to consult with First Nations and Métis.

8.2.5 First Nations and Métis Engagement

Discussions would continue with James Smith Cree Nation, Muskoday First Nation, the local Métis, and other Aboriginal groups who have been identified by the Province for consultation, regarding potential project impacts and benefits, as well as issues scoping exercises parallel to those described in Section 8.2.3.2. In addition, traditional knowledge / traditional land use studies and assessments specific to those communities would be undertaken.

9.0 Employment and Procurement

As with the development and operation of diamond mines in Northern Canada (Ekati and Diavik), it is expected that the potential Star-Orion South Diamond Project development would provide significant benefits to Saskatchewan's economy via wages (direct and indirect), taxes and royalties. The local and regional economies would benefit, as would Canada's role in becoming a world leader in diamond production.

9.1 Employment

Examples of the types of jobs that would likely be available during the operations phase are listed in Table 10 below.

Table 10: Examples of Types of Jobs During the Operations Phase

Accountant	Accounting clerk	Administrator
Assayer	Mining technologist	Auto mechanic
Buyer	Biologist	Blaster
Chemist	Environmental engineer	Environmental technician
Control room operator	Equipment operator	Driller
Electrical engineer	Dozer / Grader operator	Crusher controller
Payroll administrator	Electrician	Geological engineer
Floor operator	Gasfitter	Geotechnical engineer
Geologist	Geophysicist	Health and safety officer
GIS specialist	Haulage truck operator	Heavy duty mechanic
Labourer	Mechanic	Janitor
Human resources officer	Instrumentation mechanic	Systems analyst
Shovel operator	Surveyor	Technical supervisor
Technician	Tire repairperson	Project engineer
Mechanical engineer	Warehouse worker	Purchasing agent
Mill operator	Mine manager	Security officers
Mineral process engineer	Mining engineer	

Positions within Shore Gold and its contractors currently held by local residents include:

- security officers;
- equipment operators;
- site services;
- core hands;
- LDD supervisors;
- electricians;

- heavy duty mechanics;
- industrial mechanics;
- administration assistants;
- instrumentation technicians;
- first line supervisors;
- buyers;
- warehouse persons;
- geologists;
- plant operators;
- truck drivers; and
- environmental technicians.

9.1.1 Training

Each phase of the proposed Project would offer training opportunities. Although training and employment opportunities would be project-specific for safe and productive employment, the majority of the skills would be transferable once the project was decommissioned. The exploration phase, for example, has provided opportunities for the training of local residents in environmental monitoring and as archaeological assistants.

Shore Gold has partnered with governments, First Nations and Métis people, learning institutions and industry organizations to participate in training and skills development. This initiative, under the auspices of the “Northern Career Quest Inc. Partnership”, will provide First Nations and Métis people access to skills training, leading to long-term jobs in the resource sector (Table 11). The Governments of Canada and Saskatchewan, Aboriginal organizations, training institutions, and industry partners will provide a total of $33 million in funding to this program over the next five years. The Aboriginal Skills and Employment Partnership (ASEP) project, through Northern Career Quest Inc., will provide training and skill development opportunities for 1,500 Aboriginal people in northern Saskatchewan (including the Fort à la Corne area) over the next five years and lead to long-term jobs in the resource sector, including mining, oil sands recovery, mineral exploration and oil and gas exploration. The agreement has been signed and funding began April 15, 2008. Courses will commence September 2008 offering First Nations and Métis people the skills and knowledge needed to benefit fully from resource industry opportunities.

Table 11: Northern Career Quest, 2008-09 Training Plan

Program	Delivery Institution
CATEGORY 1 – Upgrading	
Dev Study 1 Athabasca/LaLoche	Northlands College
Dev Study 2 Athabasca/LaLoche	Northlands College
Dev Study 3 Athabasca La Loche	Northlands/DTI
GED + (La Loche, Athabasca, + another location to be determined	La Loche (DTI/Northlands) Athabasca (Northlands)
CATEGORY 2 – Job Readiness	
Aboriginal Life Transitions	SIIT/DTI
Oil Field Safety	Cumberland House – Northlands Meadow Lake Oil & Gas – NWRC (1) Cumberland Regional College
Post-Secondary Career Prep	TBA – 2 intakes
CATEGORY 3 – Vocational/Technical	
Radiation/Environmental Monitoring Technician	Northlands
Mine Engineering Technician	Northlands
Mill Operator	SIIT
Geological Technician	Northlands
Diamond Drill Helper (3 intakes)	Northlands
Heavy Equipment Operator (2 intakes)	SIIT/NWRC/DTI
Office Education	Seats split among all 5 institutions
Truck Driver	Northern Resource Trucking (industry) contracted by an institution
MLTC Oil & Gas	NWRC
CATEGORY 4 – Trades	
Welding	DTI – 8 seats Pinehouse NWRC – 4 seats Meadow Lake
Plumbing/Pipefitter/Steam Fitter	SIIT to deliver in Prince Albert

Notes: TBA – To be Announced, DTI- Dumont Technical Institute, SIIT- Saskatchewan Indian Institute of Technology, NWRC- North West Regional College.

9.1.2 Recruitment

Shore Gold intends to develop a workforce which represents the diversity of skills required to progress and develop the company's projects, and which is representative of the geographic area in which it operates, through its participation in two projects - Job Horizons 2 (JH2) and the Representative Workforce Strategy.

Job Horizons 2 is a government-funded program with a mandate to recruit potential employees from all over northern Saskatchewan, including the Fort à la Corne area. It is a sub-committee of the Northern Labour Committee and will work with other agencies to help prepare clients for relocations and preparation for work settings. JH2 will fund clients to travel to work and provide assistance to get ready to work.

The Representative Workforce Strategy is a provincial initiative directed by the Ministry of First Nations and Métis Relations designed to develop a workforce where Aboriginal workers are represented at all occupational levels in proportion to their numbers in the province's population. Employers, First Nations and Métis people, and learning institutions work together to develop:

- priorities and programs to facilitate constructive race relations;
- aboriginal employment and career development initiatives within the employer's organization;
- linkages to the Aboriginal workforce; and
- economic initiatives of mutual benefit to generate opportunities for Aboriginal business participation.

On August 29, 2008, Shore Gold signed a Partnership Agreement with the Province of Saskatchewan, Muskoday First Nation, Metis Nation Eastern Region II, Nuna Logistics LTD, Athabasca Catering, Saskatchewan Indian Institute of Technologies and Cumberland Regional College. Whitford Construction LTD plans to sign as well. The agreement commits the parties to work together to develop a work plan with both short- and long-term priorities. Also included in this work plan will be a process to:

- co-monitor progress of the agreement, and
- co-evaluate results of the agreement.

Shore Gold is working with its long-term contractors to secure their involvement in the *Representative Partnership Strategy* agreement, which should ensure a harmonious approach to, and maximize Aboriginal employment. The Strategy would allow tangible benefits from the project's success to flow to the communities.

Discussions continue with the James Smith Cree Nation with respect to signing a similar agreement.

9.2 Procurement

Shore Gold's total procurement in 2007 was $73 million with $28 million awarded to Aboriginal-owned businesses. Shore Gold intends to use local suppliers and services that are available in a timely, cost effective and reliable manner whenever possible. Shore Gold is committed to supporting local businesses and continuing to develop relationships and business opportunities with local communities.

Shore Gold currently has a number of initiatives and mechanisms to encourage local businesses and, in particular, local Aboriginal businesses. A list of "preferred" local contractors has been developed by Shore Gold, and each of these contractors receives all of Shore Gold's requests for quotes, even if the contract is not in its sector of business. This is done to give businesses a complete picture of the type of work Shore Gold contracts. Similarly, Shore Gold is participating in programs such as the Representative Workforce Strategy to assist First Nation and Métis businesses engage in economic opportunities from the project.

10.0 Summary

The key participants in the Star-Orion South Diamond Project area are Shore Gold Inc. and the participants of the Fort à la Corne (FalC) Joint Venture consisting of Kensington Resources Ltd. (60%) and Newmont Mining Corporation of Canada Limited (40%).

Assuming a positive production decision, the Project would include the following:

- excavation of one or more open pits - one at the Star Kimberlite and potentially a second at the Orion South Kimberlite, to allow access to and excavation of the kimberlite, and
- construction of processing facilities and associated infrastructure to commercially extract diamonds from these kimberlites.

Feasibility studies are on-going for the Star Kimberlite, and, depending on results from the Orion South exploration program, will be expanded to include the Orion South Kimberlite. The feasibility studies will be completed prior to submission of the final Environmental Impact Assessment (EIA) and prior to making a production decision.

The EIA and corresponding Environmental Impact Statement (EIS) are expected to be complete by the 4^{th} quarter of 2009. Construction and other required permit applications will be submitted upon receipt of approval of the EIS, and after a positive production decision is made. Construction is expected to take approximately three years; the duration of operation would depend upon final plant size and the feasibility of developing the Orion South Kimberlite.

In the event a positive production decision is made, Shore Gold proposes to construct an access and utility corridor that runs south from Highway 55 to the site. The corridor would include a paved access road capable of withstanding heavy truck traffic, a natural gas pipeline, telecommunications lines, and a potential railroad spur line.

There are three options being considered for a gas pipeline – two of the options connect to an existing natural gas line originating south of Kinistino with pipeline construction either through or around the James Smith Cree Nation Reserve, crossing the Saskatchewan River and terminating at the plant site. The third option involves a smaller line parallel to the access road.

SaskPower is currently evaluating three conceptual supply options for the provision of electrical power to the site. The options include a line connection from an existing power line in the forest, southeast of the site across the Saskatchewan River; a line north of the Saskatchewan River from the Codette Dam to the site; and a route straight north from Beatty.

The footprint of the proposed open pit at Star would be approximately 700 ha. The dimensions of the open pit at Orion South are expected to be similar to that of Star, but will depend on the results of future studies. The depth of these pits has not been finalized but the Star pit is expected to be approximately 320 m below ground surface (including approximately 100 to 150 m of overburden).

Three mining method options are being evaluated as part of the on-going pre-feasibility study:

- truck and shovel with semi-mobile crusher /conveyor to out of the pit;
- mobile crushers; and
- truck and shovel.

All three options have similar project footprints and infrastructure requirements.

The kimberlite processing plant would use DMS to separate the diamonds and other materials with similar densities from the kimberlite. The final capacity of the production DMS plant would depend on the results of the feasibility studies and whether Orion South is included in the EIA.

The FPK slurry from the DMS plants would be piped to a PKCF. The slurry released from crushing and washing the kimberlite is expected to be 15 to 30% solids and 70 to 85% water (the proportion may change depending on the consistency of the kimberlite and the equipment within the DMS).

Water management would focus on two sources of water: groundwater de-watering (necessary to maintain geotechnical stability, safety and efficiency in the pit(s)), and DMS plant water (process water). A percentage of water from pit dewatering is expected to be used in the DMS. Process water mixed with FPK would be disposed of in the PKCF. The FPK is expected to be free draining, and the PKCF would be designed to allow settled water to be re-used in the DMS plant.

The water from the DMS plant would flow with FPK into the PKCF. Some of the water would be recovered from the PKCF and reused in the DMS plant as make-up water. Depending on the quality of the water from the process plant and the bedrock compared with the quality of the water from the Saskatchewan River and regulatory discharge limits, these waters would be managed using one of the following options:

- direct discharge to the Saskatchewan River using either existing waterways or through a diffuser in the river;
- infiltration ponds to allow for mixing of released water with groundwater; or
- filtration or settling of the release water to remove suspended solids and discharge of the water to the Saskatchewan River.

The principal wastes would be non-hazardous natural materials: overburden removed from the pit(s), FPK and CPK. The principal emission from the mine would be fugitive dust generated by mobile equipment, handling of waste and ore and crushers. All significant emissions from the mine would be quantified in an emission inventory prepared for the EIA.

To ensure the health and safety of employees and the general public visiting the site, Shore Gold's Occupational Health and Safety (OH&S) Program would be expanded and amended as required for mine production. Shore Gold's existing environmental management systems and protocols would be the basis of the environmental management system (EMS) for any mining operations.

At the time of closure, all equipment would be removed and areas that were not progressively reclaimed during mine life would be made physically and chemically stable and then revegetated with native species.

Traditional knowledge and traditional land use studies are planned as part of the EIA. It is Shore Gold's intention to incorporate existing or recently completed traditional knowledge studies into the EIA and to conduct these studies in collaboration with First Nation and Métis people, if needed. The information would be used to understand the impacts to traditional land use (such as changes to wildlife habitat, berry picking areas, noise, traffic and use of trail networks) affected by the project.

Overall, it is expected that socio-economic effects of project development would be positive. Mitigation and enhancement measures would be determined throughout the assessment process in consultation with local communities, government officials and other stakeholders.

Monitoring programs will be conducted as required to assist in identifying the effectiveness of mitigation and enhancement measures and to determine if the project's socio-economic and cultural effects are as predicted. Information from the monitoring program would be used to inform management, government, and communities. Adaptive management strategies would be developed. Adequate resources (human, financial and technical) would be in place to ensure quality monitoring, as determined in the EIA.

Successful approval, permitting, construction, and operation of the Star-Orion South Diamond Project would encourage further exploration and development of diamond business ventures in Saskatchewan, and investment in other diamond mining projects in Saskatchewan. The potential development would bring much needed economic development and diversification to the area, result in employment and development of job skills that would outlast the mine and provide tax and royalty revenues to government and opportunities for local businesses.

11.0 Acronyms

CPK	Coarse Processed Kimberlite
DDAC	Diamond Development Advisory Committee
DMS	Dense Media Separation
DFO	Department of Fisheries and Oceans
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
FalC	Fort à la Corne
FMZ	Fur Management Zone
FPK	Fine Processed Kimberlite
LDD	Large Diameter Drilling
LSA	Local Study Area
MoE	Saskatchewan Ministry of Environment
MSDS	Material Safety Data Sheet
MW	Megawatt
PAREDA	Prince Albert Regional Economic Development Authority
PKCF	Processed Kimberlite Containment Facility
RM	Rural Municipality
RSA	Regional Study Area
SE	Saskatchewan Environment (Saskatchewan Ministry of Environment)
SHEMS	Safety, Health and Environmental Management System
TDS	Total Dissolved Solids
WHMIS	Workplace Hazardous Materials Information System
WMU	Wildlife Management Unit
WMZ	Wildlife Management Zone
3-D	Three Dimensional

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