berms and the underlain dams/dyke. The design documents and construction drawings will be submitted to NWB 60 days prior to construction.

The properties of the coarse PK and the Perimeter Berms are discussed in the following sections.

5.5 Coarse PK geotechnical properties

Samples of coarse PK were provided to EBA by TDC in January 2006 for geotechnical property testing. The following tests were carried out:

- Particle Size Analyses
- Specific Gravity
- Permeability
- Micro-Deval Abrasion
- Moisture Density Relationship

The coarse PK properties are variable depending on whether they include finer particles from the process plant high pressure grind circuit (HPGR). The HPGR circuit runs on a part time basis. The material that contains the HPGR feed is well-graded coarse sand with some fine gravel and trace of silt. Material without the HPGR feed is uniformly graded medium sand with some fine gravel.

Particle size analyses were carried out on samples with and without the HPGR feed. The remainder of tests were carried out on a sample that contained HPGR feed. Test Results are presented in Appendix C.

One permeability test was conducted. The sample was tested at density of 95% maximum dry density (as determined by ASTM 698). The measured hydraulic conductivity was 1.4×10^{-2} cm/s.

Micro-Deval Abrasion tests were carried out to determine the amount of material breakdown. Tests were carried out according to CAN/CSA A23.2-29A. The first two tests were conducted on oven dried (110 °C) samples. The oven dried samples had a loss of 11% and 15% coarse and fine aggregate respectively.

5.5.1 Perimeter Berm Design

A perimeter berm is planned for the retention of fine PK above elevation 523 m in Cell A. The fine PK will be stacked against the berm.

Construction materials planned for the berm will consist ofcoarse PK or overburden till. Both materials are relatively permeable; however, the intent is that no water will pond against the perimeter berms as the water level in Cell A will be maintained below the level of the fine PK. Free water adjacent to the berms will be minimized by depositing fine PK in a manner that it slopes away from the perimeter berms and stockpiles. Seepage will be collected on the downstream side of the berms if necessary. A typical cross section of the perimeter berm is shown in Figures 13.

The final design and construction drawings of the Perimeter Berms will be submitted to the NWB prior to their construction, as per the conditions of the water license.

5.6 North Dam

The North Dam is proposed to be constructed in a low area at the north side of Cell C. The dam is required to allow the water level to rise to the maximum design level of the PKCA (523 m) and prevent water from the PKCA area flowing into the drainage basin north of the PKCA. The natural ground elevation at the saddle of the North Dam is approximately 518 m.

Construction of the North Dam will be required before recommencement of mining operations. It will be constructed as a lined dam with a liner keyed into the frozen ground and bedrock. The design and construction drawings for the North Dam will be submitted to the NWB for approval prior to construction. A typical cross-section of the North Dam is shown in Figure 12.

5.7 Settling Pond Dam

The water quality in the PKCA will be monitored to determine whether the measured concentrations of the suspended solids in the supernatant follow a clear trend approaching the upper limits specified in Part G (6) of the Type "A" Water Licence for the Jericho Mine. When the trend is observed, an additional settling pond may be constructed downstream of the West Dam to remove the additional suspended solids in the supernatant.

A preliminary design of the settling pond dam was described in the water license application supporting documents (SRK 2004c). The final design will be submitted to the NWB for approval prior to construction.

6.0 MONITORING

6.1 Dam Safety Monitoring

Visual Inspections

Daily visual inspections of the dams and tailings discharge will be carried out. Signs of instability, such as deformations, slumping and cracks should be reported to the design engineers. Signs of seepage from the dams and dykes should also be reported.

Ground Temperature Measurements

Ground temperature cables are installed within the West, East and Southeast Dams. Ground temperature cables will also be installed in the North Dam once it has been constructed. Ground temperature cables are measured on a monthly basis and are reported in the monthly water licence report to the Nunavut Water Board and the Inspector.

Annual Geotechnical Inspections

The dams are inspected annually by a geotechnical engineer. The inspection will include a visual assessment and review of the ground temperature data, deformation monitoring data, water and fine PK levels. A report will be prepared summarizing the visual assessment and review of the monitoring information. The report will be submitted to the NWB and the Inspector within sixty (60) days of the inspection in accordance with Part G, 2 (g) of the water licence.

Dam Settlement

Settlement monitoring points will be installed in the dams at the end of construction. The elevation and location of the monitoring points will be surveyed and recorded on a monthly basis. The monitoring schedule should be reviewed if there are signs of movement.

Thermosyphons

Thermosyphon evaporator piping was installed at the West Dam. Thermosyphon radiators will be installed if necessary. The operational temperature of the thermosyphon evaporators will be monitored via installed ground temperature cables. The operation of the thermosyphons should also be checked visually by observing for presence or absence of frost on the thermosyphons.

Topographic Survey

An annual topographic survey of the dam crest will be conducted to identify any settlement areas of the dams.

Volume Occupation

The volume of fine PK will be monitoredusing staff gauges at fine PK locations above water level.A topographic survey and/or a bathymetric survey of the top of the fine PK will be carried out on an annual basis. The surveys will also be used to confirm the slope of the deposited fine PK.

The fine PK will be sampled to determine if fines segregation is occurring. The fine PK will also be sampled to determine in-situ density and ice content.

Ice in the processed kimberlite occurs due to the freezing of the fine PK prior to settling and consolidation, and will also occur if waterbodies are covered with frozen PK. Winter placement of fine PK over significant waterbodies will be minimized.

6.2 Water Balance

The water balance will be verified on an annual basis. The following components will be examined:

- hydrologic assumptions (precipitation, evaporation, and runoff),
- water levels in the PKCA cells
- discharge rates and quantities

6.3 Freeboard

The water level and freeboard in the PKCA will be monitored weekly during periods of open water using surveyed rock bolts within the containment.

6.4 Seepage

Seepage out of the dams and perimeter berms will be monitored. Any seepage identified will be returned to the PKCA.

6.5 Precipitation

Daily precipitation will be measurements and recorded in order to assist with the calibration of the water balance and forecast freshet events.

6.6 Discharges

Discharge quantities into and out of the PKCA will be monitored as specified in the Surveillance Monitoring Program.. The measured quantities will include:

- Discharge quantity from process plant to the PKCA,
- Discharge from East Sump, Collection Ponds and Pit Area to the PKCA,
- Reclaim water from the East Sump or PKCA, and
- Discharge quantity to the Stream C3

6.7 Water Quality

The water quality monitoring programs at Jericho include the site water quality monitoring, seepage water monitoring, and receiving water quality monitoring. The monitoring stations and the sampling frequencies are specified in the General Monitoring Plan (EBA 2011) and Aquatic Effects Monitoring Plan (EBA 2011).

7.0 ADAPTIVE MANAGEMENT

The following highlights some of the key parameters that will be monitored and may be adjusted if necessary.

- Fine PK Settling and Density: The settling density of the fine PK used for this plan is based on the operational records and survey information from TDC.
- Supernatant Water Quality: The clarity and water quality of the supernatant water will be monitored.
- The water quality of the PKCA discharge, Stream C3 and Lake C3 will be monitored. The discharge rates may be adjusted to optimize the water quality if required.
- Runoff: The runoff coefficient assumed for the water balance was based on hydrology studies at the site. Lower runoff coefficients may also be applicable for waste rock areas. The pumping rates and discharge quantities should be reviewed annually to determine if the runoff coefficients are as assumed. Lower runoff coefficients will reduce the discharge quantities and pumping requirements.
- Ice Management: The goal is to avoid entrapping large ice layers under a large cover of fine PK tailings. In the winter time this is accomplished by depositing the fine tails under water where sufficient water depth exists and similarly avoiding depositing over shallow water areas that are frozen to the bottom. Since relatively shallow standing water in winter in Cell A is projected, the under-water deposition of the fine PK in Cell A during winter may be not practical. Therefore, the standing water in Cell A of the PKCA will be limited to avoid burying of ice sheet/blocks during winter deposition of the fine PK. If practical, the fine PK may be deposited under water in winter in Cell B during late stage of the mine operation to reduce the amount of ice entrained within the fine PK.

- Fine PK Slopes: The design height of the dams and dykes has been based on an operational fine PK slope of 2.9%. These slopes should be monitored on an annual basis and the information used to optimize the Fine PK spigot location plan.
- Ponding Water in Cell A: Fine PK spigoted above the maximum water level within the PKCA will be placed around the perimeter of Cell A in a manner to reduce the amount of ponded water against the perimeter coarse PK berms. The performance to date indicates that surface water on the fine PK surface generally flows away from the East and Southeast Dams. The spigot locations will be adjusted over time to achieve this.
- Divider Dyke seepage: The seepage rates through the divider dykes are based on laboratory tests and existing operational data. If the permeability changes significantly or the filter becomes blocked with fine PK it may be necessary to decant water from one cell to another. The water can be decanted via pumps or siphons or an overflow structure across the dyke can be constructed.
- Divider Dyke Filter: The specified particle size distribution of the divider dykes has been based on properties of the fine PK from the bulk process plant in 1997. The performance of the dyke filter will be monitored and filter testing using actual supernatant water may be carried out to refine the dyke filter particle size distribution for the remaining construction of the Dyke A filter and the construction of the Dyke B filter. Fine PK was observed in 2007 coming through the Dyke A filter. The fine PK flow was mitigated by placing coarser fine PK on the dyke face. It was postulated that the fine PK was coming through cracks in the bedrock foundation. Divider Dyke B will be constructed prior to future full operations to deal with this issue. The Dyke B design will be modified to deal with these potential issues.
- Perimeter Coarse PK Berm: The final design and construction drawings of the coarse PK perimeter berm will be prepared prior to construction.Additional Settling Pond: The original design of the PKCA (SRK, 2004) included the provision for a settling pond downstream of West Dam. The need for an additional settling pond will be evaluated over the following years based on the performance of the facility and the discharge water quality.

8.0 OPERATIONS, MAINTENANCE, & SURVEILLANCE

This update to the PKCA Management plan includes a revised Operations, Maintenance, & Surveillance (OMS) Manual PKCA Dams which supports the resumption of mining operations. This update to the OMS Manual can be found in Appendix D, and thus the PKCA Management Plan together with the OMS Manual will constitute a central reference document that will provide a complete set of operating protocols for the dams and appurtenant structures for the PKCA.

9.0 CLOSURE

We trust this satisfies your present requirements. If you have any questions, please contact the undersigned at your convenience.

EBA, A Tetra Tech Company

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Michelle Tanguay

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Shear Diamonds Ltd.

PERMIT TO PRACTICE
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Signature Derek Cathro
Date August 15, 2011
PERMIT NUMBER: P 018
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

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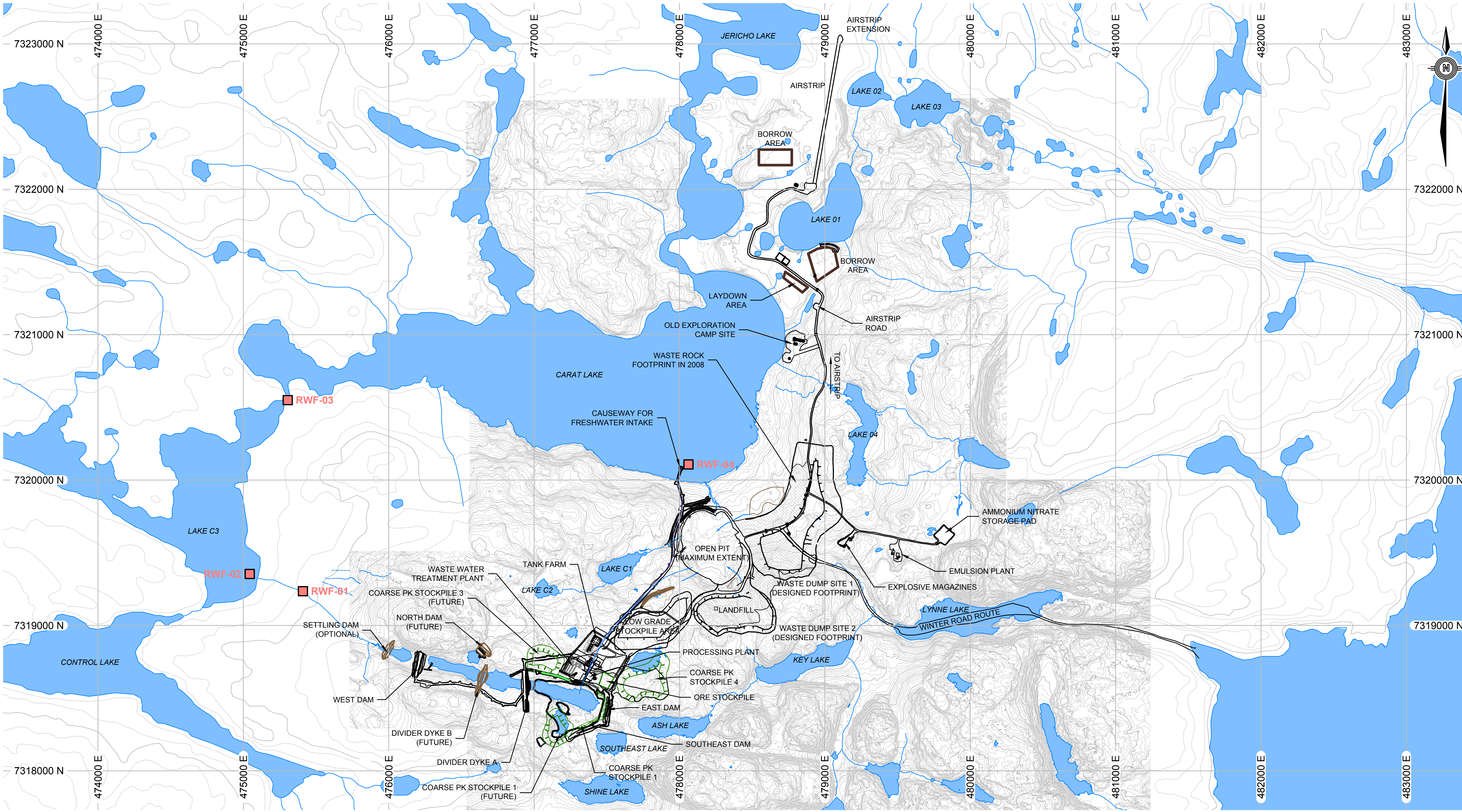
FIGURES



LEGEND

- RWF, RECEIVING WATERBODY FLOW MONITORING STATION

0 — 1 000 m

Scale: 1: 25 000

NOTES

1. LAYOUTS ARE APPROXIMATE AND MAY NOT REFLECT ACTUAL SIZE AND LOCATIONS.
2. LOCATIONS OF MONITORING STATIONS ARE CONCEPTUAL, ACTUAL LOCATIONS MAY VARY.
3. FOOTPRINTS OF WASTE ROCK PILES, COARSE PK STOCKPILES AND ORE STOCKPILES ARE SHOWN IN MAXIMUM LIMITS, ACTUAL FOOTPRINTS MAY VARY.

STATUS
ISSUED FOR USE

CLIENT
shear diamonds

eba
A TETRA TECH COMPANY

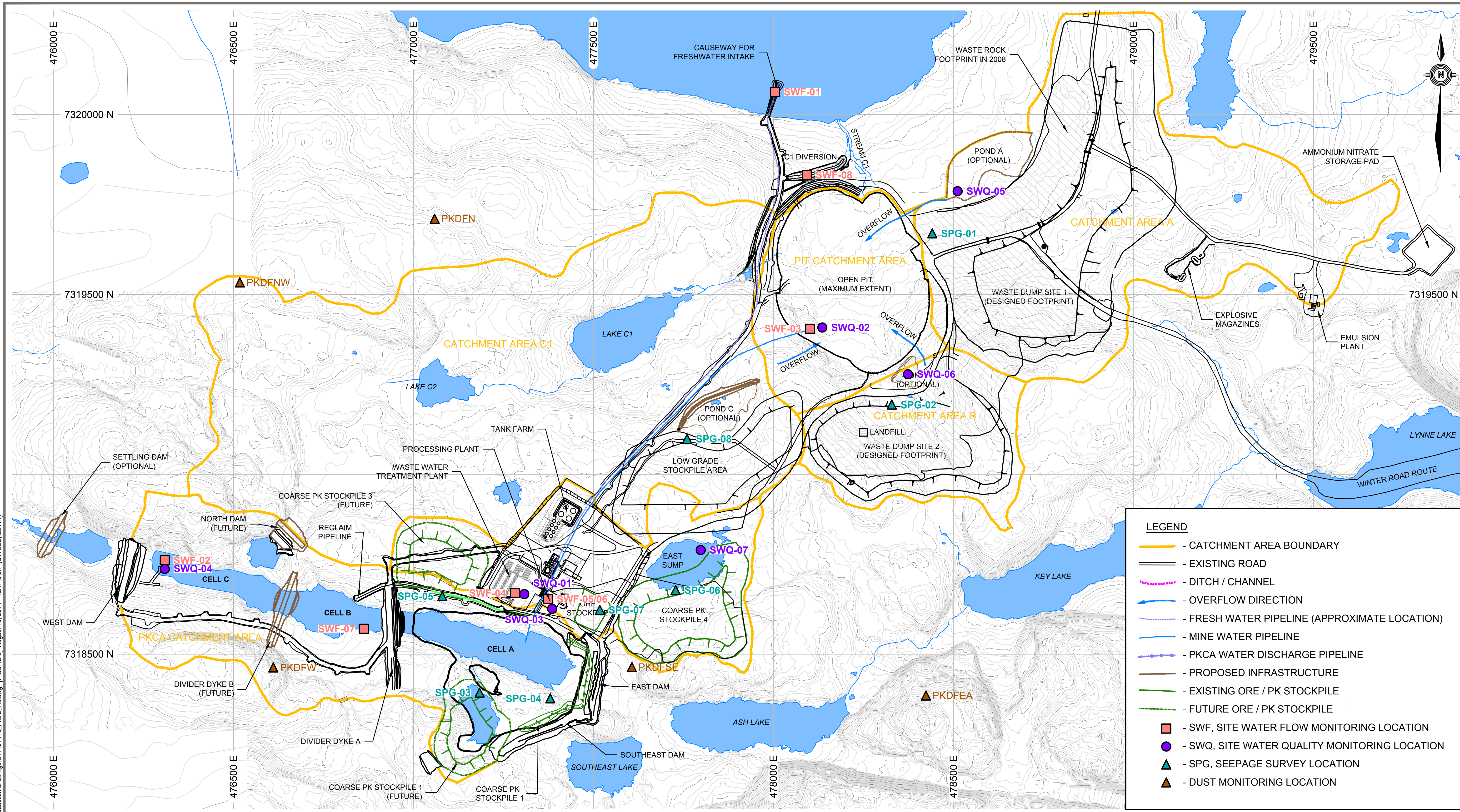
PROCESSED KIMBERLITE MANAGEMENT PLAN JERICHO DIAMOND MINE, NUNAVUT

GENERAL SITE PLAN

PROJECT NO.	DWN	CKD	REV
E14101140	EL	NG	0

OFFICE	DATE
EDM	August 15, 2011

Figure 1



Q:\Edmonton\Drafting\CIVIL3D\E141\E14101140\Production Drawings\E14101140_FIG 2_R0.dwg [FIGURE 2] August 15, 2011 - 1:24:48 pm (BY: LEE, ELVIN)

NOTES

1. LAYOUTS ARE APPROXIMATE AND MAY NOT REFLECT ACTUAL SIZE AND LOCATIONS.
2. LOCATIONS OF MONITORING STATIONS ARE CONCEPTUAL, ACTUAL LOCATIONS MAY VARY.
3. FOOTPRINTS OF WASTE ROCK PILES, COARSE PK STOCKPILES AND ORE STOCKPILES ARE SHOWN IN MAXIMUM LIMITS, ACTUAL FOOTPRINTS MAY VARY.
4. LOCATIONS OF SWF-09, 10 AND 11 WILL BE DETERMINED ON-SITE IN 2011.

STATUS
ISSUED FOR USE

CLIENT
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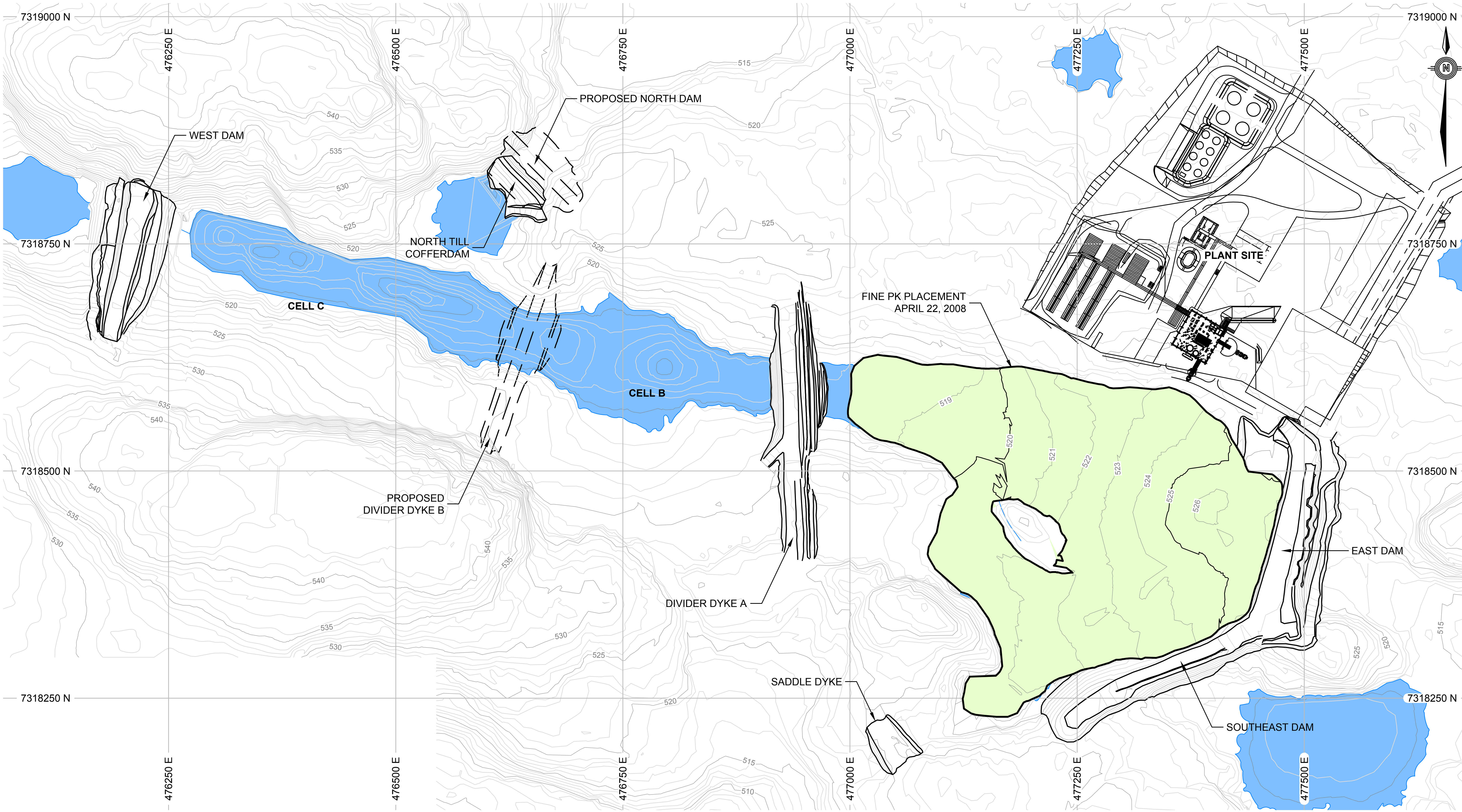
PROCESSED KIMBERLITE MANAGEMENT PLAN JERICHO DIAMOND MINE, NUNAVUT

CATCHMENT AREAS AND MONITORING STATIONS

PROJECT NO.	DWN	CKD	REV
E14101140	EL	NG	0
OFFICE	DATE		
EDM	August 15, 2011		

Figure 2



NOTES

PROCESSED KIMBERLITE CONTOURS EXTRAPOLATED FROM APRIL 22, 2008 SURVEY.

STATUS
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PROCESSED KIMBERLITE MANAGEMENT PLAN
JERICHO DIAMOND MINE, NUNAVUT

PLAN OF EXISTING PROCESSED KIMBERLITE CONTAINMENT AREA

PROJECT NO.	DWN	CKD	REV
E14101140	EL	NG	0

OFFICE	DATE
EDM	August 11, 2011

Figure 3

LEGEND

- - - - - WATER STORAGE OUTLINE

0 — 250 m

Scale: 1: 5 000

NOTES

EXISTING PROCESSED KIMBERLITE CONTOURS EXTRAPOLATED FROM APRIL 22, 2008 SURVEY.

STATUS
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PROCESSED KIMBERLITE MANAGEMENT PLAN
JERICHO DIAMOND MINE, NUNAVUT

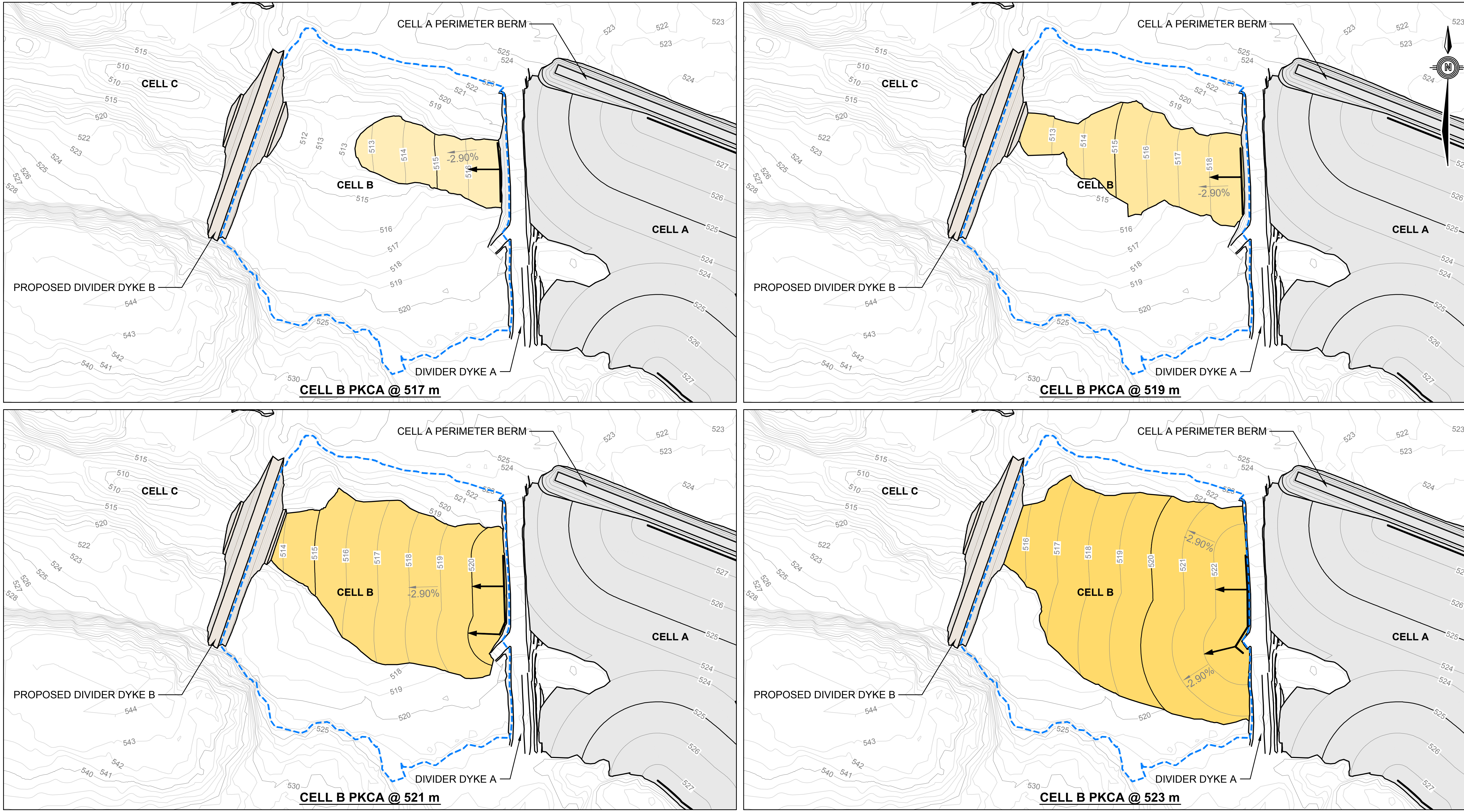
STAGED DEVELOPMENT OF PKCA
CELL A

PROJECT NO.	DWN	CKD	REV
E14101140	EL	NG	0

OFFICE	DATE
EDM	August 13, 2011

Figure 4A

Q:\Edmonton\Drafting\CIVIL3D\E141\E14101140\Production Drawings\E14101140_FIG 4A_R0.dwg [FIGURE 4A] August 15, 2011 - 1:19:30 pm (BY: LEE, ELVIN)



LEGEND

- WATER STORAGE OUTLINE

0 200 m

Scale: 1: 4 000

STATUS
ISSUED FOR USE

CLIENT
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PROCESSED KIMBERLITE MANAGEMENT PLAN
JERICHO DIAMOND MINE, NUNAVUT

STAGED DEVELOPMENT OF PKCA
CELL B

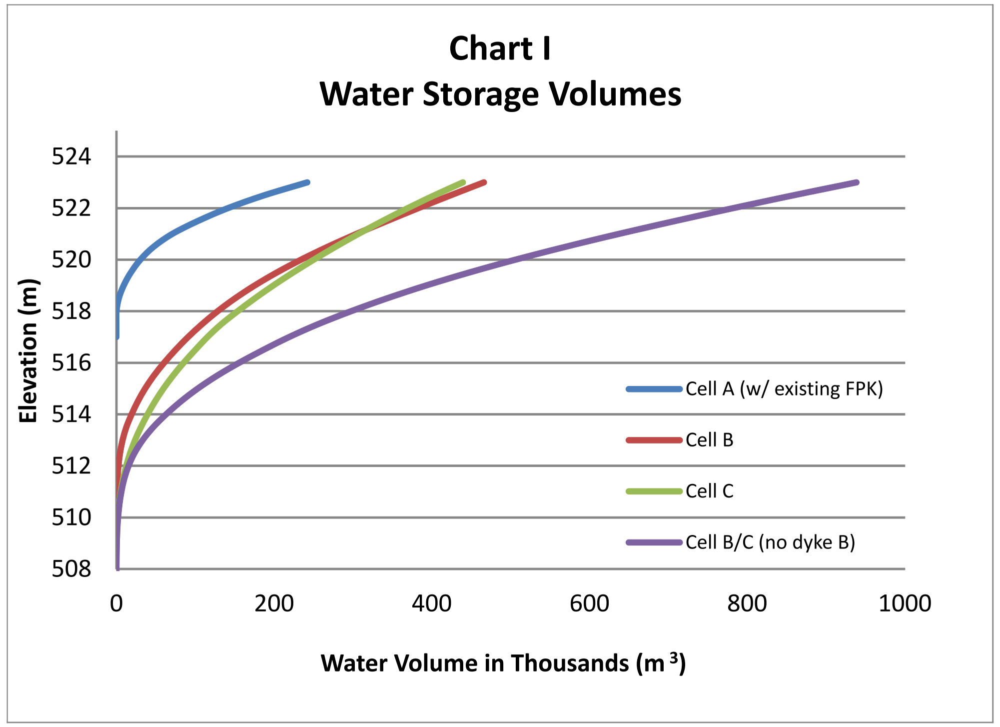
PROJECT NO.	DWN	CKD	REV
E14101140	EL	NG	0

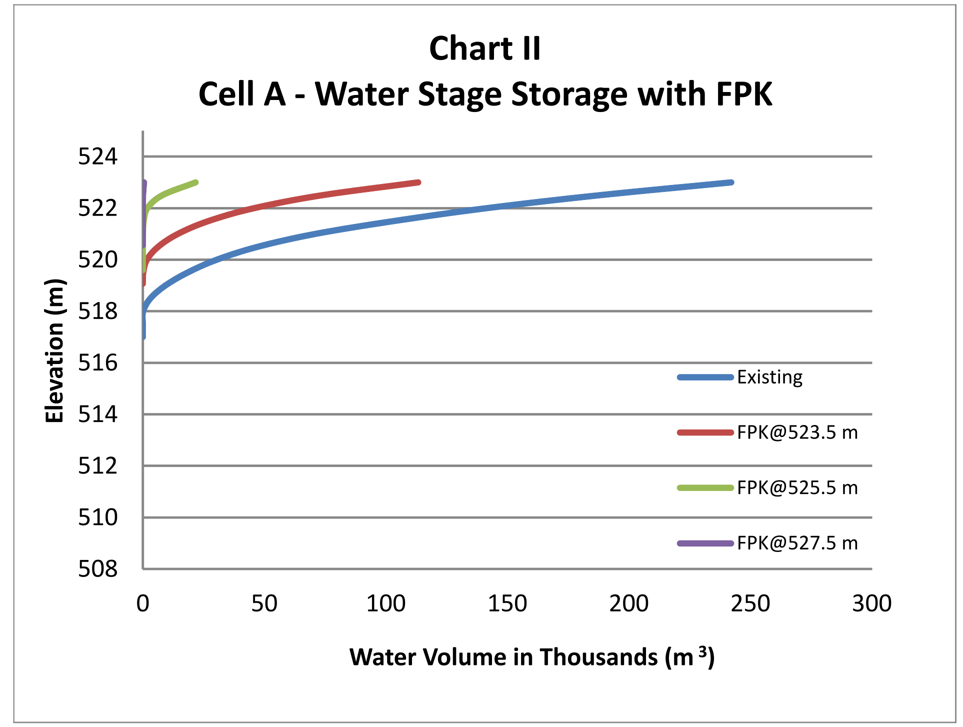
OFFICE	DATE
EDM	August 14, 2011

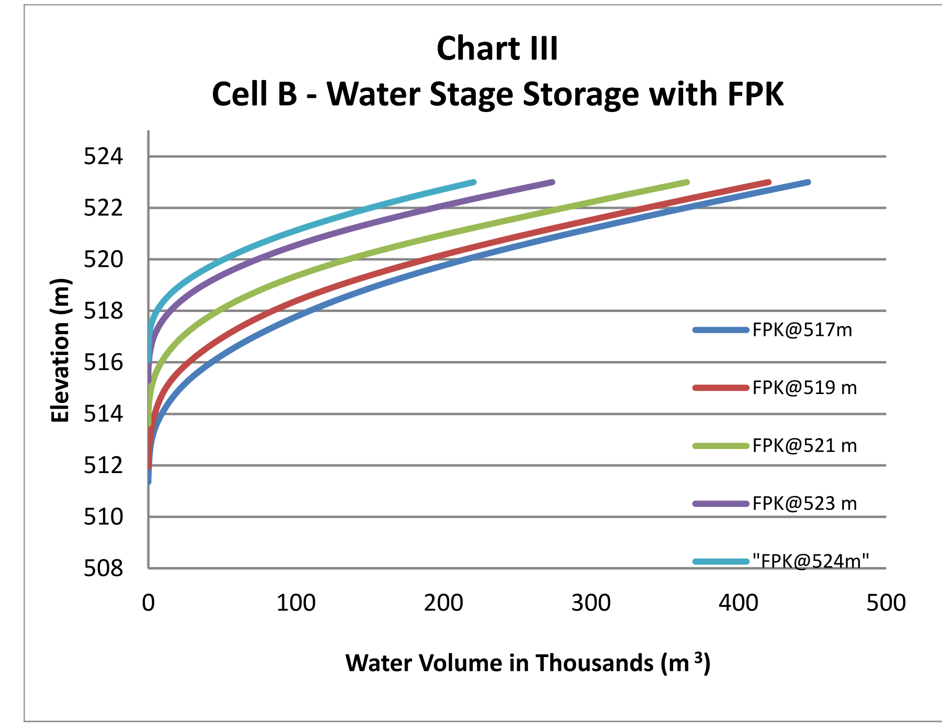
Figure 4B

Q:\Edmonton\Drafting\CIVIL3D\E141\E14101140\Production Drawings\E14101140_FIG 4B_R0.dwg [FIGURE 4B] August 15, 2011 - 1:18:59 pm (BY: LEE, ELVIN)

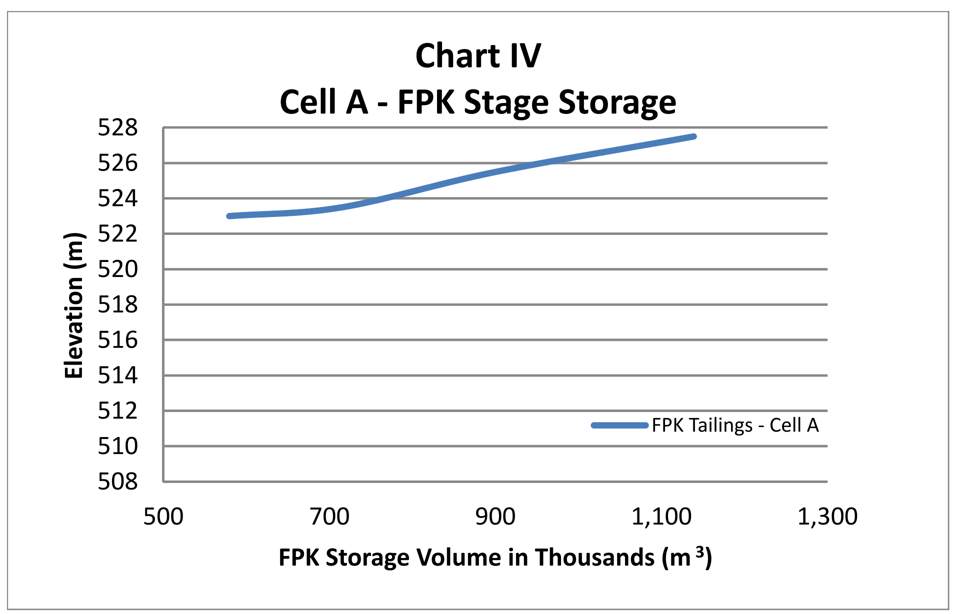
Water Storage Relationships

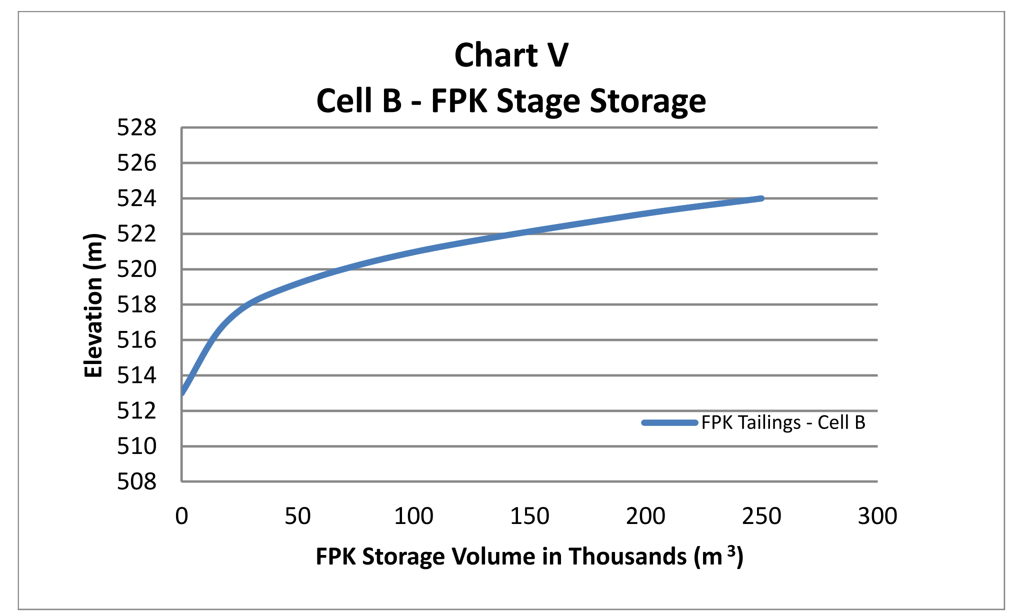






FPK Storage Relationships





LEGEND

STATUS
ISSUED FOR REVIEW

CLIENT
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PROCESSED KIMBERLITE MANAGEMENT PLAN
JERICHO DIAMOND MINE, NUNAVUT

STAGE STORAGE CURVES

PROJECT NO.	DWN	CKD	APVD	REV
E14101140	CLS	NL	NG	0

OFFICE	DATE
EBA-EDM	August 2011

Figure 5