SHEAR DIAMONDS LTD.

SITE WATER MANAGEMENT PLAN
CARE AND MAINTENANCE
JERICHO DIAMOND MINE, NUNAVUT

REPORT

JANUARY 2011
ISSUED FOR USE
EBA FILE: E14101118

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ACRONYMS & ABBREVIATIONS

AA	Atomic Absorption Spectrophotometry
AEMP	Aquatic Effects Monitoring Plan
AIA	Aquatic Impact Assessment
ANCOVA	Analysis of Covariance
ANOVA	Analysis of Variance
AQMP	Air Quality Management Plan
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BACI	Before-after-control-impact
CAEAL	Canadian Association for Environmental Analytical Laboratories
CAMP	Care and Maintenance Plan
CMP	Contingency Management Plan
CPK	Coarse Processed Kimberlite
DO	Dissolved Oxygen
EC	Electric Conductivity
EIS	Environmental Impact Statement
FPK	Fine Processed Kimberlite
GC/FID	Gas Chromatograph - Flame Ionization Detector
GMP	General Monitoring Plan
ICP-MS	Inductively Coupled Plasma – Mass Spectrometry
ICRP	Interim Closure and Reclamation Plan
INAC	Indian and Northern Affairs Canada
LFMP	Landfarm Management Plan
LFP	Landfill Management Plan
KIA	Kitikmeot Inuit Association
MANOVA	Multivariate Analysis of Variance
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
PHC	Petroleum Hydrocarbons
PKCA	Processed Kimberlite Containment Area
PKMP	PKCA Management Plan
RPD	Relative Percent Difference
Shear	Shear Diamonds (Nunavut) Corp.
SWMP	Site Water Management Plan
TDC	Tahera Diamonds Corporation
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
WEMP	Wildlife Effects Management Plan
WMP	Waste Management Plan
WRMP	Waste Rock Management Plan
WTMP	Wastewater Treatment Management Plan
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

1.1 General

The Jericho Mine Site Water Management Plan (SWMP), described herein, has been developed to provide a methodology for the collection, treatment and discharge of site water whose quality may be influenced by site infrastructure or operations.

The plan fulfills the requirements specified in Part F and Schedule F of the Jericho Mine Water Licence NWB1JER0410 (issued December 21, 2004). However, this plan is being submitted to the Nunavut Water Board (NWB) in the absence of complete historical information as Shear Diamonds (Nunavut) Corp. (Shear) only assumed control of the project in August 2010. Since that time, Shear has discovered that detailed information on the present site water conditions is limited. Comprehensive historical site water monitoring records were not well maintained under previous ownership and management, and the available information that is incomplete or lacking detail.

The Site Water Management Plan (SWMP) is based on existing records including previous site water management plans, regulator comments, and external anecdotal information where available. The plan has been redeveloped for the current regulatory requirements and to reflect Shear's commitment to the best practices in environmental stewardship.

The plan presents general descriptions of known water management infrastructure and a predicted site water balance while under care and maintenance. Once Shear has had an opportunity to thoroughly investigate the site and gather information in 2011, the SWMP will be revised (if required). Subsequent revisions of the SWMP will be submitted for review and approval prior to resuming mining operations or commencing closure and reclamation activities.

1.2 Objective of Site Water Management Plan

The primary objective of the SWMP is to ensure that water from the site, including accumulated melt and storm water, does not enter the receiving environment until the quality of that water meets regulated discharge criteria established by the NWB. At the time of the water licence renewal application, mining operations have been suspended and the site is under care and maintenance. This document will therefore address the specific site water management requirements at the present time. In addition to being a management tool, the SWMP was developed to assist Shear and the regulatory agencies with mine closure planning and the development of Jericho's Interim Closure and Reclamation Plan (EBA 2011e).

It is Shear's intention that all water collected on site during the care and maintenance phase will be pumped or directed to the Processed Kimberlite Containment Area (PKCA) and that no water will be discharged directly to the receiving environment.

The SWMP includes the following:

- Descriptions of Jericho's current site water management infrastructure;
- Descriptions of completed infrastructures;

- Descriptions of infrastructures that are planned to be built;
- Descriptions of infrastructures that are potentially required based on the progress of the project;
- A site water balance for the care and maintenance in 2011; and
- Description of flow monitoring and site water quality.

Once water is discharged into the PKCA it is no longer falls under the SWMP. Aspects of water management within the PKCA are described in the Jericho Processed Kimberlite Management Plan (EBA 2011h).

1.3 Background Information

The Jericho Diamond Mine is located approximately 260 km southeast of Kugluktuk, NU and 30 km north of Lupin Mine. The Jericho Mine was constructed and operated by Tahera Diamond Corporation (TDC) between 2004 and 2008. In January 2008, mining operations were suspended by TDC, and the site was subsequently placed under care and maintenance. Shortly thereafter, Indian and Northern Affairs Canada (INAC) assumed control of the care and maintenance activities for the site. In August 2010, Shear purchased the Jericho Mine and its assets and assumed the responsibility for the site.

Presently, the mine remains under care and maintenance as Shear evaluates the mineral resource. Once the evaluation is complete, a mine plan and operations schedule for the project will be established.

1.4 Linkage to Other Management Plans

The SWMP is part of the site wide management system. Other management plans that are related to or refer to the SWMP include:

- Aquatic Effects Monitoring Plan (AEMP);
- General Monitoring Plan (GMP);
- Processed Kimberlite Management Plan (PKMP);
- Waste Rock Management Plan (WRMP);
- Wastewater Treatment Management Plan (WTMP);
- Landfarm Management Plan (LFMP);
- Interim Closure and Reclamation Plan (ICRP); and
- Care and Maintenance Plan (CAMP) during periods where mining and processing operations are suspended.

2.0 SITE WATER MANAGEMENT FACILITIES

2.1 General Description

The general site layout and the location of existing, planned, and potential water management infrastructure for the Jericho Mine are presented in Figure 1. The existing infrastructure was constructed

during the initial development of the site. These structures are functioning but may only be partially complete, such as PKCA. Planned infrastructure will be constructed once the project reaches a certain stage of development. An example would be the development of the C4 Diversion structure, which will be constructed as waste rock placement is extended adjacent to the C4 catchment. Potential infrastructure, such as Ponds A, B, and C, are contingency structures and will be constructed if water quality monitoring determines that runoff flows to the receiving environment are being influenced by site activities or infrastructure such that the water no longer meets the specified quality criteria.

The major water management facilities are summarized in Table 1.

Table 1: Water Management Structures

Structure	Location	Function	Status
Fresh Water Intake and Causeway	At south side of Carat Lake, and west of Stream C1	Pump fresh water from Carat Lake for the uses in the processing plant and the camp.	**Existing:** Functioning
C1 Diversion	West and north of the Jericho Pit	Direct outflows from Lake C1 around the pit perimeter and back into the natural Stream C1 channel	**Existing:** Functioning
C4 Diversion	East of Waste Rock Dump Site 1	Divert clean runoff water from migrating towards the waste rock dump. Water is diverted to the southeast into Lake C4	**Planned:** To be constructed. Construction date to be determined prior to resuming mining operations
Pit Sumps	Series of sumps within and around the perimeter of the open pit	Temporarily store runoff water flowing into the Jericho pit. Runoff and seepage from Waste Dump Site 1 and 2 are also directed to the Pit Sump. Stored water is to be pumped to the East Sump or directly to the PKCA.	**Planned:** Location varied based on progress of the pit excavation
East Sump	A natural depression, east of the ore storage and process plant.	Collect runoff from the area around the plant and camp facilities, and function as a transfer point for pit water destined for the PKCA.	**Existing**: Functioning as sump for the Plant Site Catchment Area.
PKCA	Located at Long Lake incorporates the East Dam, Southeast Dam, North Dam, Divider Dyke A, Divider Dyke B, and West Dam	Store fine processed kimberlite and treat water from the processing plant, wastewater treatment plant, and water collected from other site water management infrastructure.	**Existing:** Functioning but incomplete resulting in limited capacity.
Pond A	Northwest of Waste Dump Site 1	Collect runoff and potential seepage from Waste Dump Site 1	**Potential:** Not constructed. Necessity of construction to be evaluated during the Care and Maintenance Phase.
Pond B	North of Waste Dump Site 2	Collect runoff and potential seepage from Waste Dump Site 2	
Pond C	North of Low Grade PK Stockpile	Collect runoff and potential seepage from the Ore and Coarse PK Stockpile	

2.2 Fresh Water Intake

The fresh water intake and causeway are located approximately 200 m to the west of the Stream C1 outlet. The causeway was constructed of coarse rock fill containing minimal fines and extends approximately 90 m into Carat Lake. The water intake is located approximately 5 m under the water surface to allow operation under the lake ice during the winter. The design flow capacity for the intake is approximately 35 to 40 m^3/h allowing for process water makeup and potable camp water use. A provision has been made in the Process Plant to reclaim process water discharged to the PKCA. Reclaiming water from the PKCA will reduce the intake from Caret Lake. Details of the causeway, intake and pumping facilities can be found in the Specification for the Fresh Water Intake Causeway (SRK 2005a).

During 2011, Shear will draw fresh water from Carat Lake for domestic use in the camp facility and for evaluating the mill and process plant prior to commissioning. It is expected that the camp will accommodate approximately 30 people during care and maintenance operations.

2.3 Diversion Channels

2.3.1 C1 Diversion

The purpose of the C1 Diversion channel is to direct outflows from Lake C1 so water circumvents the Jericho open pit and naturally occurring runoff water is diverted away from the open pit. The C1 Diversion channel was designed to convey a peak flow of 0.7 m^3/s from a total catchment area of 115 ha, a flow rate equivalent to a 1-in-200 year wet weather event. A detailed design and description of the C1 Diversion channel are available in the C1 Diversion Design Plan, to be submitted to the NWB in February 2011 (EBA 2011m).

The C1 Diversion Channel will be inspected during the annual geotechnical inspection in 2011 to evaluate the integrity and performance of the channel. The assessment will take place during the freshet period when the channel is conveying the maximum yearly flow. Following the assessment, modifications to the channel may be implemented as recommended by the assessing engineer. Water quality samples will be taken from the channel as part of the routine monitoring specified in the General Monitoring Plan (GMP) (EBA 2011d).

2.3.2 C4 Diversion

Overland runoff from the up-gradient area of Waste Rock Dump 2 will penetrate into the waste rock pile and may increase low quality seepage flow. The purpose of the C4 Diversion channel is to prevent up-gradient overland flow in the C4 Catchment Area (Figure 2) from entering the Waste Rock Dump Site 1 and Catchment Area A.

The C4 Diversion will be constructed prior to expanding Waste Dump 1 northwards into the area that lies between the C4 catchment and Carat Lake. The C4 channel will be designed to convey a peak 1-in-200 wet year flow of 0.2 m^3/s from a total catchment area of approximately 15 ha.

In 2011, or while the project remains under care and maintenance, the mine plan will be reviewed and a timeline for the construction of the C4 Diversion channel will be established. A preliminary design of the C4 diversion channel is included in Appendix A (SRK 2004c). The detailed C4 Diversion channel design

report will be submitted to the NWB for review and approval at least 60 days prior to commencing construction.

2.3.3 Collector Ditches and Site Grading

Based on the projects historical documents, Shear understands that the site's component areas (plant site, waste dumps, and stockpiles) were graded to direct local runoff towards Jericho pit or the PKCA, incorporating a series of ditches as required (design drawing included in Appendix A). Site Water Management Plans developed previously by SRK and TDC (SRK 2004c; AMEC 2005b) indicate that collector ditches were located on the upslope side of local access and haul roads and have capacities in excess of the 1–in-200 wet year flows. In addition, excavated "cut" sections for ditches were avoided to minimize the potential for permafrost degradation and erosion protection measures were constructed as required.

Shear has not been present on site to monitor the condition and performance of this infrastructure or indeed confirm its existence. During the spring and summer of 2011, Shear will initiate an assessment of all collection ditch infrastructure and site grading. The assessment will be conducted by a qualified engineer and will evaluate the structural integrity and effectiveness of the ditches and grading. A survey of the infrastructure may be undertaken to reconcile the grading and ditching with site documentation. Adjustments to the ditches will be implemented according to the results of the survey and the recommendations of the geotechnical assessment.

2.4 Pit Sump

It is understood that, during previous mining operations, sumps were constructed within Jericho pit to dewater active mining areas. Runoff inflow to the pit was collected in sumps and then pumped to the East Sump or directly to the PKCA. The location and size of the pit sump(s) would have varied depending on the mining plan and the active mining face.

Based on site observations by Shear in January 2011, the estimated depth of the current ponded pit water and ice is approximately 30 m equating to a pit water volume of approximately 660,000 m^3. Dewatering of the pit is expected to occur throughout the care and maintenance period to prepare the pit for additional exploratory drilling and the eventual resumption of mining activities. All pit water will be pumped to the PKCA and discharged in Cell A, upstream of Divider Dyke A. The pit dewatering schedule will take into consideration the holding capacity and water discharge schedule of the PKCA. Once the pit is dewatered, the existing pit sump(s) will be inspected and used to collect any inflows to the pit. The quality of the water in the pit sump will be routinely monitored. A description of the data collection and interpretation is available in Section 7.0 of the GMP.

2.5 East Sump

The East Sump is a natural surface depression located in the Plant Site Catchment Area. The sump collects drainage from the catchment that encompasses the camp and plant facilities, the fuel tank farm, the ore stockpile, and coarse processed kimberlite (CPK) Stockpiles 3 and 4. Accumulated melt and storm water in the sump is pumped directly to the PKCA. The quality of the water in East Sump will be routinely monitored. A description of the data collection and interpretation is available in Section 7.0 of the GMP. If

water in the East Sump is found to meet the applicable water licence discharge criteria, it may be used for earthwork construction within the site's managed catchment areas.

2.6 PKCA Facility

Site water collected from the collector ditches, pit sump, potential contingency ponds, and all other facilities will be transferred to the PKCA for treatment and storage. Subject to meeting the applicable water quality criteria specified in the water licence, water in the PKCA will be discharged to Lake C3 on a seasonal basis as discussed in Jericho's Processed Kimberlite Management Plan (PKMP, EBA 2011h) to be submitted to NWB in February 2011.

The PKCA is situated within the former Long Lake and is bounded by the natural high ground and a series of dams, as shown in Figure 1. Ostensibly, the PKCA is divided into three cells: Cell A, Cell B and Cell C; however, Cell B and Cell C are presently a single cell until the construction of Divider Dyke B is completed. Divider Dyke A has been partially constructed with the filter zone at a minimum elevation of 521.5 m. The design elevation for the dyke is 524.0 m. Fine processed kimberlite (FPK), process water, and effluents from other site water management facilities are discharged into Cell A. Supernatant water in the cell drains towards the permeable Divider Dyke A and suspended solids in the water are removed as the water passes through the structure into the combined Cell B/C. The quality of filtered water in the cell will be monitored and a description of the data collection and interpretation is available in Section 7.0 of the GMP. If the water in Cell B/C is found to meet the applicable water licence discharge criteria, it will be pumped over the West Dam and released into Stream C3 in accordance to the discharge schedule discussed in the PKMP.

Shear anticipates discharging from the PKCA as early as possible in the spring of 2011. Upon assuming ownership of the site, Shear discovered that sufficient water had not been discharged from the facility during the summer of 2010 and is therefore at risk of exceeding the allowable freeboard during freshet 2011. The water balance and water flows associated with the PKCA including estimated monthly release of excess water from the PKCA to Stream C3 for the year 2011 is presented in the Jericho PKMP.

2.7 Contingency Ponds A, B, C

The main objectives of constructing contingency retention structures are to collect runoff water for potential treatment before discharge into PKCA and to contain high runoff flow in order to reduce the short-term loading in the Pit Sump and PKCA.

The need for one or more of the intra-area collection ponds cannot be evaluated until Shear resumes mining activities. If, after resuming mining activities, it is determined that the volume of water cannot be contained within the natural topography or that mining operations are resulting in a demonstrable decline in water quality, the collection ponds will be constructed. Seepage quality is monitored through the annual Seepage Survey, as discussed in the GMP.

The original planned locations and general arrangements of Ponds A, B, and C are shown on Figure 2 with preliminary designs included in Appendix A. The location and function for each area pond is as follows:

- Pond A will be located at northwest of the Waste Dump Site 1, to collect runoff and potential seepage from Waste Dump Site 1.

- Pond B will be located between the Waste Dump Site 2 and the Mine Pit , to collect runoff and potential seepage from Waste Dump Site 2.
- Pond C will be located north of the low grade ore stockpile area, to collect runoff from the ore stockpiles, coarse tailings area and plant site area if the East Sump becomes filled with CPK.

Detailed engineering designs and drawings will be provided to the NWB for review at least 60 days prior to commencing pond construction.

2.8 Hydrocarbon Containment Facilities

2.8.1 Fuel Tank Farm

The Fuel Tank Farm facility consists of two lined bermed enclosures sharing a common centre berm. In addition to the Tank Farm, there are two other fuel containment berms at the Jericho site: the Generator Tank Containment Area and the Airstrip Tank Containment Area.

The tank enclosures prevent the uncontrolled release of fuel oil to the surrounding environment if a fuel tank is compromised. Over time, precipitation and snowmelt accumulate in the facilities and require discharge so containment volume can be maintained. Previous fuel spills contained within the tank farm mean that residual fuel will affect the water accumulating in the structures. Water accumulation within the Tank Farm will be treated prior to discharge into the PKCA. Treatment options for hydrocarbon-affected water are discussed in Section 2.8.3.

2.8.2 Landfarm

Based on records of historical spills and the volume of stored contaminated soil, Shear expects that a land farm facility will need to be constructed at Jericho before resuming mining operations. A preliminary design for the structure has been developed and is presented in the Jericho Landfarm Design Plan (EBA 2011o). A landfarm is a lined, bermed enclosure used to treat hydrocarbon-affected soil through atmospheric ventilation and biodegradation. As with the Tank Farm, storm and meltwater accumulate in the enclosure and, as a result, come into contact with the contaminated soil. Water accumulation within the Landfarm will be treated prior to discharge into the PKCA.

2.8.3 Water treatment

Shear will collect, monitor, and treat any hydrocarbon-affected water on site so that it meets the applicable water quality criteria before it is discharged to the PKCA.

Water ponded in tank farm and land farm will be tested for benzene, toluene, ethylbenzene, and xylene (BTEX) and petroleum hydrocarbon (PHC) F1 through F4. The analytical results of BTEX in the water will be compared with the guideline values in the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 2007). Since no known federal or territorial guideline values were established for PHC F1 to F4 in water, the applicable criteria in the *Ontario Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (ON-MOE, 2009) will be adopted. If the impounded water exceeds the applicable criteria indicated above, it will be treated in a portable hydrocarbon water

treatment unit. A description of the proposed treatment unit is described in the Jericho Landfarm Management Plan (LFMP, EBA 2011f).

2.9 Other Facilities

Small diameter culverts may be required under site roads crossing minor natural drainage paths. The locations of any existing or required crossings will be determined during the 2011 care and maintenance activities. Culvert installations will be carried out in accordance with the appropriate Nunavut regulations and guidelines, including the Department of Fisheries and Ocean's Operational Standards, and will be reviewed by a qualified geotechnical engineer. As part of the geotechnical monitoring specified in the GMP, regular inspections and maintenance of the culverts will be carried out to ensure they are functioning as intended.

3.0 OPERATION PHASE

As indicated in Section 1.0, an exploratory drilling program is planned for 2011 to evaluate the mineral resource in Jericho Pit. Shear will also determine the status and working condition of the milling and processing plant. Once the evaluation is complete, a mine plan and operations schedule for the project will be established. The SWMP required for mining operations may vary significantly from the plan required under care and maintenance activities. If required, a revised Site Water Management Plan for Mining Operations will be submitted to the NWB for review and approval at least 60 days prior to commencing mining activities at Jericho.

The following principals and activities will be addressed in any updated Site Water Management Plan:

- The use of the reclaimed water from the PKCA will, where possible, be maximized to reduce the water intake from Carat Lake.
- All existing site water management structures will be maintained in serviceable condition.
- Structures, such as Diversion Ditch C4, West Dam, North Dam and Divider Dyke B, will be completed or constructed to satisfy the requirements of the current mine plan.
- The necessity of constructing the contingency ponds will be determined.

4.0 POST-CLOSURE PHASE

The site closure and reclamation plan will be presented in the Interim Closure and Reclamation Plan, (ICRP, EBA 2011) to be submitted to the NWB in February 2011. As discussed in the ICRP, the following water management activities are expected to be undertaken upon completion of mining and processing activities:

- Significant flows from mine infrastructure will be directed into the open pit.
- Drainage from reclaimed areas around the process plant and stockpile areas will be directed to the open pit or PKCA drainage system.
- Prior to filling the open pit, an in-pit water quality assessment will be conducted to determine the desirable fill rate and, if required, alternative methods of treatment.

- The C1 Diversion channel will remain in place to bypass water around the open pit. If a faster rate of pit filling is desirable, some or all of the channel flow may be directed into the pit.
- After the pit has filled and water quality testing determines the pit water to be acceptable for release, flows from the pit could be directed into the C1 stream channel. Alternatively, flows may be directed into a separate open channel discharging along the east shore of Carat Lake. The final configuration of pit water release options will be determined once a thorough site evaluation is completed and sufficient monitoring data is available to refine the present pit water quality estimates.
- After confirming the water quality within the PKCA is suitable for release, the West Dam will be breached or completely removed to minimize or eliminate stored water. Runoff will flow through the (breached) West Dam and directly into Stream C3 and on to Lake C3. A detailed description of the PKCA reclamation is presented in the ICRP.

5.0 SITE WATER BALANCE

5.1 General Description

A specific site water balance has been developed for the Jericho site while it is under care and maintenance. A continuous simulation water quantity and quality model was developed by Clearwater Consultants for Jericho during the mine's original water licence application. The analysis and model, found in the 2004 Site Water Management Plan (SRK 2004c), used monthly time steps to simulate inflows and outflows from the various project components. The Clearwater Consultants model, along with the 2004 and 2009 Jericho Site Water Management Plans (SRK 2004c; EBA 2009), was used as a basis for the present water balance. Shear has not been present on site to verify the accuracy of the previous models and management plans; as such, Shear is expecting that models for both care and maintenance activities and mining operations will be refined once a thorough evaluation of site conditions is completed in 2011 and new monitoring data is gathered.

5.2 Estimated 2011 Water Balance

While Jericho remains under care and maintenance, Shear has elected to maintain conservative assumptions regarding precipitation levels and water volumes collected in the site's retention structures. During 2011, Shear intends to further assess the historical assumptions used to develop the site water balance while also gathering new data. Any new information will be used to update and refine the predictions for the 2012 and subsequent years. The NWB will be notified of any changes to the SWMP and the water balance.

As described in the 2005 Site Water Management Plan (TDC 2005b), permafrost aggrading into the waste rock reduces dump runoff as most of the infiltrating rainfall and snowmelt becomes permanently frozen within the dump. In addition, "wetting" of the waste rock (i.e., abstraction of the water that adheres to waste rock particles) will also reduce the volume of runoff, and hence, the contaminant load generated by the waste dump.

Based on the Jericho Mine climate and hydrology study carried out by SRK (SRK 2003a), the following parameters were also adopted in the current water balance analyses:

- Annual precipitation of 330 mm for a mean (1 in 2 return period) year;
- Mean annual runoff of 225 mm corresponding to a mean runoff coefficient of 0.682;
- Annual lake surface evaporation of 270 mm; and
- The monthly distributions of the runoff and lake surface evaporation are listed in Table 2.

Table 2: Monthly Distributions of Runoff and Lake Surface Evaporation

Month	Monthly Percentage of Runoff (%)	Monthly Percentage of Open Water Evaporation (%)	Monthly Runoff (Mean) (mm)	Monthly Lake Surface Evaporation (mm)
May	3%	5%	7	14
June	57%	29%	128	78
July	16%	36%	36	97
August	10%	21%	23	57
September	13%	9%	29	24
October	1%	0%	2	0
November to April	0%	0%	0	0
Annual	100%	100%	225	270

The site water balance for 2011 including detailed calculations is presented in Table 3 (attached). The inflows to the PKCA in 2011 will include:

- Effluents discharged from the Waste Water Treatment Plant;
- Pit water pumped during dewatering activities; and
- Surface water runoff collected from various facilities and catchments.

Shear estimates that approximately 660,000 m^3 of water will need to be pumped from the Jericho pit prior to resuming mine operations. Pit water is expected to be the largest water input source to the PKCA during the first year of care and maintenance. Strictly speaking, the discharge of pit water into the PKCA is part of the SWMP; however, a detailed discussion of the discharge requirements and a schedule for pit water pumping has been included in the PKMP.

6.0 WATER FLOW AND QUALITY MONITORING

Flows and water quality at the mine are monitored at key locations described in detail in the GMP. Locations of the site water flow and quality monitoring are shown in Figure 1 and 2 and summarized below.

Water Flow Monitoring

- JER-SWM-01 – Freshwater Intake Pump
- JER-SWM-02 – PKCA Discharge Pump
- JER-SWM-03 – Pump for Discharging Pit Water to PKCA

- JER-SWM-04 – Pump for Discharging Wastewater Treatment Plant Effluent
- JER-SWM-05 – Pump for Processing Plant Freshwater Intake
- JER-SWM-06 – Pump for Discharging Processing Plant Water to PKCA
- JER-SWM-07 – Pump for Reclaim PKCA Water to Processing Plant
- JER-SWM-08 – C1 Diversion
- JER-SWM-09 – Catchment Area A Collection Discharge (currently from collector ditch)
- JER-SWM-10 – Catchment Area B Collection Discharge (currently from collector ditch)
- JER-SWM-11 – Plant Site Area Collection Discharge (currently from East Sump)

Seepage Survey Program

- JER-SPG-01 – Waste Rock Dump 1 Seepage
- JER-SPG-02 – Waste Rock Dump 2 Seepage
- JER-SPG-03 – CPK Stockpile 1 Seepage (currently not constructed)
- JER-SPG-04 – CPK Stockpile 2 Seepage (currently not constructed)
- JER-SPG-05 – CPK Stockpile 3 Seepage (currently not constructed)
- JER-SPG-06 – CPK Stockpile 4 Seepage
- JER-SPG-07 – Ore Stockpile Seepage
- JER-SPG-08 – Low Grade Ore Stockpile Seepage (currently not constructed)

Site Water Quality Monitoring Program

- JER-SWQ-01 – Wastewater Treatment Plant Effluent
- JER-SWQ-02 – Pit Sump
- JER-SWQ-03 – Process Plant Supernatant
- JER-SWQ-04 –Discharge Pump Intake in PKCA
  - Note: JER-SWQ-04 is used to determine compliance of discharge criteria in water licence before discharge, whereas JER-AEM-04 in the AEMP is used to determine compliance during discharge
- JER-SWQ-05 – Collector Ditch for Catchment Area A or Pond A
- JER-SWQ-06 – Collector Ditch for Catchment Area B or Pond B
- JER-SWQ-07 – East Sump or Potential Pond C

7.0 CONCLUSIONS

This report presents the designs of the site water management facilities and a summary of the Jericho Project overall site water balance during the Care and Maintenance Phase in 2011. A water balance for the site in 2011 provides estimates of monthly and annual inflows and outflows based on hydrological data. The water balance will be confirmed following the completion and analysis of the monitoring programs in 2011.

8.0 CLOSURE

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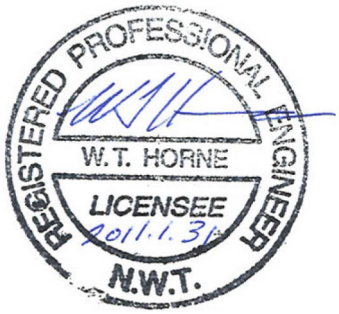

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2011 WATER LICENCE RENEWAL DOCUMENTS

Management Plans

EBA, A Tetra Tech Company (EBA), 2011a. Aquatic Effects Monitoring Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011b. Care and Maintenance Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

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TABLES

Table 3: Site Water Balance Sheet in 2011

1) Annual Average Precipitation and Evaporation [1]

Precipitation =	330	mm/yr
Runoff =	225	mm/yr
Runoff coefficient =	0.682	
Open Water Evaporation =	270	mm/yr
Precipitation - Open water evap =	60	mm/yr

2) Water Consumption

Daily Domestic Water Consumption [2] = 0.329 m^3/person/day
Number of camp occupants = 30 Person

Month	Day	Monthly Percentage of Runoff	Monthly Percentage of Open Water Evaporation	Water Intake	Open Pit							Area A Catchment					Area B Catchment					Plant Site Catchment Area					Waste Water Treatment Plant			PKCA										
				Pumped Water [3]	Catchment Area	Prec + Runoff - Evap	Recharge from Area A	Recharge from Area B	Recharge from Area C	Discharge to PKCA	Ponded Water	Catchment Area	Prec + Runoff - Evap	Discharge to Pit or PKCA	Discharge Destination	Collected Water	Catchment Area	Prec + Runoff - Evap	Discharge to Pit or PKCA	Discharge Destination	Ponded Water	Catchment Area	Prec + Runoff - Evap	Discharge to Pit or PKCA	Discharge Destination	Ponded Water	Water pumped to Camp	Influent to WWTP	Effluent to PKCA	Catchment Area	Cell B and C Area	Water Level	Prec + Runoff - Evap	Recharge from Pit	Recharge from Area A	Recharge from Area B	Recharge from Area C	Recharge from WWTP	Discharge to Stream C3	Remaining Capacity	Ponded Water
		(%)	(%)	(m^3)	(m^2)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(m^2)	(m^3)	(m^3)	-	(m^3)	(m^2)	(m^3)	(m^3)	-	(m^3)	(m^2)	(m^3)	(m^3)	-	(m^3)	(m^3)	(m^3)	(m^3)	(m^2)	(m^2)	(m)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)
Jan-11	31	0%	0%	306	269,031	0	0	0	0			551,207	0	0	Pit	0	178,828	0	0	Pit	0	308,178	0	0	Pit	0	306	306	306	534,700	50,657		0		0	0	0	306			
Feb-11	28	0%	0%	276	269,031	0	0	0	0			551,207	0	0	Pit	0	178,828	0	0	Pit	0	308,178	0	0	Pit	0	276	276	276	534,700	50,657		0		0	0	0	276			
Mar-11	31	0%	0%	306	269,031	0	0	0	0			551,207	0	0	Pit	0	178,828	0	0	Pit	0	308,178	0	0	Pit	0	306	306	306	534,700	50,657		0		0	0	0	306			
Apr-11	30	0%	0%	296	269,031	0	0	0	0			551,207	0	0	Pit	0	178,828	0	0	Pit	0	308,178	0	0	Pit	0	296	296	296	534,700	50,657		0		0	0	0	296			
May-11	31	3%	5%	306	269,031	1,816	0	0	0			551,207	3,721	0	Pit	0	178,828	1,207	0	Pit	1,207	308,178	2,080	0	Pit	2,080	306	306	306	534,700	50,657		3,425		0	0	0	306			
Jun-11	30	57%	29%	296	269,031	34,503	3720.65	1207.09	2080.2			551,207	70,692	3,721	Pit	3,721	178,828	22,935	1,207	Pit	22,935	308,178	39,524	2,080	Pit	39,524	296	296	296	534,700	50,657		62,958		0	0	0	296			
Jul-11	31	16%	36%	306	269,031	9,685	70692.3	22934.7	39523.8			551,207	19,843	70,692	Pit	70,692	178,828	6,438	22,935	Pit	6,438	308,178	11,094	39,524	Pit	11,094	306	306	306	534,700	50,657		18,519		0	0	0	306			
Aug-11	31	10%	21%	306	269,031	6,053	19843.5	6437.81	11094.4			551,207	12,402	19,843	Pit	19,843	178,828	4,024	6,438	Pit	4,024	308,178	6,934	11,094	Pit	6,934	306	306	306	534,700	50,657		11,534		0	0	0	306			
Sep-11	30	13%	9%	296	269,031	7,869	12402.2	4023.63	6934.01			551,207	16,123	12,402	Pit	12,402	178,828	5,231	4,024	Pit	5,231	308,178	9,014	6,934	Pit	9,014	296	296	296	534,700	50,657		14,429		0	0	0	296			
Oct-11	31	1%	0%	306	269,031	605	16122.8	5230.72	9014.21			551,207	1,240	16,123	Pit	16,123	178,828	402	5,231	Pit	402	308,178	693	9,014	Pit	693	306	306	306	534,700	50,657		1,089		0	0	0	306			
Nov-11	30	0%	0%	296	269,031	0	1240.22	402.363	693.401			551,207	0	1,240	Pit	1,240	178,828	0	402	Pit	0	308,178	0	693	Pit	0	296	296	296	534,700	50,657		0		0	0	0	296			
Dec-11	31	0%	0%	306	269,031	0	0	0	0			551,207	0	0	Pit	0	178,828	0	0	Pit	0	308,178	0	0	Pit	0	306	306	306	534,700	50,657		0		0	0	0	306			
Year 2011 Total	365	100%	100%	3603	269,031	60,532	124,022	40,236	69,340			551,207	124,022	124,022	-	0	178,828	40,236	40,236	-	0	308,178	69,340	69,340	-	0	3,603	3,603	3,603	534,700	50,657		111,954		0	0	0	3,603			

Note	294,130	1,066,084	+ 954,130
		954,130	0
			0
			0

1. Values obtained from SRK (2003), Supplemental Climate and Hydrology, Jericho Project, Nunavut
2. Values obtained from Environment Canada (2010), Wise Water Use [Online] http://www.ec.gc.ca/eau-water/default.asp?lang=En&n=F25C70EC-1
3. Additional 10% of estimated water consumption rate was counted to cover losses during transporting
4. Volume of ponded water (highlighted in grey) in the Pit will be estimated following the field measurement in February 2011. The pit dewater and PKCA discharge schedules in 2011 will then be established accordingly.

FIGURES