Technical Memorandum D

To: Nunavut Water Board	Date: July 15, 2011
From: Shear Diamonds Ltd.	cc:
Ref: Jericho Diamond Mine: 2AM-JER0410	

2AM-JER Renewal Application Technical Meeting June 20-21, 2011

List of Commitments: Operational Commitments – Jericho Diamond Mine, Nunavut

This technical memorandum is being submitted in response to the discussions and questions raised during the Technical Meeting and Pre-Hearing Conference held in Cambridge Bay. As follow up to those discussions, and in response to the interveners' technical submissions, Shear Diamonds Ltd (Shear) is pleased to provide the Nunavut Water Board with our operational commitments, see Table 1.

If you, or any interveners', have any questions, or require further clarification, please do not hesitate to contact me.

Sincerely,

Julie Lassonde
Chairman & CEO
Shear Diamonds Ltd.
info@shearminerals.com

Table 1. Operational Commitments, Shear Diamonds Ltd., Jericho Diamond Mine, Nunavut

Plan	Commitment made by:	Item #	Comment/Question/Concern	Description
3				**Site Water Management Plan**
	SHEAR	21	Given that the explosives storage etc. is upgradient of the C4 diversion, it may be prudent to establish a monitoring point along the channel or in Lake C4.	The C4 Diversion has not yet been constructed. A station will be added if and when the C4 Diversion is constructed. In the meantime, if flow is observed from the ammonium nitrate storage pad, this water sample will be collected for analyses.
	SHEAR	25	The WMP states that water that has come in contact with hydrocarbon contaminated soil in the landfarm will be treated in a portable hydrocarbon water treatment unit, and that a description of the proposed treatment unit is described in the Jericho Landfarm Management Plan (LFMP, EBA 2011f). There are no details in the LFMP of the details of such a unit.	Training is being provided to site personnel which has been completed as of July 15, 2011 by the manufacturer of the Remediation Skid. Water from the secondary containment facilities will be treated and pumped to a temporary holding berm so that the water can be sampled and analyzed. Once the remediation skid has been proven effective in treating the water, the water will be pumped to the PKCA. Shear will check the plan for consistency with figures and labels i.e.: page 10
4	**SHEAR**			**General Monitoring Plan**
	SHEAR	28	The previous GMP also described an automated water level recorder near the outlet of Lake C3. Will this be replaced if unserviceable?	Shear will replace the automated water level recorder located near the outlet of Lake C3 if unserviceable.
5	**SHEAR**			**Preliminary Landfill Management and Design Plan**
	SHEAR	35c	Are there planned surface water controls in this area (minimize snow melt by snow removal prior to melt, minimize open pit size to alleviate ponding, sloping base so fluids can run to sump and be removed for treatment, etc.)?	With respect to the new landfill, Shear should sample sludge before pumping out.
	SHEAR	36	The thermal performance (freeze-back of the landfill) is predicted with no measurements planned.	Shear will install ground temperature monitoring cables in the landfills during decommissioning.
	SHEAR	36a	Shear should implement a temperature monitoring program for the landfill to compare actual performance to predicted performance.	A thermal monitoring program will be implemented for both the closed and new landfill upon closure.
	SHEAR	36c	If the landfill does not freeze back, is there a plan to monitor for leachate?	Confirmation of freeze back of landfill with GTC's. Failing freezeback leachate monitoring wells will be installed.

	SHEAR	38	A framework for record keeping is proposed. How will compliance with this be audited? (Particularly in light of previous owner's lack of data collection, keeping, and reporting.)	Shear reports all water use and waste disposal monthly to the NWB. All non-compliances are reported monthly. During active landfill operations, any non-compliances that occur will be reported in the NWB monthly report.
	SHEAR	40	Note: reference should be made to the Canadian Environmental Protection Act	Edit flagged for next version.
6	**SHEAR**			**Preliminary Landfarm Management and Design Plan**
	SHEAR	42	In the review, nothing was found detailing a separate facility to treat heavy end PHCs. The WMP says there will be no treatment of these and that they must be moved off site. This dichotomy should be resolved.	Based on the current Landfarm Management Plan, heavy end hydrocarbons will be shipped off site.
	SHEAR	43c	What is the anticipated treatment time for the anticipated volumes?	Shear will conduct a sampling program this summer to determine the volumes and characterize the contaminated soils stored on site. Shear will provide a Technical Memo this winter.
	SHEAR	44	Shear is planning to pump and treat contact water regularly to reduce water levels in the sump. No details on how water will be treated were located in the review.	Shear will submit a Technical Memo on August 15, 2011 with technical specifications and the operating manual for the remediation unit (Oztek™).
	SHEAR	45a	Water treatment capability will have to be in place prior to commencement of the use of the landfarm.	Water treatment mobile unit is currently on site as of July 15, 2011.
	SHEAR	47	The landfarm management strategy appears to be adequately documented, however, to the uninitiated, control of the environment, sampling etc. is likely to be poorly understood. If a landfarm is to be operated, some form of control of personnel or the use of consultants to support the operation should likely be specified. Since there are currently approximately 6500 cu. m that need to be treated, Shear should be queried on just exactly how they envisage this being conducted and supervised.	Internal SOP's will be developed for landfarm operations prior to construction.

	SHEAR	49	EC supports the use of current federal and/or provincial guidelines and objectives as criteria for contact water quality prior to discharge to the PKCA; this will allow for the updating of target concentrations as further guidelines are developed. It is suggested that the Plan includes a table with current values for the parameters listed in Appendix A.	Shear agrees with the recommendation made by EC and will refer to these guidelines in the next reiteration of the plan.
7				**Waste Rock Management Plan**
	SHEAR	55	Figures 2-7 were not included in the Plan. The inclusion of these Figures would have assisted the review of this Plan.	Shear will add Figures 2-7.
9				**Waste Management Plan**
	SHEAR	60	The Waste Management Plan does not discuss camp waste incineration. Appendix A, Forced Air Incineration System Operating and Maintenance Manual, provides general information on incineration. However, it provides no specific information on incineration activities at the mine site.	Shear will submit an Incineration Management Plan by November 1, 2011.
	SHEAR	61	The management plan should also provide information on the types and quantities of waste to be incinerated, the types of training completed by incinerator operators, and maintenance and operational records.	During care & maintenance, Shear will not exceed 26 tonnes of waste for incineration.
10				**Aquatic Effects Monitoring Plan**
	SHEAR	62d	Ammonia, copper, and TSS are main contaminants of concern from PKCA. This is a consideration for monitoring.	Shear will monitor for ammonia, copper, and TSS.
	SHEAR	64	Re: Laboratory qualification, the accrediting body has changed from CAEAL to CALA.	Shear will edit the next version to reference to the accrediting body.
	SHEAR	65	The Plan indicates that data will be quality checked before formal statistical analysis and outliers identified.	Shear provided a separate document which addressed the question posed by EC at the Technical Meeting. This response is being included as an attachment to the Technical Memo - Proposed Changes to the AEMP, being filed with the NWB on July, 15th, 2011.
	SHEAR	66	Was the proponent able to verify comparability of previous sediment sampling methods and analysis for the sites selected to be used in the updated AEMP?	Shear provided a separate document which addressed this question posed by EC at the Technical Meeting. This response is being included as an attachment to the Technical Memo - Proposed Changes to the AEMP, being filed with the NWB on July, 15th, 2011.

	SHEAR	67	Sediment sampling will be done using an Ekman dredge and the top 5cm will be taken from the top of the grab. Given the extremely low sedimentation rates in Arctic lakes, use of a 5 cm depth would mask changes occurring at the surface of the sediments. Other mines are successfully using core samples and analyzing the top 1cm layers.	The next iteration of the AEMP will be updated to include core sampling.
	SHEAR	68	Two mesh sizes (210 um or 500 um) are specified for sieving of sediment samples for benthic invertebrates. When would each size be used, and which would be most consistent with historical samples?	Shear will ensure that in all instances, where methodologies are changed, new methodologies will collect data that is comparable to historical data, UNLESS the previous sampling methodologies are inappropriate, suspect, or obsolete.
	SHEAR	69	DFO recommends that it may be worth having more than one control lake to cross reference sampling data that is gathered during the AEMP monitoring program, as there may be no, or little historical data available for the control lake that is yet to be decided upon.	During the care and maintenance phase, Shear will investigate the possibility of other potential control lakes to be included when production resumes.
	SHEAR	70	DFO recommends that a minimum of one duplicate sediment deposition trap to be deployed at each sampling location.	In 2012, Shear will implement one duplicate sediment trap to be deployed at each sampling location.
	SHEAR	71	If issues are identified in the AEMP that may suggest increased metals concentrations or other factors that may affect fish health, DFO recommends that the fish population and health portion of the AEMP should be reinstated.	If issues are identified through the AEMP that suggest that parameters or other factors may be affecting fish health, Shear will reinstate the fish studies.
	SHEAR	72	DFO recommends that the sampling frequency of zooplankton and phytoplankton be conducted on an annual basis during care and maintenance because the phytoplankton and zooplankton abundances and community structure is correlated closely with other factors in the AEMP that affect lake health.	In 2012, Shear will conduct seasonal sampling of phytoplankton and zooplankton in Carat Lake and the newly established “control” lake.
11				**Interim Closure and Reclamation Plan**
	SHEAR	84	In section 7.4.4, one alternative considered for the closure of PKCA pond water, should it not meet Water License discharge criteria, would be to pump the water to the open pit. It is unclear what the final decision regarding this alternative was.	Shear will undertake modelling of pit water quality for closure.
12	**SHEAR**			**Contingency Management Plan**
	SHEAR	85	The listed number provided for EC in this Table (i.e., 867-766-3737) is no longer in service. Please revise the table with the following number: 867-669-4730.	Will be edited in next version.

13	SHEAR			Emergency Preparedness and Emergency Response Plan for Dam Emergencies
	SHEAR	86	This listed number provided for EC in these two sections (i.e., 867-766-3737) is no longer in service. Please revise this table with the following number: 867-669- 4730.	Will be edited in next version.