DOMINION DIAMOND

October 3, 2016

Chuck Hubert - Senior Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre P.O. Box 938
Yellowknife, NT
X1A 2N7

Dear Mr. Hubert:

Re: Report of Environmental Assessment and Reasons for Decision Jay Project, EA1314-01 – Measure 4-4: Dike Stability and Safety

Dominion Diamond Ekati Corporation (DDEC) is pleased to provide the following submission regarding the Jay Project (the Project) as per the *Report of Environmental Assessment and Reasons for Decision, Jay Project EA1314-01* (REA), Measure 4-4: Dike Stability and Safety. This measure states the following:

> *To reduce the risk of dike failure and its associated significant impacts, Dominion will establish an independent dike review panel to evaluate and, if necessary, improve the design, construction, operation and maintenance of the dike. The panel will provide recommendations to the developer and the Wek'èezhìi Land and Water Board to ensure that impacts to the safety of people and the environment are minimized. The panel will, at a minimum:*
>
> - *review and accepts the dike design prior to the commencement of dike construction*
> - *review the dike operation*
>
> *Dominion will engage with the Wek'éezhii Land and Water Board, Government of the Northwest Territories and the Independent Environmental Monitoring Agency on the panel composition and tasks. Dominion will submit the review panel's final terms of reference to the Wek'éezhii Land and Water Board.*

On February 1, 2016 the Mackenzie Valley Impact Review Board (MVIRB) released the REA for the Project and recommended to the Government of the Northwest Territories Minister of Lands (the Minister) that, under subparagraph 128(1)(b)(ii) of the *Mackenzie Valley Resource Management Act*, the Project be approved subject to the measures described in the REA. The REA contains 23 measures and includes all the commitments made by DDEC during the Environmental Assessment (EA) process. On May 19, 2016, the Minister agreed to adopt the recommendation of the MVIRB; that the Project be approved subject to the measures and developer's commitments contained within the REA.

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DDEC made the commitment to create an independent dike review panel prior to construction of the Project during the early stages of the EA in response to questions at technical sessions held in April 2015[1]. As with the majority of the other Developer's Commitments made during the EA process, DDEC moved forward with this particular commitment in between the time period when it was made (April 2015) and the release of the REA (February 2016).

Jay Dike Review Panel

The Jay Dike Review Panel (the Panel) member selection process included the development of a short list of potential candidates who were Professional Engineers, who had worked on previous projects in the North which included design, construction, and/or inspections of major water retention structures, or who were on other northern dike review boards. DDEC contacted potential candidates to confirm if they were interested in participating in the Panel, that they were free from conflict with the current dike engineering design team, and that they would be available for the required term. DDEC selected the three Panel members from this process based on their interest to participate, qualifications and availability. The CVs of the three chosen panel members are attached and included with this package. A Terms of Reference was developed and agreed on by the 3 members of the Panel. The initial meeting of the Panel was held in Vancouver on December 7-8, 2015.

Many of the recommendations included in the Panel's report were addressed within the final version of the *Jay Dike and North Dike Detailed Design Report* (submitted with the Water Licence Application for the Project, See Appendix E) and plans have been made to address the remainder of the recommendations through the second half of 2016. A technical memorandum confirming actions completed and plans moving forward has been prepared by the Jay Dike design team in May 2016 (attached). The next meeting of the Panel is currently expected to occur in February of 2017[2].

Following the approval of the REA by the Minister, DDEC engaged the the Wek'éezhii Land and Water Board (WLWB), Government of the Northwest Territories (GNWT) and the Independent Environmental Monitoring Agency (IEMA) on the Panel composition and tasks as per Measure 4-4. On May 31, 2016 DDEC sent an information package[3] to each of these organizations and requested comments on the panel composition and the tasks as per Measure 4-4 by June 30, 2016. This deadline was extended until September 7, 2016 via a series of requests from the WLWB. This was to allow for additional time to adequately carry out a public review process, respect procedural fairness, and align with Board meeting times.

[1] See Developer's Commitment #9 of the Report of Environmental Assessment and Reasons for Decision, Dominion Diamond Ekati Corporation, Jay Project, EA1314-01. Note that this commitment did not include engaging on the panel composition and tasks.
[2] Originally this meeting was to be held in October of 2016 however the Project schedule has since been extended and therefore the Panel meeting was rescheduled.
[3] This information package included Resumes for each Panel member, Jay Dike Terms of Reference, Jay Dike Geotechnical Review Board Report #1, December 7-8, 2015, Jay Dike Geotechnical Review Board Meeting No. 1 Report – Technical Memorandum.

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IEMA provided their comments directly to DDEC on August 12, 2016. The GNWT responded through the WLWB's On-line Review System (ORS). The WLWB asked various questions through the ORS. There were no other review comments received during the WLWB's public review process. The WLWB provided DDEC with its overall comments on September 2, 2016. Written responses to each organization were provided.

Summary of Key Findings

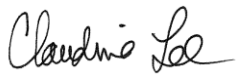
Key issues identified from this process are as follows:

- Change in the name of the Panel going forward to be "Jay Dike Review Panel".
- The term of the appointment of Panel members. DDEC committed to discussing this at each annual meeting of the Panel.
- Reports and materials related to the Panel's review of the Jay Dike and how and what materials need to be distributed.
- Clarification on engagement completed prior to the establishment of the Panel.
- Panel member selection process.
- The independence of the Panel to which DDEC agreed to add a definition into the Terms of Reference to help clarify independence.

Further information can be found in the attached documents and correspondence between IEMA, GNWT, and the WLWB.

If you have any questions or concerns regarding this submission, please contact me at 867-669-6116 or Claudine.Lee@Ekati.DDCORP.CA.

Sincerely,



Claudine Lee, M.Sc., P.Geol.
Head – Environment and Communities

Attachments:

- *Resume – Bob Dodds, Ph.D., P.Eng.*
- *Resume – Anthony Ratue, P.Eng.*
- *Resume – Cecil Urlich, P.Eng.*
- *Jay Dike Terms of Reference*
- *Jay Dike Geotechnical Review Board Report #1, December 7-8, 2015*
- *Jay Dike Geotechnical Review Board Meeting No. 1 Report – Technical Memorandum*
- *Letter to WLWB, IEMA, GNWT-ENR dated May 31, 2016 re: Response to Report of Environmental Assessment Measure 4-4 Dike Stability and Safety*

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- *Letter from IEMA dated August 12, 2016 re: Jay Dike Geotechnical Review Board Terms of Reference*
- *Letter from GNWT dated July 18, 2016 re: Comments On Jay dike Design Panel Composition and Terms of References*
- *Letter dated September 2, 2016 – WLWB to Dominion Diamond re: Response to Report of Environmental Assessment Measure 4-4 Dike Stability and Safety (includes the Review Comment Table)*
- *Letter to P. Green (GNWT) dated July 26, 2016– Dominion Diamond to GNWT re: Comments on Jay Dike Design Panel Composition and Terms of Reference, Measure 4-4 Report of Environmental Assessment*
- *Letter to J. Ohokannoak (IEMA) dated October 3, 2016 – Dominion Diamond to IEMA re: Comments on Jay Dike Design Panel Composition and Terms of Reference, Measure 4-4 Report of Environmental Assessment*
- *Letter to V. Camsell-Blondin (WLWB) dated October 3, 2016 – Dominion Diamond to WLWB re: Comments on Jay Dike Design Panel Composition and Terms of Reference, Measure 4-4 Report of Environmental Assessment*

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Robert B. Dodds, Ph.D., P. Eng.

PROFILE

Dr. Dodds is an experienced senior manager of national and international companies in the mining, civil construction and energy sectors. His expertise includes:

- Senior Engineering and Project Management
- Capital Planning
- Business Development
- Business Financing
- Marketing Operations Management
- Employee Hiring and Development
- Development of Human Resources Policies
- Development of Health, Safety and Environmental Polices
- Development of Health and Pension Benefits Plans
- Integration of Employees (of acquired assets)
- Negotiation of Collective Bargaining Agreements
- Customer Relations and Customer Service

Dr. Dodds has authored and co-authored 17 publications in various North American technical journals.

EXPERIENCE

Chief Executive Officer of Augustine Ventures Inc. (CNSX: WAW), a junior gold exploration company 2012- Present

Responsible for obtaining listing on TSX Venture Exchange, shareholder relations, raising equity on the market, developing a geological exploration program, preliminary economic assessment (PEA), mine feasibility and planning, corporate social responsibility (CSR) policy, HS and Environmental policies, corporate governance and Corporate Secretary dutie.

Mining and Operations Consultant (Oakville Resources) 2006-Present

Advisor to Dominion Diamonds on geotechnical engineering, construction and power supply on the $400 million Jay Project to develop 3 more kimberlite diamond pipes to feed the Ekati Diamond Mine mill. Chairman of the Jay Dike Geotechnical Review Board for Dominion Diamonds.

Advisor and consultant for Energizer Resources on power supply, metallurgical testing and operations on the Molo Graphite project in Madagascar.

Member of Advisory Board of JMP Engineering (Automation and Integration Specialists) since 2006.

Member of Board of Directors for design and development of not-for-profit aging-in-place communities in the Greater Toronto Area (GTA), responsible for infrastructure (water, wastewater, power, solid wastes, roads). Each community will have 3,000 residents in 2,000 residences. Funding of $750 million secured for each development with the first one in Linsday, Ontario.

President and General Manager with Algonquin Power Utility Corp (TSX-AQN) 1999- 2012

Reported to the Senior Partners and the CEO of Algonquin Power Utility Corp (APUC), which owns and operates 45 renewable (hydro and wind) and 12 thermal (biomass and natural gas) power generation facilities, 21 regulated water utilities and one regulated electric distribution utility (under Liberty Utilities). The assets are located across North America and valued at $1.7 billion. Dr. Dodds held the following senior management positions with APUC:

- President of the operating companies that managed and operated the facilities;
- Director of Operations responsible for financial and operating performance for all the APUC assets;
- Vice President of Service Delivery for Liberty Utilities;
- President and GM of a $100 million Energy From Waste facility;
- President and GM of a $135m electric distribution utility in California.

Vice President Business Development, Senior Project Engineer and **Chairman of the Board** for Trow Consulting Engineers 1987-1999

Responsible for acquisition of contracts for engineering and senior project management for mining, civil construction and environmental projects in a multi-disciplinary engineering firm with 425 employees and offices in the US and Canada. Responsible for corporate, financial and consulting performance.

Owner and Partner in Geotechnical Consulting Engineering Firms (Robert Dodds Limited and Morton Dodds and Partners, Dominion Soils) 1973- 1987

Responsible for business development, financing, staffing, senior project management, business administration for consulting services to the mining, civil construction and environmental sectors in North America, East Africa and Asia. Up to 60 employees with offices in Canada and the US.

Owner and Partner in Grouting Associates and International Grouting 1978- 1985

Responsible for tendering, financing, staffing, project management, business administration for grouting operation to the mining, civil construction and environmental sectors in North America and East Africa. Projects included: sealing off water inflow to mine shafts, railway tunnels and subway tunnels; preventing radioactive seepage from uranium mine tailings; controlling earth dam seepage; mud jacking floors and stabilizing machine foundations.

EDUCATION

- Ph.D., Geotechnical Engineering, University of Waterloo
- M.A.Sc., Soil Mechanics, University of Toronto
- B.A.Sc., Civil Engineering, University of Toronto

PROFESSIONAL AFFILIATIONS

- Registered Engineer in the Province of Ontario and the Northwest Territories, Canada
- Rotary International for 30 years: President of Thunder Bay Club 1991-92 (115 members) and President Toronto West Club 1997-98 (40 members)
- Canadian Institute of Mining and Metallurgy
- Prospectors and Developers Association of Canada
- Member of Policy Advisory Committee on Energy for Ontario Provincial Government from 1996 to 2003 then for Official Opposition from 2003 to present.

ANTHONY RATTUE, Eng.

Mr. Anthony Rattue has 45 years of experience in geotechnical engineering acquired on a number of projects, both in Canada and overseas. His experience includes engineering associated with hydroelectric, flood control and water supply projects, and also tailing dams. It extends to feasibility studies, conceptual design, basic and detailed engineering, technical specifications, construction supervision and quality control, dam safety evaluation, environmental protection and mitigation measures and as a member of Project Review Boards. Mr. Rattue is fluent in English and French with some knowledge of Spanish.

SECTORS OF EXPERTISE

Power	• Dam Safety • Hydroelectric Power • Water Resources Projects
Agriculture	• Irrigation and drainage
Mining	• Water retention dikes • Tailings dams

EDUCATION

1972	|	M.A.Sc., Soil Mechanics, University of Waterloo, Ontario, Canada
1967	|	B.Sc., Civil Engineering, University of Manchester, United Kingdom

EXPERIENCE

INDEPENDENT WORK SINCE 2011

Member of the Panel of Experts for the Dam Complex of the Upper Atbara Project, Sudan

Member of the Board of Review for the Lihir Gold Mine Cofferdam, Papua New Guinea

External Reviewer for Romaine Ro-4 embankment dam feasibility study for Hydro Québec

Contributor to the Technical Review of the Yguazu Hydro-electric Project, Paraguay for Manitoba Hydro International.

Member of the Independent Geotechnical Review Board for the KSM Mining Project in British Columbia.

Consultant to BGC Engineering Inc. for the Diavik A21 Water Retention Dike, NWT

Member of the Dike Review Board, Meadowbank Gold Mine, Agnico-Eagle, Nunavut, Canada, (2015-)

Years of Experience

- 45 years

Years with SNC-Lavalin

- 29 years

Key Position

- Engineer - Geotechnical

Languages

- English
- French
- Spanish

Site Experience

- Argentina
- Burkina Faso
- Canada
- China
- Congo
- Egypt
- Guinea
- India
- Malaysia
- Mali
- Romania
- Sudan
- Tunisia
- Venezuela
- Zambia

SINCE 2009 | Senior Geotechnical Engineer
Hydro Montreal
SNC-LAVALIN INC., MONTREAL, QUEBEC, CANADA

Keeyask Generating Station Project - Engineering Consulting Services, Manitoba Hydro, Lower Nelson River, Canada, (2014-)

- Member of the Peer Review Committee.

Hadlock Pond, New York State (2010)

- Expert witness in court case related to the failure of a small municipal dam which resulted in damage to homes and a highway

Romaine-2 Hydroelectric Project - Detailed Engineering, Hydro-Québec, Canada, 640 MW, (2010-)

Reservoir development, including 109-m-high Asphalt Core Rockfill Dam (ACRD) and six dykes, 26-to-80-m-high, concrete gated spillway, 500-m-long gated diversion tunnel, 5.5-km-long headrace tunnel, and 640 MW above-ground powerhouse.

- Participation in various studies for the ACRD structures.

Dikes A-154, A-418 and North Inlet Dikes, Diavik Diamond Mines, Canada, (2010-)

The most recent dike, the A-418, is 1.29 km long and 32 m high and was built to facilitate the dewatering of part of the bottom of Lac de Gras in order to develop the A-418 kimberlite raise. The A-154 dike is over 3 km in length.

- Annual evaluation of the dikes' behaviour.

Muskrat Falls Hydroelectric Development, Nalcor Energy, Canada, CA $6 200 000 000, 824 MW, (2010-)

The development will comprise a 35-m-high RCC dam, a 4-unit powerhouse, a spillway discharge capacity of 25 000 m³/s, 1 200 km of HVDC overhead transmission lines as well as HVAC overhead transmission lines. A natural spur of land with a depth to bedrock of some 250 m will form a part of the water retaining structures and requires stabilizing measures as part of the project.

- Participation in various studies for the North Spur.

Meadowbank Gold Mine, Agnico-Eagle, Nunavut, Canada, (2009-2015)

- Member of the Dike Review Board.

Site C Hydroelectric Project, BC Hydro, British Columbia, Canada, (2012)

- Member of the Independent Senior Review committee.

1991 - 2009 | Head of Geotechnical Department
Hydro Montreal

Peribonka River Hydroelectric Development, Hydro-Québec, Canada, 385 MW, (2005 - 2009)

Works comprise a 4 900 m³/s spillway, 700-m-long x 83-m-high zoned rockfill dam with 115 m deep plastic-concrete diaphragm wall, two dykes respectively 175 m and 665 m long, and a diversion tunnel sized for a 2 260 m³/s flood

- Participation in the project studies and design review of the dam and dikes.

Eastmain-1 and Eastmain-1A Hydroelectric Developments, James Bay Energy Corporation, Canada, (2002 - 2009)

- Participation in the project studies and design review of the dam and dikes for both projects.

Middle Tiouladi Dam, Guinea Alumina Corporation, Guinea, (2007 - 2008)

- Participation in design studies for earth and rockfill water storage dam.

Harka Development, Ministry of Agriculture, Tunisia, (2000 - 2006)

The Harka Project comprises a 27-m-high zoned earth dam, a free flow spillway with a maximum capacity of 360 m³/s, a diversion tunnel, and a transfer system formed by a pumping station fed by a water intake.

- Participation in design and advisor for the construction of the earthfill dam on alluvial foundation.

Ringlet Reservoir in the Cameron Highlands, Tenaga Nasional Berhad, Malaysia, (2000 - 2006)

- Responsible for the geotechnical aspects of the de-silting operation of the reservoir.

Water Retention Dikes, Diavik Diamond Mines, Northwest Territories, Canada, (1998 - 2006)

- Responsible for the design and active participation in the construction and monitoring of the three water retention dikes built in the waters of Lac de Gras.

Several Small Irrigation Dams, Various Clients, Tunisia, (2001 - 2003)

- Participation in the studies.

SM-3 Hydroelectric Development, Hydro-Québec, Canada, 882 MW, (1999 - 2003)

The 253 km² reservoir is created by a 160-m-high, 500-m-long rockfill dam. Major structures include: a 1 875 m³/s spillway, a 8.3-km-long power tunnel, and an underground power station with two 441 MW Francis turbines.

- Responsible for the engineering studies and preparation of drawings and specifications, and active participation in the construction of the SM-3 dam.
- The project included the construction of a jet grouted cut-off to a depth of 70 m beneath the cofferdam.

Barbara Multipurpose Project, Ministry of Agriculture, Tunisia, (1999 - 2003)

A 70-m-high dam was built on the Barbara Wadi to create a 56.5 hm³ reservoir; a pumping station sends 86 hm³ of water yearly to the Bou Heurtma reservoir for irrigation and urban supply purposes.

- Participation in the review of construction and quality control of the dam.

Kinnerasani Dam, Andhra Pradesh State Electricity Board, India, (2001)

- Consultant for safety evaluation of the dam.

Merowe Multipurpose Hydro Project, Ministry of Energy and Mining, Sudan, 1 250 MW, (2000)

The project comprises a 800-m-long fill dam, two RCC dams with a total length of 8 km, a spillway, a powerhouse with 10 x 125 MW units, access roads, bridges, and transmission lines (500 and 220 kV).

- Participation in the studies for the project.

Changma Dam, Water Resources Bureau, Gansu, China, (1998)

- Consultant for the construction phase of the dam, an earth and rockfill structure forming a key element of the Gansu Hexi Corridor.

Shipshaw River Dam Safety Evaluation, Abitibi-Consolidated Inc., Quebec, Canada, (1998)

- Participation in the dam safety evaluation of structures on the Shipshaw River in the Saguenay Region.

River Nile Protection and Development - Phase 1, Canadian International Development Agency (CIDA), Egypt, (1996 - 1997)

- Participation in the setting up and staff training of the Dam Safety Monitoring Group for the Ministry of Public Works in Egypt. Seven Nile dams involved.

Organization and supervision of the group involved in the engineering studies of the earth and rockfill dams of the Ashuapmushuan, Sainte-Marguerite and Broadback river developments, Hydro-Quebec, Quebec, Canada

Upper Lake Falls, Nova Scotia Power Inc., Canada

- Responsible for the preparation of drawings and specifications for the Upper Lake Falls dam rehabilitation. An Emergency Preparedness Plan was also prepared for the Mersey scheme.

Sidi Saad and El Haouareb Dams, Ministère Tunisien de l'Équipement, Tunisia

- Responsible for annual inspection and behaviour report for the dams.

Bougouriba River Hydroelectric Developments, Société Nationale d'Électricité du Burkina (Sonabel), Burkina Faso

- Participation in the feasibility studies.

Canadian Dam Safety Guidelines, Canadian Dam Safety Association, Canada

- Participation in the preparation of the Canadian Dam Safety Guidelines.

Rosia Montana Gold Mine, Rosia Montana Gold Corporation SA, Romania

- Participation in design studies for the tailings and water storage facilities at the proposed mine.

1986 - 1991 | Head of Geotechnical Department
THE SNC GROUP - SNC INC., MONTREAL, QUEBEC, CANADA

Barbara Multipurpose Project, Ministry of Agriculture, Tunisia,

- Review of all geotechnical aspects.

Kompienga Multipurpose Project, Société Nationale d'Électricité du Burkina (Sonabel), Burkina Faso, 14 MW

Engineering and construction management of a 50-m-high earthfill dam, intake, headrace tunnel and powerhouse with two 7 MW Kaplan turbines. The energy produced is delivered to Ouagadougou.

- Responsible for semi-annual inspections of Kompienga dam during first filling.

Isle-Maligne Development, Alcan, Quebec, Canada

- Participation in studies for the rehabilitation of the Isle-Maligne hydro project, Lake St-Jean.
- Preparation of contract documents and supervision of quality control procedures for the densification of the earth dam by vibroflotation and stone columns.

Lac Manouane Development, Alcan, Canada

- Participation in studies for the dam safety evaluation and for the rehabilitation of the Lac Manouane storage reservoir.

1986 - 1991 | Project Manager and Senior Geotechnical Engineer

Mersey Hydro System Dam Safety Review, Nova Scotia Power Inc., Canada

Engineering services to carry out dam safety review of water retaining structures at six hydropower sites on the Mersey River system, using the Canadian Dam Association Guidelines.

- Dam safety evaluation of the Upper Lake Falls Development on the Mersey River.
- The evaluation involved hydrologic and hydraulic studies to verify spillway capacities, a site investigation, stability studies on the earth dam and dyke, dambreak studies and preparation of flood maps.

Upper Lake Falls Dams, Nova Scotia Power Inc., Nova Scotia, Canada

- Responsible for the preparation of drawings and specifications for the Upper Lake Falls dam rehabilitation.

1986 - 1991 | Resident Engineer

Quality Control and Engineering on El Haouareb Dam, Ministère tunisien de l'Équipement, Tunisia

- Construction involved a cement bentonite plastic diaphragm cut off wall, grouting of limestone abutment, tunnel for river diversion and draw off, and earthfill works totaling 6 million cubic metres.
- Responsibilities included the training and supervision of site inspectors.

1975 - 1986 | Geotechnical Engineer
ROUSSEAU, SAUVÉ, WARREN INC., MONTREAL, QUEBEC, CANADA

LG-4 hydroelectric Development, Société d'énergie de la Baie James (SEBJ), Quebec, Canada, 2 700 MW

- Responsible for the design of the dam and dykes of the LG-4 hydroelectric development.

Construction of LG 4 Dam and Dykes, Société d'énergie de la Baie James (SEBJ), Quebec, Canada

- Resident soils specialist.
- Responsible for quality control of embankment construction, borrow pit exploitation, training of inspectors, and installation and monitoring of instrumentation system.

Limay-Medio Hydroelectric Development, Hidronor, Argentina, 620 MW

- Responsible for the design of dams at the optimization stage of the Limay-Medio hydroelectric development.
- Also involved, on site, with exploration work to determine the in-situ densities of alluvial material.
- Preparation of design report, drawings and specifications for the instrumentation of the Michihuao dam of the Limay Medio development.

Nepisiguit River, New Brunswick Power, New Brunswick, Canada

- Responsible for design of dams for a feasibility report.

Bamako-Selingue Transmission Line, Mali

- Planning and on site control of exploration work for the transmission line.

Electrification of Steam Generating Equipment, Consolidated Bathurst, Quebec, Canada

- Design and supervision of construction of foundation works including piles for switchyards, pylons and boilers in the electrification of steam generating equipment.

Stability Studies of Overburden Dump, Canada Cement Lafarge, Quebec, Canada

- Design of canal and dykes for river diversion and stability studies of overburden dump for the quarry of the company.

Stability Studies of Pit Slope and Overburden Dump, Mines Selbaie, Quebec, Canada

1973 - 1975 | Resident Engineer
WATERMEYER, LEGGE, PIESOLD AND UHLMANN, KITWE, ZAMBIA

- Rehabilitation of existing tailings dumps involving new drainage systems for surface runoff, control of pore pressures and corrective works for erosion protection measures on the RCM mines in Luanshya.
- Construction of new active tailings dam for deposition by hydro-cyclone separation methods. Corrective works for stability of tailings thickener tanks and railroad tracks because of water table level changes in lateritic soils.
- Studies of potential water storage dams and existing storage and distribution facilities for drinking and industrial water supply.

1970 - 1972 | Field Engineer
ACRES CANADIAN BECHTEL, CHURCHILL FALLS, NEWFOUNDLAND AND LABRADOR, CANADA

- Responsible for foundation preparation, dike construction and surveillance during reservoir filling of the East forebay area dikes.
- Training of inspectors and preparation of "as-built" reports for this area.
- Surveillance of corrective measures, including the installation of relief wells.

PROFESSIONAL ASSOCIATIONS

SINCE 1999 | Association of Professional Engineers & Geoscientists of Northwest Territories and Nunavut

SINCE 1989 | Canadian Dam Association (CDA)

SINCE 1976	|	Ordre des ingénieurs du Québec (OIQ), Membership no. 028701
SINCE 1975	|	The Canadian Geotechnical Society
SINCE 1967	|	Institution of Civil Engineers (ICE), United Kingdom

PROFESSIONAL DEVELOPMENT

1985	|	Course in Project Management, McGill University, Montreal, Quebec, Canada
1984	|	Course in Irrigation, Silsoe College, England, United Kingdom

PUBLICATIONS AND PRESENTATIONS

Designing for safety - The implications. Canadian Dam Association, annual conference. D. Anthony Rattue, Whistler, British Columbia, Canada, 2009

Dam construction in the post-colonial era. Canadian Dam Association, annual conference. D. Anthony Rattue and Michel Maeyens, St. John's, Newfoundland and Labrador, Canada, 2007

Vibrocompaction of the foundation soils of the Peribonka hydroelectric dam. M. Lauzon, B. Gagné, D. A. Rattue, A. Bigras and Y. Hammamji. Canadian Dam Association, annual conference, Quebec, Canada, 2006

Potential interface slip analysis of Peribonka dam plastic concrete cut-off wall. J.-Y. Morency, P. Garand, J. Chahde, A. Rattue and A. Bigras. Canadian Dam Association, annual conference, Quebec, Canada, 2006

Design, construction and operation of the A154 dike at Diavik. D. A. Rattue, G. Blanchette, V. Ricci and J. Reinson. 22nd Congress on Large Dams, ICOLD, (Q84, R26), Barcelona, Spain, 2006

Geo-mechanical behaviour of plastic concrete. P. Garand, A. Bigras, D. A. Rattue and Y. Hammamji. 22nd Congress on Large Dams, ICOLD, (Q84, R24), Barcelone, Spain, 2006

Design and construction of the filter zone for the A154 dike at Diavik. Anthony Rattue, Sam Proskin, Valentino Ricci and Jeff Reinson. Proceedings of Canadian Dam Association Annual Conference, Ottawa, Ontario, Canada, 2004

The use of jet grouting in the Diavik and Sainte-Marguerite Projects. D. Anthony Rattue. Proceedings of the AEG 2004 Symposium of the Association of Engineering Geologists, Montreal, Quebec, Canada, 2004

Performance of the Sainte-Marguerite-3 Dam during Construction and Reservoir Filling. Y. Hammamji, D.A. Rattue and J.P. Tournier. 20th Congress on Large Dams, ICOLD, (Q78, R58), Beijing, China, 2000

Foundation Treatment of the SM-3 Dam. D.A. Rattue, Y. Hammamji, F. Virolle and J.P. Tournier. International Symposium on Dam Foundations, Problems and Solutions, Antalya, Turkey, 1999

The SM-3 Cofferdam: A Jet Grout Case History. Y. Hammamji, D.A. Rattue and C. Bérubé. International Symposium on Dam Foundations, Problems and Solutions, Antalya, Turkey, 1999

Deep Foundation Improvement of Sainte-Marguerite-3 Cofferdam. B.N. Touileb, Y. Hammamji and D.A. Rattue. 50th Canadian Geotechnical Conference, Ottawa, Ontario, Canada, 1997

The Densification of an Earthfill Dam in Service. D.A.B. Rattue, F. Giroux and H. Jobin, 18th International Congress on Large Dams, Q.68, R.23, Durban, South Africa, 1994

An Integrated Approach to Dam Safety Evaluation A Case Study: Upper Lake Falls Dam, Nova Scotia, Canada. P.M. Pelletier, D.A.B. Rattue and E.R. Brown. Canadian Dam Safety Conference, Toronto, Ontario, Canada, 1990

Behaviour of LG4 Main Dam. N.S. Verma, J.-J. Paré, B. Boncompain, R. Garneau and D.A.B. Rattue. XI ICSMFE, San Francisco, California, United States, 1985

The LG-4 Main Dam, Design, Construction and Behaviour during Construction. R. Garneau, D.A.B. Rattue and N.S. Verma. Annual General Assembly CANCOLD, from September 9 to 11, Montreal, Quebec, Canada, 1982

Materials and Construction Methods for the Dam and Dyke Embankments of the LG-4 Project. A.D. McConnell, J.-J. Paré, N.S. Verma and D.A.B. Rattue. 14th International Congress on Large Dams, Q.55, R.8, Rio de Janeiro, Brazil, 1982

General Description of the LG4 Hydroelectric Power Development. D.A.B. Rattue, J. Saindon and J.R. Bégin. Annual General Assembly CANCOLD, from September 9 to 11, Montreal, Quebec, Canada, 1982

The QA 1 Dyke, Design and Construction. D.A.B. Rattue, J.-J. Paré and N.S. Verma. Annual General Assembly, CANCOLD, from September 9 to 11, Montreal, Quebec, Canada, 1982

COMMITTEES

SINCE 2011 | Canadian Dam Association, Member of the Dam Safety Committee, Director for the Province of Quebec (2011-2015).

1998 - 2000 | Member of the United States' National Performance of Dam Program Executive Committee (Canada Representative), United States

AECOM

Cecil Urlich, PE, P.Eng

Vice President / Principal Geotechnical Engineer / Mining Business Line Leader Pacific Area and Western Canada

Areas of Expertise

Tailings Dam Engineering, Design Construction and Inspection
Tailings Management, Planning and Design
Project Program Development
Mine Closure and Reclamation
Geotechnical and Civil Engineering
Pit and Waste Rock Pile Stability
Tailings Dam Failure Evaluations
Construction Quality Assurance

Years of Experience

With URS: 38 Years
With Other Firms: 4 Years

Education

BSc, 1968 – Senior Scholarship, Mathematics, University of Auckland, New Zealand

BE, 1970 – First Class Honors, Engineering Science, University of Auckland, New Zealand

MSc, 1972, Geotechnical Engineering, University of Calgary, Alberta, Canada
Cold Regions Engineering Short Course, University of Washington (2004)

Registration/Certification

Professional Engineer –
1978 British Columbia, No. 11229
2006 Northwest Territories
1994 Washington No. 31611
1994 California No. C047933
2002 Idaho No.10704
2004 Alaska No. 11095
U.S. Federal Regulatory Energy Commission (FERC) approved dam inspector
U.S. Department of Labor Mine Safety and Health Administration (MSHA) Certificate of Training for Surface Coal, Metal and Nonmetal Mine Operations & Related Industry.

Overview

Cecil Urlich a civil/geotechnical engineer with 42 years of experience, including 36 years on mining projects such as tailings facilities, mine closure, and reclamation. He program managed and completed geotechnical, hydrology and geology studies and remedial investigations, feasibility studies, and remedial evaluations; prepared reports, designs, plans, specifications, cost estimates, bid and contract documents and permit applications; participated in public and agency meetings; managed and inspected construction repairs; and overseen post-construction monitoring and reporting. He is a hands-on contributor with cold regions and Arctic experience and a work approach oriented to solving problems and developing innovative and constructible solutions.

Cecil has managed design, construction and inspection activities at the Red Dog Mine tailings dam and its raises in Alaska since 1988, and is the task manager for tailings dam closure planning as part of the mine closure plan. He managed the geotechnical inspection and dam remedial work at Tundra Mine in Northwest Territories, and developed conceptual designs and cost estimates for closing the Colomac Mine tailings ponds in Northwest Territories, and the Yankee Girl Mine tailings pile, Eskay Creek Mine Mine and mill facilities and Premier Mine waste rock piles, all in British Columbia. He assisted the State of Alaska with preparation of its "*Guidelines for Cooperation with the Alaska Dam Safety Program*".

Project Specific Experience

Copper Mountain Tailings Release, Princeton, British Columbia. Lead investigator for the root cause evaluation of a tailings release for a pipe distribution system to a diversion channel that overtopped and released tailing into a valley and creek, and First Nations consultation.

Lac des Iles Tailings Release, Thunder Bay, Ontario. Technical reviewer in 2015 for a property insurance company for a root cause evaluation of a tailings and water release and cost estimate to repair the dam and facilities and equipment that had been partly inundated.

Mount Polley Tailings Dam Breach, Likely, British Columbia. Lead engineer in 2014 for a property insurance company for development of a cost estimate to rebuild a breached rockfill and earthfill tailings dam to its pre-breach condition and to evaluate and confirm the cause of the breach.

Minera Penasquito Tailings Storage Facility, Near Cedros, Mexico. Project Manager for completion of a pre-feasibility study in 2014 for a replacement tailings storage facility. Evaluated five potential sites on a technical and cost basis and concluded with one site to be carried forward to a base-line feasibility study and two other sites to be considered for feasibility subject to village resettlement and mineral rights resolutions.

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Twin Metals Tailings Storage Facility, Near Ely, Minnesota. Task manager in 2014 for development of unit costs for all closure elements of a planned new mine, and for estimating closure costs for the planned tailings storage facility considering different tailings deposition plans. The integration of closure into the design in significant overall project cost savings by changing the originally proposed tailings deposition plan.

State of Alaska Department of Natural Resources, Dam Safety and Construction Unit. In 2002, assisted in the early stages of development of the "Guidelines for Cooperation with the Alaska Dam Safety Program" document that outlined analyses and information needed for dam owners to obtain a Certificate of Approval for Construction, Modification, or Operations of dams. The focus was on simplicity and user-friendly to include information that was relevant and necessary. Was thanked in the Acknowledgements of the Guidelines by the State Dam Safety Engineer.

Red Dog Mine Tailings Dam Stages I to VI and Seepage Collection Dam Design and Construction, Alaska. Project manager in the late 1980s and early 1990s for the completion of the design, drawings, specifications, operations manuals, emergency action plan and resident engineering for Stages I to VI of the rock fill tailings dam, and seepage collection dam and pump-back system that incorporated a starter dam five raises, a HDPE liner and concrete cutoffs for primary seepage control, and an underdrain and seepage collection pond and pumpback system for secondary seepage control.

Red Dog Mine Water Supply Dam Design and Construction, Alaska. Project manager in the late 1980s for the completion of the design, drawings, specifications, operations manuals, emergency action plan and resident engineering for a rock fill water supply dam, that included a HDPE liner and concrete cutoffs for seepage control and an emergency open-cut side-channel spillway.

Red Dog Mine Tailings Dam Stability Analyses, Alaska. Project manager during the 1990s and early for stability and seepage analyses of the mine tailings dam after ten years of operation and six raises, stability analysis of a pipe bench built along the upstream slope of the dam, stability analyses of dust control groins built over the tailings beach, and an update and expansion of the Operations and Maintenance Manual and Emergency Action Plan.

Red Dog Mine Tailings Dam Stage VII, IX and X Raises, Alaska. Project manager from 2002 to 2013 for design of the tailings dam Stage VII to IX raises which was built from 2005 to 2013, in 2013 and 2014 for the Stage X widening that is being built in 2015, and in 2015 for the Stage X raise that will be built in 2016 and 2017. Managed the completion of geotechnical investigations and preparation of design reports, drawings, specifications and CQA manual, responded to State comments on applications to construct, and responsible for CQA field management of construction, and preparation construction completion report for State operations permit.

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Red Dog Mine Periodic and Annual Dam Inspections, Alaska. He completed periodic dam safety inspections of the tailings main dam, freshwater dam, and mine water diversion dam in accordance with State guidelines in 2004, 2009 and 2014, and directed annual inspections since 2003 of the three dams, a seepage collection dam and a fish weir in accordance with mine requirements. He completed reports and Alaska Dam Safety program forms for all inspections.

Red Dog Mine Tailing Facility Failure Mode and Effects Analysis (FMEA), Alaska. He participated in early 2008 as the tailings main dam subject matter expert in an FMEA for the Red Dog Mine tailings facility structures. Focal areas of the tailings main dam were seismic design criteria, stability and seepage, life expectancy of the rock fill, drain and geosynthetic parts of the dam, and compatibility of the ultimate dam configuration at closure with the preliminary mine closure plans.

Red Dog Mine Tailings Dam Future Raises to Closure, Alaska. Project manager from 2004 to 2007 of conceptual designs of the tailings dam future raises to closure, with focus on stability, seepage control and freeboard, as part of an ongoing closure and reclamation plan being prepared by others for the mine. Participated in public and stakeholder information and feedback meetings and workshops on the closure plan with focus on the dam.

Red Dog Mine Tailings Dam Ultimate Closure Configuration, Alaska. Project manager of preliminary designs of the tailings main dam ultimate closure configuration and spillway layout, evaluations of life expectancy of rock fill in the dam and underdrain and geosynthetic parts of the seepage control liner system, assessment of filter criteria at the time of breakdown of the liner system, development of freeboard for spillway sizing, and advanced hydrologic, hydraulic, geotechnical, seismic, seepage and stability analyses.

Red Dog Mine Water Diversion System Hydrology and Hydraulics Evaluation. Project manager in 2007 and 2008 for updated hydrology and hydraulic analyses that were completed on the mine water diversion system and its contributory drainage area based on changes to the open pit mine and its catchment area since the system was constructed in 1993. The separates mine-impacted water (mine water) from natural surface runoff (clean water) into two parallel channels. The mine water is pumped to the tailings pond. The clean water discharges to the environment.

Red Dog Mine Mill Gravity and Discharge Pipeline Relocation Design. Lead consultant in 2008 and 2009 for the development and evaluation of design concepts and preparation of final designs, cost estimates and schedules to convert a tailings conveyance gravity flow system into a pumped system. The project included four pump stations including two on emergency generator power, pipe relocations to provide room for future tailings dam raises, and piping and instrumentation diagrams and process control logic.

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Kensington Mine near Juneau, Alaska. Project manager of site selection evaluation, geotechnical investigation, creek diversion studies, and conceptual designs of a tailings disposal system that included a 240-foot-high water and tailings storage dam built as a starter dam and raises, and an assessment of tunnel options for a creek diversion.

Nalunaq Gold Mine, Greenland. In 2000, completed site inspections of potential sites for tailings disposal facility in a valley for a proposed mine, assessed impacts on sites of potential rock slope instability and avalanches, selected feasible sites and tailings discharge and water return alignments, developed conceptual designs for a starter dam and raises, and developed capital and operating costs as part of a mine feasibility evaluation and for comparison with a sub-sea tailings disposal alternative.

Tundra Mine Closure and Reclamation, Northwest Territory, Canada. Civil and geotechnical engineer on a team that is developed a closure and reclamation plan for a remote abandoned mine with buildings, equipment, head frames, underground shafts, tailing ponds, contaminated soil and water, waste rock, hazardous waste, roads and airstrip.

Tundra Mine Tailings Dams, Northwest Territories, Canada. From 2001 to 2015, completed safety inspections of five tailings dams with two tailings ponds at an abandoned mine, identified potential borrow for dam repairs, designed emergency repairs for two dams in 2001, reviewed construction, operations and performance history of the dams and ponds, prepared inspection reports, prepared designs and specifications to repair all five dams, and provided engineering support for maintenance repairs.

Tundra Mine Landfill Site Assessment, Northwest Territory, Canada. In 2004, with the tailings dam inspections, assessed four sites that were identified as possible landfills for non-hazardous debris, and identified a fifth site as the most technically feasible and cost effective site.

Colomac Mine, northwest of Yellowknife, Northwest Territories, Canada. In 2000, completed safety inspections of an open pit, three tailings dam, two tailings ponds, a series of waste rock piles and access roads at an abandoned mine, reviewed the construction, operations and performance history of the dams, estimated closure and reclamation costs for two tailings ponds, waste piles and roads, completed a periodic safety inspection on one of the tailings dams, and prepared an inspection report.

Con Mine Upper and Lower PUD Tailings Dams, Yellowknife, North-west Territories, Canada. He reviewed the design, operations and performance history of 19 tailings dams around Upper and Lower tailings impoundments for an environmental liability assessment. The dams were built and raised using methods and materials ranging from upstream to downstream construction, and seepage cutoffs ranging from steel plates and geosynthetics to tailings impounded between rock berms.

Con Mine Taylor Road Tailings Dam Extension, Yellowknife, North-west Territories. In 2003 inspected the dam and reviewed its design, construction and operations history for litigation support to the

mine in response to charges alleging water discharge and tree kill. The dam was raised using tailings between rock berms for seepage control. Reviewed the plaintiff Case Particulars file of charges and mine correspondence files. Coordinated arborist, biologic and water quality studies of trees, vegetation and nearby water bodies. Charges against the mine were dropped.

Department of Indian and Northern Affairs Canada. Reviewed the appropriateness of engineering issues raised at a workshop on proposed plans for acid rock drainage research for mine development north of Latitude 60 in Canada. Addressed issues raised at the workshop including sub-zero temperatures, short frost-free periods, long duration snow and ice cover, permafrost, variable annual precipitation, seasonal runoff variations due to melting snow, lack of reliable data to characterize climate, and remoteness.

Kutz Ze Kayah Mine, near Ross river, Yukon Territory. Completed geotechnical review of potential tailings disposal and mill sites for the proposed mine, computed tailings to dam volume ratios for various tailings storage needs, and presented findings at a mine feasibility review meeting with Cominco, Inc.

Sa Dena Hes Mine, near Watson Lake, Yukon Territory. Project engineer for the assessment of environmental liabilities associated with waste rock piles, tailings pond, water storage dam, runoff diversion, and access roads during temporary closure of the mine. Completed designs for interim tailings pond management, tailings and water dam maintenance, and runoff diversion construction.

Central Packwood Wall Mine Plan, TransAlta Centralia Coal Mine, Washington. Principal in charge for geotechnical evaluation and slope stability Champ Mine, Soda Springs, Idaho. Engineer of record for the design and construction of a buttress stabilization to a part of an open pit slope that is near a creek and was showing signs of potential failure and regression towards the creek, for Nu-West, a division of Agrium.

Star Mine Tailing Ponds 1 to 7, Mullen, Idaho. Completed several site investigations, designs, specifications, drawings, construction inspection, operation manual, emergency plan, and operation consultation for upstream raises to Tailing Ponds 1 to 6, construction of Tailings Pond 7, and combining of the ponds in pairs, built in series down a valley for Hecla Mining Company.

Lucky Friday Mine Tailing Ponds 1 and 3, Wallace, Idaho. Completed site investigations designs, specifications, drawings, construction inspection, operation manual, emergency plan and operation consultation for raising Tailings Pond 1 by upstream raises and building new Tailings Pond 3 with a creek relocation for Hecla Mining Company.

Star and Lucky Friday Tailings Management, Mullen and Wallace, Idaho. Evaluated the feasibility alternate tailings management technologies at the Star and Lucky Friday Mine tailings ponds including

the development of thickened tailings instead of slurry tailings, and use of floating barge and pipe decants instead of fixed towers and pipes for Hecla Mining Company.

Sunshine Mine Tailings Ponds 1 and 2, Kellogg, Idaho. Completed site investigations, designs, specifications, drawings, operation manual and emergency plan, and conducted construction inspection for evaluating an active Tailings Pond 1 and building a new Tailings Pond 2 with dam, tailings discharge system and creek relocation for Sunshine Mining Company.

Bunker Hill Populated Areas Superfund Site, Coeur d'Alene Valley, Idaho. Assisted with the geotechnical part of a remedial investigation and feasibility study to remove lead-contaminated soils and remediate lead-contaminated houses and other structures in populated areas of the site.

Stone Cabin Mine Dams, Idaho. Task manager for the design of two concrete weir and rockfill dam systems with the synthetic liner groundwater cutoffs for developing wetlands in the Jordan Creek Valley for Kinross Gold.

Rock Creek Tailings Dam, Montana. Provided consultation during an engineering review of third-party response regarding the preliminary design of a proposed tailings starter dam and future raises on varied soil conditions.

Pend Oreille Tailings Dam 1, Metaline Falls, Washington. Project in the late 1980s and late 1990s for investigation, stability evaluation, slope stabilization and surface drainage design, and construction cost estimate to stabilize an inactive tailings pile that was built by upstream construction using tailings. Evaluated methods to permanently close the pile.

Confidential Tailings Ponds, Central Washington. Geotechnical task manager in 2009 for evaluations and conceptual designs of methods to relocate a creek and stabilize three abandoned tailings piles that were developed in the mid-20th century by upstream construction using tailings, and slopes have experienced erosion from creek flooding and wind action, as part of a mine closure and reclamation feasibility study.

Retention Facility 3D Dam Expansion, TransAlta Centralia Mine, Washington. Project manager since 1997 for design review, construction monitoring, stability and seepage analyses, regulatory compliance to raise a 250-foot-high earthfill dam for storing fine coal refuse slurry and water.

Kettle River Tailings Dam, Republic, Washington. Project manager for tailing dam design review, and tailings densification, freeboard, borrow material, and test pad planning for an upstream raise evaluation for raising the 170-foot-high dam. Principal-in-charge of the feasibility evaluation, stability analyses, design, permitting, construction monitoring, and operation and maintenance manual for the 12-foot-high upstream raise.

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Similkameen Mine Tailings Dam, British Columbia. Assisted with slope stability, liquefaction, and seismic risk evaluations to assess the feasibility of raising the dam to a height of over 300 feet.

Sullivan Mine, British Columbia. Conducted field inspections during raising iron and silica tailings ponds, and completed site investigation and sludge infiltration studies for design of a sludge disposal pond.

Blackdome Mine, Tailings Dam, British Columbia. Completed siting, investigation, design, plans, specifications, permitting and operation manual for the mine tailings dam and discharge system, seepage collection dam, flood diversion channel, spillway, and access roads. Construction manager for the mine, responsible for directing contractor activities, approving equipment records for payment, selecting borrow areas, classifying material for fill or reclamation and quality control.

Osprey Mine near Squamish, British Columbia. Conducted a site reconnaissance and developed layouts and conceptual designs for a tailings dam, seepage control system, and diversions at the planned mine.

Morenci Mine, Arizona. Conducted a stability evaluation of a leaking, buried pipe overlain by several hundred feet of tailings, identified the leakage zone, and provided retrofit recommendations.

Bullfrog Gold Mine near Beatty, Nevada. Project director for quality control testing and construction monitoring during site grading, fill placing, and foundation construction for new road, mill and process plant.

Ray Mine near Globe, Arizona. Technical reviewer for the site investigation, stability evaluation, and feasibility study of raising an existing tailings dam for a projected doubling of the tailings discharge rate.

16-to-1 Mine, Nevada. Performed site investigations, completed designs, specifications, drawings, permitting, and construction consultation for tailings dams, discharge pipes, flood diversions, access roads, and mill foundations.

Lepanto Tailings Dam 5A, Philippines. Completed design review of proposed dam, with particular attention given to design storm and flood computations, dam and spillway design, dam constructability, and tailings operations.

Caribou Mine, New Brunswick. Performed site investigations, completed designs, specifications, drawings, and cost estimates for two tailings dams, and associated discharges and decant systems, flood diversions, access roads, and mill foundations.

FMC Mine, Wyoming. Performed a field investigation for raising an existing tailings dam and building a new tailings dam, and conducted laboratory tests and engineering analyses for design of the raises.

Minas de San Luis, Tayoltita, Sinaloa, Mexico. Investigated the failure of a tailings impoundment built by hand labor upstream

construction methods, and designed measures to stabilize the remaining tailings and clean up a river that tailings flowed into.

Minas de San Luis, Tayoltita, Sinaloa, Mexico. Performed site investigations of existing and planned gold tailings impoundments, designed two new dams and cyclone discharges, and provided construction management and operation consultation.

La Libertad Mine, Durango, Mexico. Designed a portable drill rig and performed site investigations and geotechnical analyses to evaluate the stability of a tailings pile built by upstream construction hand labor.

CODELCO Andina Mine, Chile. Evaluated potential new tailings disposal sites and feasibility to discharge tailings by non-conventional means. Reviewed stability of the Los Leones and Piuquenes tailings dams.

Caracoles and Catavi Mines, Bolivia. Developed design concepts and cost estimates as part of an environmental review for closure of tailings impoundments, drainage channels, and waste dumps, and construction of pipelines and diversion channels.

COMIBOL 10 operating and closed mines, Bolivia. Reviewed remedial plans and cost estimates for tailings stabilization, waste rock pile closure and runoff diversion as part of evaluating environmental liabilities.

Pueblo Viejo Mine, Dominican Republic. Reviewed the Mejitas and Las Lagunes tailings dams and waste rock piles, assessed their impacts on the environment, and made recommendations for new tailings disposal sites and existing dam raises.

Cement Kiln Dust (CKD) Pile, Metaline Falls, Washington. Principal-in-charge for developing remedial alternatives, designs, plans, specifications and cost estimate of drainage controls and closure cap for 7-acre and 70-foot-high CKD pile. Project Manager for permitting and construction management of drainage controls, closure cap and landscaping, and performance monitoring, maintenance and reporting.

Sullivan Mine, near Kimberley, British Columbia. Conducted field inspections during raising of the iron and silica tailings ponds, and site investigation and sludge infiltration studies for a sludge disposal pond.

Professional Societies/Affiliates

American Society of Civil Engineers
Association of State Dam Safety Officials
Society of Mining Engineers of the American Institute of Mining, Metallurgical and Petroleum Engineers

Commendations

Con Mine Closure, Yellowknife, Northwest Territories. *"In all work completed, I found URS Staff to be skilled environmental and engineering consultants responsive to my needs. They have related well to a variety of parties including*

government officials, Miramar corporate personnel, Con Mine operating personnel and other consultants. URS' reports have been clear and concise, presenting sometimes complex and extensive data in a well-organized form, and effective use of graphics. Communication with URS has been excellent. Assignments were performed on time and on budget." Brian Lababie, Executive VP and COO, Miramar.

Tundra Mine Closure Plan and Execution, Salmita, Northwest Territories. *"I wanted to thank you for meeting the deadline and having all the documents posted on buzz.… Again, thank you for meeting the deadline, it appears that there has been a lot of great team work."* Maria Dumitrescu, MEng, PEng, Public Works and Government Services Canada (PWGSC)

Red Dog Mine Tailings Dam Development and Closure, Alaska. *"I would not hesitate to recommend Cecil as part of a URS team to other organizations to conduct similar engineering work on mine tailings in arctic or sub-arctic environments. I have found him to be professional and thorough, yet practical, and to produce clear and concise reports and documents. I have not had many difficulties with regulators in getting construction and operation permits because he knows the regulatory requirements and prepares excellent reports and construction documents."* James F. Swendseid, PE, Senior Mine Engineer, Teck Alaska Inc. Red Dog Operations

Eskay Creek Mine/Mill Closure Feasibility Study, British Columbia. *"Thanks for your help Cecil, especially under the dynamic situation involving Steve's relocation. I appreciated the manner in which you took control of the project."* Randy MacGillivray, Site Environmental Manager, Barrick Gold

Premier Mine Waste Rock Pile Closure Inspection, near Stewart, British Columbia."*Hello Cecil; …I think we should wrap this report up. It is well done and the most thorough Premier waste dump inspection account I have ever seen"* Rex Johnson, Mine Manager, Boliden

Jansen Mine Terminal 5 Bulk Handling Facility, Vancouver, Washington. *"Dear Cecil - I would to extend our gratitude to the URS team that did such an excellent work on the Geotechnical Optimization Study. During the first trimester of 2011, our BHPB internal reviewers from Australia for the prefeasibility study done in 2010 praised the in depth detail effort for the geotechnical study for the port site. I am sure that the geotechnical study work done for this port project will be an example for other BHP Billiton projects"* Alberto Bragagnini, PE, Engineering Project Manager, BHP Billiton.

JAY DIKE GEOTECHNICAL REVIEW BOARD
TERMS OF REFERENCE

1. INTERPRETATION

1.1 Definitions

In these terms of reference:

(a) "Board" means the Jay Dike Geotechnical Review Board.

(b) "Closure" means that period of time commencing with the initiation of back-flooding of the Jay pit and terminating upon the completion of the breaching of the Jay Dike.

(c) "Construction" means that period of time commencing on placement of rockfill within Lac du Sauvage for the purposes of constructing the Jay Dike, and terminating immediately before commencing the dewatering of the isolated portion of Lac du Sauvage.

(d) "Design Phase" means:

(i) that period of time commencing with the initial design of the Jay Dike by Dominion and terminating immediately before placement of rockfill within Lac du Sauvage for the purposes of constructing the Jay Dike; and

(ii) that period of time during which any material changes, updates or revisions to the Jay Dike design are made, which period of time may coincide with Construction.

(e) "Dominion" means Dominion Diamond Resources Corporation.

(f) "IEMA" means the Independent Environmental Monitoring Agency created pursuant to the Environmental Agreement among Dominion, the Government of the Northwest Territories and the Government of Canada.

(g) "Jay Dike" means the primary water retention structure to be constructed in Lac du Sauvage, Northwest Territories, as part of the Jay Project, which, for greater certainty, includes the North Dike.

(h) "Jay Project" means the project advanced to develop a pit to obtain the Jay kimberlite ore for processing at the existing Ekati diamond processing plant.

(i) "Mandate" means the directive of the Board as set out in section 4.

(j) "North Dike" refers to the smaller water retention structure to be constructed in Lac du Sauvage, Northwest Territories, near the north abutment of the Jay Dike, as part of the Jay Project, which in combination with the Jay Dike will isolate the portion of the lake that contains the Jay kimberlite pipe.

(k) "Operations" means that period of time commencing with the dewatering of the isolated portion of Lac du Sauvage and terminating immediately before the back-flooding of the Jay pit.

(l) "Qualifications" means the credentials of a member of the Board, as set out in section 3.2.

(m) "Term" has the meaning set out in section 3.4.

(n) "Terms of Reference" means the terms provided in this document.

(o) "WLWB" means the Wek'eezhii Land and Water Board.

2. ESTABLISHMENT OF THE BOARD

2.1 Purpose

These Terms of Reference establish the framework within which the Board may be constituted for the purposes of providing Dominion with an independent review of the design, construction, operations and closure of the proposed Jay Dike.

2.2 Effect

These Terms of Reference do not create any new legal powers or duties, nor do these Terms of Reference in any way alter the powers and duties established by the *Mackenzie Valley Resource Management Act,* and the regulations made pursuant to such act. The Board shall serve in an advisory role to Dominion.

3. COMPOSITION OF THE BOARD

3.1 Members

Subject to section 3.2, the Board will consist of 3 members, selected at the sole discretion of Dominion. The composition of the Board and Qualifications of Board members will be appended to any public reports issued by the Board.

3.2 Chairman

Dominion shall designate a member of the Board to be the chairman of the Board. The chairman shall supervise, manage and direct the business of the Board in accordance with these Terms of Reference.

3.3 Qualifications

Members of the Board shall be unbiased and free from any conflict of interest in relation to both Dominion and the Jay Project, and shall have knowledge or experience relevant to the purpose of the Board as set out herein, which knowledge or experience shall include, without limitation:

(a) a bachelor's degree or higher form of education from a recognized university in Canada or abroad in a relevant field of study, such as for example water retaining dam design, tailings dam design, or mine geotechnical design;

(b) registration as Professional Engineer or Professional Geoscientist in Canada;

(c) eligibility for professional registration in the Northwest Territories;

(d) minimum 10 years' experience in a combination of design, construction, remediation and inspection of rock and soil based major water retention structures;

(e) recognized authority in the design, construction, remediation or inspection of rock and soil-based major water retention structures; and

(f) able to pass a background security check and capable of traveling to the Ekati Mine site.

3.4 Term of Appointment

Members of the Board will be appointed for a minimum term of two years (the "Term"), which Term may be renewed at Dominion's sole discretion.

3.5 Vacancies

A seat on the Board shall become vacant if a member of the Board:

(a) resigns;

(b) fails to meets the Qualifications at any time;

(c) is not re-appointed at the end of his or her Term; or

(d) is unable to perform the Board's duties on an ongoing basis, as determined by Dominion, acting reasonably.

In the event of any vacancy, Dominion shall appoint a new member to the Board in accordance with these Terms of Reference.

4. MANDATE OF THE BOARD

4.1 Mandate During Design Phase

During the Design Phase, and at such times as reasonably requested by Dominion, the Board shall:

(a) review the Issued for Review Plans related to the Jay Dike;

(b) make recommendations on reasonable measures necessary to ensure the Jay Dike does not have a significant adverse impact on human health, safety, or the environment; and

(c) at Dominion's reasonable request, participate in briefings, discussions, and meetings with Dominion, any governmental authority, or any other affected person or entity as may be required to carry out the above.

4.2 Mandate During Construction

During Construction, and at such times reasonably requested by Dominion, the Board shall:

(a) make an annual visit to the Jay Dike site to review the soundness of the construction and propose improvements as deemed suitable or necessary;

(b) complete an annual review of project compliance with the Issued For Construction Plans related to the Jay Dike;

(c) deliver an annual report, which report shall include recommendations on reasonable measures necessary to ensure the Jay Dike does not have a significant adverse impact on human health, safety, or the environment; and

(d) at Dominion's reasonable request, participate in briefings, discussions and meetings with Dominion, any governmental authority, or any other affected person or entity as may be required to carry out the above.

4.3 Mandate During Operations

During Operations, and at such times reasonably requested by Dominion, the Board shall:

(a) upon the completion of the dewatering of the isolated portion of Lac du Sauvage, and at least bi-annually thereafter, visit the Jay Dike site to review the performance of the Jay Dike and recommend such improvements deemed suitable or necessary;

(b) complete a bi-annual review of the operating performance of the Jay Dike;

(c) deliver a bi-annual report, which report shall include recommendations on reasonable measures necessary to ensure the Jay Dike does not have a significant adverse impact on human health, safety, or the environment; and

(d) at Dominion's reasonable request, participate in briefings, discussions and meetings with Dominion, any governmental authority, or any other affected person or entity as may be required to carry out the above.

4.4 Mandate During Closure

During Closure, and at such times as is reasonably requested by Dominion the Board shall:

(a) upon the back-flooding of the Jay pit, make a visit the Jay Dike site to observe the condition of the Jay Dike at that time;

(b) review the closure strategy for the Jay Dike;

(c) prior to the back-flooding of the Jay pit, deliver a report, which report shall include recommendations on reasonable measures necessary to ensure the Jay Dike does not have a significant adverse impact on human health, safety, or the environment; and

(d) at Dominion's reasonable request, participate in briefings, discussions and meetings with Dominion, any governmental authority, or any other affected person or entity as may be required to carry out the above.

4.5 Exclusions

At no time shall the Board be responsible for the design, management or supervision of the Jay Dike, or any activities related thereto during the Design Phase, Construction, Operations or Closure. Without limiting the generality of the foregoing, the mandate of the Board shall not include:

(a) the design, management or supervision of the Jay Dike, or any activities related thereto during the Design Phase, Construction, Operations, or Closure;

(b) the operational practices in the Jay Project that do not directly relate to the operational performance of the Jay Dike;

(c) the protection of human health, safety, or the environment from factors not related to the Jay Dike; or

(d) any other activities carried out by Dominion which are not directly related to the design, construction, operation, or closure of the Jay Dike.

4.6 Delegation

The Board may not delegate its obligations hereunder.

5. PROCESS OF PROCEEDINGS

5.1 Access to Information

The Board shall have access to all relevant and available documents and information related to the Jay Dike which are necessary to carry out its Mandate.

5.2 Meetings

Board shall sit at the times and conduct its proceedings in the manner that it considers necessary to perform its duties under these Terms of Reference. Meetings may be attended in person or via teleconference or other means that allows communication between attendees.

5.3 Quorum

Two members shall constitute a quorum of any meeting of the Board.

5.4 Meeting format

Board meetings will be open for observation by Dominion, its agents, representatives or appointees, except as requested by the Board for in camera discussion of its recommendations. The Board's final report of a given meeting will serve as a record of the proceedings of that meeting, and Dominion will retain a copy of all Board reports for five years following the end of Closure.

5.5 Logistics & Organization

Meetings will be organized by Dominion at times mutually convenient to Board members and Dominion. Dominion will send advance notice of Board meetings and prepare an agenda. Board members may request additional meetings to address specific issues or events.

6. BOARD RECOMMENDATIONS

6.1 Format

Recommendations of the Board shall be submitted to Dominion in draft form prior to publication. Dominion will have the opportunity to comment on the draft report and propose changes based on additional evidence or revised plans to address deficiencies.

The Board shall consider any comments and proposed changes recommended by Dominion. After due consideration, the Board will submit a final report to Dominion with the Board's recommendations, signed by the members of the Board.

At the subsequent Board meeting, Dominion and/or its agents, representatives, or appointees will present to the Board information gained or actions taken, if any, to address recommendations in the Board's final report. The Board will consider the information presented regarding each recommendation and will, in writing, either certify that Dominion has appropriately resolved the recommendation, or leave the issue open. Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record.

6.2 Differences of Opinion

If the Board members disagree on recommendations, the Board may present multiple points of view with authors of each opinion noted.

Dominion reserves the right to solicit additional opinions from other sources, and to present these opinions and/or its own interpretation of evidence alongside the recommendations of the Board.

7. COMPENSATION

7.1 Retainer

Dominion shall pay a competitive retainer to each member of the Board for services performed in accordance with these Terms of Reference.

7.2 Expenses

Dominion will reimburse Board members for reasonable expenses incurred in the performance of their work in accordance with these Terms of Reference.

Robert Dodds
Oakville Resources

Anthony Rattue,
Rattue Consultant Inc.
Knowlton,
Québec

Cecil Urlich,
AECOM

February 12th, 2016

Mr. Elliot Holland
Vice President, Projects and Business Development
Dominion Diamond Ekati Corporation
#1102 – 492052nd Street
Yellowknife, NT Canada X1A 3T1

Email: elliot.holland@ekati.ddcorp.ca

Dear Mr. Holland,

Report on Meeting No. 1
Jay Dike Geotechnical Review Board
December 7-8, 2015

1.0 INTRODUCTION

Dominion Diamond Ekati Corporation (Dominion) held Meeting No. 1 of the Jay Dike Geotechnical Review Board (Board) in the Vancouver offices of Golder Associates (Golder) on December 7th and 8th, 2015. The Board is comprised of three members: Dr. R. B. Dodds (Chair), Mr. D. A. Rattue, and Mr C. M. Urlich. All three members were in attendance.

As this was the first meeting of the Board, the objectives were to make an initial acquaintance with the project and the project team, confirm the mandate of the Board, and review the status of the investigations and studies relating to the design and construction planning of the Jay Dike.

The activities covered those outlined in the agenda which is included as Attachment A. The list of attendees at the meeting is given in Attachment B.

Paper copies of the various PowerPoint presentations by Golder were provided in a three-ring binder by Dominion and Golder during the meeting. Also provided was a reduced-size set of the Issued for Review (IFR) Rev A drawings, issued on October 26, 2015 with additional drawings issued on October 30, 2015.. Project appendices were provided to Board members before the meeting by email on November 30 and December 4, 2015.

In the report which follows, the Board's recommendations are underlined.

2.0 PRIMARY OBJECTIVES

The purpose of Meeting No. 1 was to review the Jay Dike design as presented in the IFR Rev A drawings which Golder made available to Dominion on October 26th and 30th, 2015.

3.0 THE JAY PROJECT

3.1 Description

To set the scene and provide context for the subsequent discussions, Dominion described the Jay Project. Ekati Mine has been operating as a diamond mine from a base on land to the north of Lac de Gras in the Northwest Territories since 1998. An additional Kimberlite pipe, the Jay Pipe, situated beneath the waters of Lac du Sauvage about 25 km south-east of the Ekati main facilities, is to be developed, ramping up to full production by 2021. Isolation of a part of Lac du Sauvage to allow dewatering and operation of an open pit mine requires a 4.5 km long dike to be built, for the most part, in water.

The Golder team presented the design concept and the various studies that have been carried out. The maximum depth of water along the alignment is 14 m. The bedrock is overlain by lakebed sediments (upper soft layer and lower consolidated layer), competent soils (mainly glacial till but also glacio-fluvial materials) and, in local areas, glacio-lacustrine deposits. The thickness of the sediments can reach more than 7 m with soft material up to 2 m in thickness. Competent soils attain a maximum thickness of 23 m. Along the dike alignment, the depth from lake level to bedrock is up to 22 m.

Rockfill embankments are to be constructed, primarily “in-the-wet”, with materials, both run-of-mine and processed, sourced from the Lynx mine pit located about 10 km from the Jay Pipe. Only granitic rock will be used which is identified to be non acid-generating. In relatively shallower areas, the rockfill will be placed to form a “single platform”. In deeper areas, parallel rockfill embankments will be constructed to form a “double platform”.

Turbidity curtains are to be deployed for all in-water placing work in the summer months. Winter placement of rockfill (2017-2018) is planned in order to construct an outer rock groin to complete the enclosure that will serve as a protective barrier against currents that may transport sediments, waves that may damage turbidity curtains, and as an anchor for the turbidity curtains.

Once the single platform has been constructed to working level, about 0.5 m above nominal lake level (416.1 m), a key trench will be excavated through the platform to “Bedrock” or to acceptable foundation in “Competent Soil”. The clean rockfill from the excavation will be re-used in the construction of the platforms. The rockfill that has been mixed with sediments and natural soils will be taken to a nearby spoil storage area.

For deeper areas, where a double platform is constructed, the key trench will be further excavated by equipment working from the platforms to expose bedrock or competent soils at the base of the key trench.

A central zone of 0-20 mm fine filter material flanked by 0-200 mm coarse filter zones, both of crushed rock, will then be placed in the key trench. The central zone will be densified by

dynamic compaction or vibro-compaction. The central part will then be raised to the final elevation of 418.6 m.

The water barrier will be a composite construction of a cement-soil-bentonite (CSB) cut-off wall executed with slurry trench technology, taken to bedrock or the target elevation in competent soil, and curtain grouting in bedrock. To complement these elements, a series of jet grout columns will be installed through the remaining competent soil with overlaps into the base of the slurry wall and into the rock. Systematic pressure grouting through perforated drill casings is planned for the contact zone at the bedrock surface. Curtain grouting in the bedrock is designed to attain depths of up to 20 m which is established such as to be of the order of 100% of the water head at the bedrock surface. Processed till, with a maximum particle size of 102 mm, is the basis for the production of the CSB mix.

Additional work activities include the installation of monitoring instruments, primarily vibrating wire piezometers and thermistor chains, with associated data acquisition equipment plus inclinometer casings.

A shallow water channel to the west of the north-west abutment will be closed by the North Dike. This structure consists of adding a water barrier (geomembrane) on the upstream slope of the Jay North access road and anchoring this in a key trench. The geomembrane will be protected by upper and lower filter zones, and rockfill slope protection. It is to be noted that the project is located in a region of continuous permafrost though the lakebed, where the water depth of 2 m or greater, is unfrozen.

After initial dewatering of the dike enclosure around the Jay Pipe, seepage passing through or beneath the dikes will be directed by drainage ditches to pump stations for capture and evacuation. The dike axes have been aligned to profit from islands and bathymetric shallow areas, to the extent possible, and to maintain a safe set-back from the open pit perimeter. The current design uses a 100m setback but this may be adjusted in the final design.

Precedent for this type of construction is found primarily in the water retention dikes constructed for the Meadowbank Mine in Nunavut.

3.2 Construction schedule

The project is currently in the permitting phase though start of dike construction is scheduled for the third quarter of 2017. The dike construction is planned to continue year-round and to be completed in the second quarter of 2020 with initial dewatering starting at this time.

Meanwhile, four contractors have already been pre-qualified. The Issued for Tender (IFT) drawings and tender specification are planned to be issued by late January 2016. The design report is planned to be issued in February 2016. The water license process is planned to start in March 2016. The contractor solicitation process is expected to be completed by late 2016. Some design modifications, presumed to be minor, may be required subsequent to the 2016 investigations and will form part of the contract negotiations. Early Contractor involvement is viewed as favourable in the interests of constructability and cost control.

4.0 COMMENTS AND BOARD RECOMMENDATIONS

4.1 Site Characterization

The foundation investigation programs for 2014 and 2015 including: diamond core drilling, sonic drilling, air track sounding, geophysical surveys, and in-situ and laboratory testing; have enabled the site to be adequately characterized for dike design and construction planning. Additional work may be desirable to firm up quantities and reduce the potential for unknown conditions along the dike alignment. A 2016 program has been prepared and, though this may not be essential for detailed design, it will enhance bidding confidence and validate constructability.

The basic data from the 2014 and 2015 work has been analysed and full use has been made of correlations to establish material parameters. More discussion on the parameters is to be found below in the section on analyses.

4.2 Dike Design Concepts

The Board judges the design concept to be robust and comfort is derived from the precedents with the construction methods.

As was the practice at Meadowbank, there are no plans to dredge the soft sediments prior to embankment construction as it is assumed that they will be pushed aside by the advancing fill and any remaining material will be penetrated by the rockfill fragments. The embankment will essentially be founded on the underlying “Consolidated Sediments and “Competent Soils”. However, the platform is of generous width and precautions will be in place for equipment routing and placement techniques. The analytical studies to ensure dike slope stability further address this issue. Beneath the central zones, the sediments will be removed as part of the key trench excavation.

4.3 Design Criteria

The Board concurs with the adopted design criteria which have been derived from the Canadian Dam Association (CDA) Guidelines, and appropriate state-of-practice standards and design procedures.

4.4 Stability Analyses

Stability analyses have carried out for a number of scenarios during construction, dewatering and operation, and for various cross-sections and profiles, to determine whether the factors of safety for dike stability meet the criteria. The Board is generally satisfied with the methodology, the software used, and the material parameters but makes the following comments and recommendation:

a) Effective stress and undrained strength analyses have been made. For the effective stress analyses, excess pore pressures need to be applied as a base case even if sensitivity analyses with different magnitudes are also carried out;

b) For the undrained strength analyses, the strength parameters are those derived from Consolidated Undrained (CIU) triaxial tests and various correlations with the results of in-situ field tests. These values are representative of the actual state of the foundation soils. As the embankment is advanced, additional loading will be applied. The higher values for confining stress have been simulated in some laboratory tests but the specimens were left to consolidate before strength testing. During construction, the rate

of placement may be such that the materials, particularly the lakebed sediments, are no longer in a state corresponding to over-consolidated or even normally consolidated. The pre-consolidation pressures may be exceeded in some cases and an under-consolidated state may exist in the short term. The materials may be contractive in shear, rather than dilative as the laboratory tests showed, and excess pore pressures may develop. Consequently, the analyses as presented for some cases may not be conservative. The Board recommends that these be verified. Golder has indicated that this will be addressed in the final design;

c) On the other hand, the Board does agree that 2-Dimensional analyses are conservative for the concentrated loads of construction equipment as these assume a semi-infinite model and concur with the use of the 3-Dimensional FLAC modelling.

4.5 Filter Compatibility and Seepage Analyses

Studies have been performed to confirm the inter-zone compatibility to ensure the prevention of internal erosion of particles through the dam. The methods are conventional and appropriate, but there are limited gradation data on the "Rockfill" which constitutes the mass of the dike.

Some of the naturally occurring materials are internally unstable and require filters or adequate control of hydraulic gradients. The selection and gradations of the fine and coarse filter zones, that constitute the inner portion of the embankment, has been carried out to ensure protection against erosion of the competent foundation soil by compliance with the usual filter criteria. The lakebed sediments and some fractions of the glacio-lacustrine materials are not protected by the fine filter material which has a D_{15} size of 0.7 mm. It is assumed that the soft sediments are either excavated or displaced by the fill. Consolidated sediments remain in contact with the downstream rock fill embankment and the potential for erosion will be a function of the hydraulic gradients.

The Board understands that "Rockfill" is either being, or soon will be, produced out of the Lynx pit for other mine site uses such as construction of roads, building pads, laydown areas, etc. The Board recommends that approximate gradations of this "Rockfill" material be obtained as soon as possible by commercially available optical granulometry methods, such as WipFrag software, and that the inter-zone compatibility be verified, or filter material gradations be modified if necessary. Optical granulometry tests should be conducted on loose rockfill and compacted rockfill to check on how much breakdown there might be of the rock particles as a result of compaction. While the gradations will be approximate due to the level of accuracy of the optical granulometry method, they should be adequate for filter compatibility design purposes. It needs to be noted that the gradation of the material dumped at the forward face of the rock fill embankments will generally be controlled by the loading at Lynx Pit.

Numerical seepage analyses have demonstrated that hydraulic gradients are acceptable at most exit points. However, the Board notes that an acceptable gradient criterion of unity or less has been adopted. At unprotected exit points a factor of safety of 3, i.e. a gradient of 0.3, is more usual practice. A review of the analytical results is warranted. Golder has indicated that this will be addressed in the final design.

The seepage quantities, as determined from these same seepage analyses, indicate manageable volumes. The geological model used for the analyses assumes continuum for the bedrock, which is usually the case, though in reality discrete rock structure and discontinuities

will in fact control the flow through rock. Consequently, the interpretation of the results may need to be revisited once all the information from the bedrock grouting work becomes available.

4.6 Instrumentation

The types and locations of the instruments planned for the Jay Dike are similar to those used on previous water retention dikes and are appropriate. The use of data acquisition systems has been proven to be necessary given the inability to visually observe the dike toe during dewatering and during subsequent winter periods due to snow cover.

The Board notes that two thermistor strings are planned for installation upstream of the cut-off. The lake temperature profile with depth is required for interpretation of temperature measurements in the cut-off and downstream thereof. The lag time between temperature cycles is indicative of seepage flow rates and is now a recognized tool for behaviour monitoring. However, the locations may be less than optimal given that both are planned to be installed some distance from open water. Moving the instruments closer to the edge of the embankment or installing additional instruments may be required to facilitate interpretation of the data.. It is understood that the current layout is more indicative of the scope rather than the final layout and that adjustments and possibly additions can be made during the course of the works according to field observations during construction.

4.7 Total Suspended Solids (TSS)

Control of TSS during construction (and operation) is a requirement of the water licence. Turbidity curtains will be deployed and the construction sequence, with winter placement of a portion of the embankment, is aimed at controlling TSS. The Board enquires whether the water currents in Lac du Sauvage have been determined in order to evaluate the efficiency of the turbidity curtain during the first summer season when the first closure of the deep channel on the western side of the lake will take place. During this phase, and during winter placing, appropriate compliance locations need to be established that are both environmentally acceptable and reasonable for practical application.

4.8 Construction Schedule

The construction schedule is aggressive and a number of activities are on the critical path to achieving the goal. The materials balance both in terms of total quantities from the Lynx Pit that will be made available and the timing of the processed material stockpiling, are paramount. The need to engage experienced contractors and sub-contractors is well understood. The Board recommends that a material balance be finalized to ensure there will be adequate rockfill for the dike and other mine site needs, both from the Lynx pit and from another quarry that might need to be developed.

4.9 Grouting

The grouting methodology was described in detail. By and large, this is based on the Meadowbank experience and is similar to other projects (e.g., Diavik). Equipment and methods are state-of-practice, and the desired results should be achievable. Curtain grouting will be the last step in the sequence of constructing the water barrier. Quite correctly, the engineer denotes this as the low permeable element in the dike. However, none of the components, slurry wall, jet grouting or curtain grouting, will be entirely impermeable.

The drilling for curtain grouting will be through the CSB and in some cases through the Jet Grout columns before penetrating into the bedrock. Cobbles and boulders will likely exist within

the Jet Grout and rock quality will vary. Consequently, vertical drilling is preferred to reduce the risk of drill rod binding and breakage. However, successful treatment of the rock depends on intercepting the discontinuities. Hemispherical plots of the poles of planes of discontinuity do indicate some sub-vertical features. Vertical drill holes may not achieve complete interception. The Board recommends that the geological data base be further analysed to ensure that the choice of vertical drill holes can be validated. Golder has indicated that this will be addressed in the final design.

As a final step in the pressure grouting (prior to rod withdrawal and hole filling), it is planned to perforate the drill casing immediately above the bedrock surface and to grout the contact. This procedure was used at Meadowbank and therefore experience is available. The objective was, and is, to treat potentially erodible materials that settled and/or remained in the trench bottom below the CSB. In areas where the Jet Grouting technique will be used to complete the cut-off through the soil below the target excavation depth, the jetting will likely disturb and adequately cement these deposits and in-situ materials at the bedrock contact. Given the extensive grouting work required over the 4.5 km length of dike, which is on the critical path, the Board suggests further examination of the need for perforated casing grouting in areas where jet grouting will be carried out.

The Board notes and is in full agreement with the intent that curtain grouting work will be directed by the Engineer.

4.10 North Dike

As briefly mentioned above, the North Dike will close a topographic low to the west of the Jay Dike north abutment. The concept is to seal the upstream face of the Jay North access road by the application of a geomembrane (bituminous liner) on a prepared surface of filter materials and overlain with adequate granular and rockfill protection. Furthermore, the membrane will be anchored in a key trench penetrating the active layer and down to ice poor material. Again, this is a concept used at Meadowbank. If it can be demonstrated that a Talik (unfrozen) is absent from the alignment, then the Board suggests that alternative concepts be considered.

Experience at Meadowbank demonstrated the quick freeze back of the dike and foundation in shallow water areas which may obviate the need for a membrane and cut-off. A “Frozen Core” concept may be considered for the access road construction with sufficient fill above lake level to ensure that the core is below the active (annual freeze and thaw) depth. Winter construction in early 2018 would permit two seasons of freezing prior to dewatering.

Adoption of such a concept would require the investigation of the foundation and the installation of thermistors to demonstrate the frozen nature of the foundation and the absence of ice rich materials.

The Board notes that “Frozen Core” structures are being planned elsewhere at the mine site and to be constructed before the dike construction. Advantage could be taken of the equipment mobilization by tagging the North Dike construction behind the other “Frozen Core” construction, and building North Dike ahead of the Jay Dike schedule.

4.11 Pit and Dike Interaction

A presentation of the pit wall stability analyses was made for the information of the Board. While this is a work in progress, there is currently no indication that the set-back from pit rim to dike toe is inadequate.

4.12 Additional Comment

As frequently mentioned in the presentations and in this report, the Meadowbank project provides adequate precedent for the design concept and construction techniques. Nevertheless, as the water depths and planned excavation depths are a few meters greater, it is suggested that a Failure Modes and Effects Analysis (FMEA), covering both the construction and the expected performance, be carried out to identify and address any potential issues in a timely manner.

On January 8, 2016, the Board received a report dated November 20, 2105 on a risk assessment conducted on August 5 and 6, 2015. This report addresses some Board concerns, but many "Additional Controls" need to be added as discussed in the letter transmitted by the Board on January 18, 2016.

5.0 NEXT MEETING

Meeting No. 2 of the Jay Dike Geotechnical Review Board is tentatively scheduled for October 4 - 5, 2016, likely in the Golder office in Vancouver.

A site visit is not considered to be necessary before the construction season in 2017.

6.0 ACKNOWLEDGMENTS

The Board wishes to thank the personnel of Dominion and Golder for their hospitality and participation in the meeting, and for the excellent documentation and presentations made which contributed to the efficiency and effectiveness of the proceedings.

Signed:

Dr. Robert Dodds, P.Eng.

D. Anthony Rattue, P.Eng

Cecil Urlich, P.Eng.

ATTACHMENT A

AGENDA FOR BOARD MEETING NO. 1

December 7-8th, 2015

AGENDA

JAY DIKE REVIEW BOARD MEETING #1

When: December 7 – 8, 2015
Where: Golder Associates Office in Vancouver
200, 2920 – Virtual Way
Tel. (604) 296 4200
Conference Centre 2nd floor, Milligan boardroom

Purpose

The purpose of the meeting is to review the Jay Dike design as presented in the Issued for Review (IFR) Rev.A drawings which Golder Associates made available to Dominion Diamond on October 26 and 31, 2015. Golder will be presenting the design and supporting documents. The Review Board will provide feedback on the basis of design and analyses, and would raise problematic issues and opportunities for improvement. Feedback will be considered and incorporated into the final design, drawings, and specifications as needed.

Monday, December 7

Welcome: Ermanno Rambelli (Golder)	
8:30 to 8:45	Introductions, Office Orientation, Safety Share
Meeting Purpose and Project Overview: Elliot Holland / Mats Heimersson (Dominion Diamond)	
8:45 to 9:15	Review agenda: • Meeting purpose • Mandate of the Dike Review Board • Terms of Reference
9:15 to 10:00	Overview: • Dominion Diamond • Ekati Mine, location and facilities • Jay Project, location, overall scope and schedule • Dike construction schedule
10:00 to 10:15 Break	

Jay Dike Design and Construction: Fiona Esford (Golder)	
10:15 to 12:15	• Jay Dike Components: earthworks (summer and winter), jet grouting, curtain grouting, and instrumentation installation • Earthworks Construction Sequence: o turbidity management (summer and winter) o rockfill platform (summer, winter, single, double) o central trench excavation (single platform) o sediment / lakebed soil removal (double platform) o surveying and approval of base of excavation fine and coarse filter placement o densification of fine filter • Earthworks Construction Sequence (Continued): o cut-off trench excavation using slurry trench technology o surveying and approval of cut-off wall base o cement-soil-bentonite (CSB) production o CSB transport and backfilling of cut-off trench o Connections between Year 2 and Year 3 CSB wall
12:15 to 13:00 Lunch will be provided	
Jay Dike Construction: Vafa Rombough (Golder)	
13:00 to 14:45	• Jet Grouting Construction Sequence: o Areas o Methodology o Materials • Curtain Grouting Construction Sequence o Areas o Methodology o Materials • Quality Control / Quality Assurance (testing, inspection, equipment) • Instrumentation and Monitoring • Dewatering
14:45 to 15:00 Break	
Jay Dike Design: Fiona Esford (Golder)	
15:00 to 16:30	• Dike design criteria • Geotechnical, hydrogeological, and thermal characterization (2014, 2015, 2016) • Foundation conditions
16:30 to 17:00	• Wrap up and discussion

AGENDA

JAY DIKE REVIEW BOARD MEETING #1

When: December 7 – 8, 2015
Where: Golder Associates Office in Vancouver
200, 2920 – Virtual Way
Tel. (604) 296 4200
Conference Centre 2nd floor, Milligan boardroom

Tuesday, December 8

Jay Dike Design: Fiona Esford (Golder)	
8:30 to 10:30	• Dike design and analyses o Typical Sections o Materials (Types, production, availability, locations) o Filter o Stability
10:30 to 10:40 Break	
10:40 to 12:30	• Dike design and analyses (Continued) o Seepage o Dike-Pit Interaction • Path forward (information on permitting and tendering process)
12:30 to 13:15 Lunch will be provided	
13:15 to 13:30	• Questions
Board Deliberation and Presentation	
13:30 to 16:00	• Board Deliberation
16:00 to 17:00	• Board to present their preliminary findings and comments • Recommendations for next meeting

ATTACHMENT B

ATTENDANCE AT DECEMBER 2015 MEETING
Held in the Golder Associates offices in Vancouver

Attendance		
Elliot Holland	Dominion	Vice-President, Projects and Business Development, Ekati
Mats Heimersson	Dominion	Vice President, Consulting Engineer
Chris Fedora	Dominion	
Tony Morris	Dominion	Construction Manager, Jay Project
John Cunning	Golder	Principal
Ermanno Rambelli	Golder	Project Manager
Fiona Esford	Golder	Geotechnical Engineer
Chad Mundle	Golder	Geotechnical Engineer
Vafa Rombough	Golder	Geotechnical Engineer
Greg Naus	Golder	Geotechnical Engineer
Marisol Valerio	Golder	Geotechnical Engineer
Robert Dodds		Jay Dike Review Board
Anthony Rattue		Jay Dike Review Board
Cecil Urlich		Jay Dike Review Board

ATTACHMENT C

LETTER - JAY DIKE GEOTECHNICAL REVIEW BOARD TO DOMINION DIAMOND CORPORATION

Subject – Risk assessment

January 18, 2016

Robert Dodds
Oakville Resources

Anthony Rattue,
Rattue Consultant Inc.
Knowlton,
Québec

Cecil Urlich,
AECOM

January 18th, 2015

Mr. Elliot Holland
Vice President, Projects and Business Development
Dominion Diamond Corporation
#1102 – 492052nd Street
Yellowknife, NT Canada X1A 3T1

Email: elliot.holland@ekati.ddcorp.ca

Dear Mr. Holland,

Risk Assessment as mentioned in
Report on Meeting No. 1
Jay Dike Geotechnical Review Board
December 7-8, 2015

1.0 INTRODUCTION

Subsequent to the submission of the draft report by the Jay Dike Geotechnical Review Board (the Board) relating to Meeting No. 1, the Board has received a copy of the Risk Assessment for Jay Project Stage 3 Engineering, dated November 20, 2015. The Risk Assessment was held on August 5 and 6, 2015. The Board has been asked to comment on the extent to which this risk analysis addresses the concerns of the Board as raised in item 4.12 of their report.

2.0 BRIEF OVERVIEW

The Risk Assessment is comprehensive and covers many risk items grouped into the following categories:

- Financial;
- Operations;
- Compliance;
- Strategic.

An assessment has been made of the risks during several phases, namely; construction, operations, closure and post closure.

The Board acknowledges the thoroughness of the exercise and commends the parties for having carried out this assessment at an appropriate time in the project development schedule.

However, the Board would like to offer the following comments and suggestions for follow-up and the application of the findings. Risk controls (or mitigation measures) are indicated in the tables but these are of a general nature and specific action items would be appropriate to ensure that they could be implemented in a timely manner during the construction season and after the closure of the winter road.

3.0 RISK SCENARIOS

3.1 Regulatory and Permitting Risks for Construction Phase

It is indeed a potentially very serious issue. Although requirements may have changed since the first Diamond Mines were opened in the NWT, there is now the experience of operating several mines in this environment and mitigative actions include the application of technology having a track record in the North. Furthermore, the proponents, the designers, the contractors and the Board all add to the collective experience and this can be recognised as a Risk Control.

3.2 Construction Activities

As noted above, the precedent for construction in the region and in-water exists. However, it would be more convincing if a detailed evaluation of the entire construction process were to be made, identifying all areas of possible departure from experience (including Meadowbank and Diavik) and listing the mitigative actions. Note that this exercise may be undertaken over the coming months including input from Contractor method statements prior to the actual start of construction but could equally continue during each season in anticipation of the activities envisaged in the subsequent years. Departures should cover in-situ materials, rock quality, lakebed topography, and water depths.

3.3 Construction Materials

The assurance of an adequate supply of rockfill is essential. This includes availability of “run-of-mine” rock as well as crushing capacity. No detailed materials balance is mentioned in the Risk Registers or the Risk Mitigations. The Board would expect to see this at some moment in the project development.

3.4 In-water Embankment Construction

As the attendant “Risk Profile” is that which would exist if appropriate effective controls were <u>not</u> implemented, then scenarios such as slope instability during placement could be “Critical” if an accident were to occur. Currently, this scenario is given a “High” ranking. (Attachment 1, page 2, line 1)

Also related to this scenario is the effect of unexpected geological conditions including compressible sediments. (Attachment 1, page 2, line 4) The existence of the Board (additional controls) is unlikely to reveal such a situation even if the design has been reviewed. Site surveillance during construction by the Golder team is more likely to bring this issue to light.

3.5 Additional Controls

It is noted that, in many cases, the “additional controls” box has been left blank. As noted in paragraph 2.0 above, more specificity is warranted, particularly for the “High” and “Critical” risk items. Perhaps the term “existing controls” (existing or planned in Appendix 2) is misleading as

It could be taken to imply that no further planning is required. The term "Additional" (with the comment "To be considered") also leaves some doubt as to whether the item will be implemented. It is suggested, as a follow-up exercise, that the Risk Mitigations be classified as:

- Existing (included in current specifications, procedures etc.);
- Planned (additional work required for establishing details but information available);
- Pending (input required from others e.g., Contractor, before details can be established).

In each case, the action items should be clearly laid out for implementation with the responsible party identified. Examples of more specific mitigations items could be: remote controlled equipment for some operations, fixed windows removed to permit easy egress from dozers, extra grout rigs on site, rock stockpiles for emergency use during dewatering, helicopter for emergency evacuation, etc.

3.6 Financial

Although not perhaps of concern to the Board, it notes that Commodity Prices have been included in the Risk Register under Operations. Falling stock prices and shareholder upheaval could also jeopardize the construction start-up.

The Board hopes that the above comments are constructive but welcomes any request for clarification if deemed necessary.

Kindest Regards

Signed:

Robert Dodds

Dr. Robert Dodds, P.Eng.

D. Rattue

D. Anthony Rattue, P.Eng

C. M. Ulrich

Cecil Urlich, P.Eng.

TECHNICAL MEMORANDUM

DATE May 27, 2016 **REFERENCE No.** 1419751-E16046-TM-Rev0-2090

TO Elliot Holland and Claudine Lee
Dominion Diamond Ekati Corporation

CC Chris Fedora

FROM John Cunning and Ermanno Rambelli **EMAIL** John_Cunning@golder.com; Ermanno_Rambelli@golder.com

DOMINION DIAMOND JAY PROJECT
ADDRESSING OF JAY DIKE GEOTECHNICAL REVIEW BOARD MEETING NO. 1 REPORT

The first meeting of the Jay Dike Geotechnical Review Board (JDGRB) was held at the Golder Associates Ltd. (Golder) Vancouver office on December 7 and 8, 2015. Thereafter, the JDGRB issued Meeting Report No. 1 dated February 12, 2016, which provided a summary of the first meeting including comments and recommendations related to the design and constructability of the Jay Dike and North Dike. Attachment C of the JDGRB report included a previously submitted letter addressed to Dominion Diamond Corporation (Dominion Diamond), dated January 18, 2016, providing feedback following a review of the Jay Project Risk Assessment presented in Golder (2015).

Table 1 summarizes the recommendations of the JDGRB and describes how each has been addressed as part of the Jay Dike and North Dike design (Golder 2016a) or the plan and schedule for ongoing and future actions.

Table 1: Recommendations and Actions Resulting from Report on Meeting No. 1

Report on Meeting No.1 Section	Summary of JDGRB Comments / Recommendations[(a)]	Completed Action	Ongoing / Future Action	
			Description	Estimated Time of Completion
4.4a – Stability Analyses	Excess pore water pressures to be applied as a base case for all stability analyses.	Addressed in the Jay Dike and North Dike Design Report (Golder 2016a). Appendix E: Stability Analyses	No on-going work	n/a
4.4b – Stability Analyses	Consideration of a case in the stability analyses during the construction stage where contractive shear behaviour in the consolidated lakebed sediments results in excess pore pressures.	Addressed in the Jay Dike and North Dike Design Report (Golder 2016a). Appendix E: Stability Analyses	Laboratory testing of samples of consolidated lakebed sediment collected during the winter 2016 investigation program is underway. Any necessary updates to the stability analyses will be carried out, if necessary, following review of testing results.	Laboratory testing results by September 2016 Additional analyses: pending review of laboratory results
4.5 – Filter Compatibility and Seepage Analyses	Obtain approximate gradations of rockfill material (loose and compacted) by optical granulometry methods, such as WipFrag software. Verify inter-zone compatibility or modify filter material gradations, if necessary.	Use of WipFrag software, or similar, has been specified in the Issued for Quotation Technical Specifications for assessment of loose rockfill gradation during construction.	Photos of loose rockfill from initial development of Lynx Pit were taken in March and April 2016. WipFrag software is being utilized to obtain granulometry data. Results to be assessed to determine if additional testing (i.e., LA Abrasion) is required and/or assessment of compacted rockfill gradations. Inter-zone compatibility to be completed once gradation data is available. Optical granulometry to be completed by Contractor during construction as part of quality control.	Initial gradation assessment and recommendations: by September 2016. Optical granulometry included in the QC and QA programs during construction
4.5 – Filter Compatibility and Seepage Analyses	Review analytical results from numerical seepage analyses presented during Meeting No.1. Acceptable gradient criterion of unity or less has been adopted. At unprotected exit points, a factor of safety of 3, i.e., a gradient of 0.3, is more usual practice.	Addressed in the Jay Dike and North Dike Design Report (Golder 2016a). Appendix B: Design Criteria Appendix D: Seepage Analysis	Laboratory testing of samples of sediment collected during the winter 2016 investigation program is underway to assist with the assessment of critical gradients under which erosion may occur. Data will be reviewed and compared with the results of the seepage analyses. Any necessary updates to the design will be incorporated, if necessary, prior to construction.	Laboratory testing results by September 2016 Additional analyses: pending lab results
4.5 – Filter Compatibility and Seepage Analyses	Interpretation of seepage quantities may need to be revisited once all the information from the bedrock grouting work becomes available.	Seepage inflows during dewatering and initial pit development are assessed in the Jay Dike and North Dike design report (Golder 2016a), Appendix D, Seepage Analysis. Seepage inflows as pit development progresses are assessed in the Hydrogeological Assessment in Support of Jay Pit Design Feasibility Assessment (Golder 2016b) and include discrete rock structure and discontinuities.	Data collected during any future drilling in the vicinity of the Jay Dike and Jay Pit will be interpreted, and if required, further seepage analyses and hydrogeological modelling may be carried out.	Pending results of future drilling.
4.6 – Instrumentation	Two thermistor strings are planned upstream of the cut-off. Locations may be less than optimal given that both are planned to be installed some distance from open water. Moving instruments closer to the edge of the embankment or installing additional instruments may be required to facilitate interpretation of the data.	n/a	Comments from the JDGRB are acknowledged and recommendations will be taken into consideration as part of final instrumentation layout and quantities during the course of the works. Observations during construction will be used to guide the final instrumentation requirements.	During construction
4.7 – Total Suspended Solids (TSS)	Determine water currents in Lac du Sauvage in order to evaluate the efficiency of the turbidity curtain during the first summer season when the first closure of the deep channel on the western side of the lake will take place. During this phase, and during winter placing, appropriate compliance locations need to be established that are both environmentally acceptable and reasonable for practical application.	Addressed in the Jay Dike and North Dike Design Report (Golder 2016a). Appendix G: Technical memorandum on modelled current velocities.	Jay Dike and North Dike Construction, Environment, Monitoring Plan (CEMP) is being prepared by Dominion Diamond, to be submitted as part of water licencing. This will include a proposed turbidity management plan. Monitoring and compliance locations and threshold levels will be established as part of the licencing process. During construction, Dominion Diamond will implement a monitoring and reporting program in compliance with the water licence.	Draft CEMP: June 2016 with subsequent updates as necessary. Monitoring and reporting: during construction.
4.8 – Construction Schedule	Material balance should be finalized to ensure there will be adequate rockfill for the dike and other mine site needs, both from the Lynx pit and from another quarry that might need to be developed.	Golder has provided to Dominion Diamond estimated material quantities.	Dominion Diamond is responsible for Lynx Pit development schedule and design. Dominion Diamond is also responsible for producing crushed material. Dominion Diamond will track quantities and determine if supplemental materials are required. If necessary, Dominion Diamond / Contractor will develop a quarry to provide additional materials.	On-going through project development and into construction
4.9 – Grouting	Recommended that geological database be further analysed to ensure that the choice of vertical drill holes can be validated.	Addressed in the Jay Dike and North Dike Design Report (Golder 2016a).	Data collected during any future drilling in the vicinity of the Jay Dike and Jay Pit will be interpreted, and if required, incorporated into the design.	Pending results of future drilling.

Report on Meeting No.1 Section	Summary of JDGRB Comments / Recommendations[(a)]	Completed Action	Ongoing / Future Action	
			Description	Estimated Time of Completion
4.9 – Grouting	Recommend further examination of the need for perforated casing grouting in areas where jet grouting will be carried out.	Addressed in the Jay Dike and North Dike Design Report (Golder 2016a).	To be further assessed based on results obtained during the grouting program.	During construction
4.10 – North Dike	Recommend that alternative concepts be considered (e.g., frozen core concept"), if it can be demonstrated that Talik (unfrozen) is absent from the alignment.	North Dike design presented in Jay Dike and North Dike design report (Golder 2016a). No changes to the design are required. However, drilling was carried out in the vicinity of the North Dike during the 2016 winter drilling program and included the installation of a thermistor.	Drilling and thermistor data obtained will be reviewed and the North Dike design may be optimized to reduce costs, if deemed appropriate.	Drilling data review by September 2016 Thermistor data review by December 2016 and updated thereafter as additional data received Design review: prior to North Dike construction
4.12 – Additional Comment	Recommended that a Failure Modes and Effects Analysis (FMEA), covering both the construction and the expected performance, be carried out to identify and address any potential issues in a timely manner.	A copy of the Risk Assessment for Jay Project Stage 3 Engineer, dated November 20, 2015, provided to the JDGRB by Dominion. Additional comments from the JDGRB received January 18, 2016.	Dominion to consider JDGRB comments in future project risk assessment processes following feasibility study decision.	Pending Dominion Diamond Jay Project Feasibility Study decision expected by June 2016.

CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this technical memorandum.

We trust the above meets your present requirements. If you have any questions or requirements, please contact the undersigned.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED

John Cunning, P.Eng.
Principal, Senior Geotechnical Engineer

ORIGINAL SIGNED

Ermanno Rambelli, P.Geo. (BC)
Associates, Senior Engineering Geologist

JCC/ER/ls/bb

Attachment 1: Study Limitations

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REFERENCES

Golder (Golder Associates Ltd.). 2015. Dominion Diamond Jay Project Risk Assessment for Jay Project Stage 3 Engineering. Prepared for Dominion Diamond Ekati Corporation, Yellowknife, NWT, Canada. Golder Doc. No. 1419751-E15015-TM-Rev0-2080. November 20, 2015.

Golder. 2016a. Jay Dike and North Dike Design Report. Prepared for Dominion Diamond Ekati Corporation, Yellowknife, NWT, Canada. Golder Doc. No. 1419751-E16009-R-Rev0-2035. May 10, 2016.

Golder. 2016b. Dominion Diamond Jay Project Hydrogeological Assessment in Support of Jay Pit Design Feasibility Assessment – Mining Period. Prepared for Dominion Diamond Ekati Corporation, Yellowknife, NWT, Canada. Golder Doc. No. 1419781-E15067-TM-Rev0-2060. January 26, 2016.

STUDY LIMITATIONS

Golder Associates Ltd. (Golder) has prepared this document in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practising under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this document. No warranty, express or implied, is made.

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May 31, 2016

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Jaida Ohokannoak - Chair
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Nathan Richea
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Government of the Northwest Territories
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Yellowknife, NT
X1A 2L9

Re: Response to Report of Environmental Assessment Measure 4-4 Dike Stability and Safety

During the Environmental Assessment Process, Dominion Diamond Ekati Corporation (Dominion Diamond) committed to establishing a Dike Review Panel (Technical Session, April 20, 2015 Commitment #1) to address concerns from the Parties to the Environmental Assessment on the design of the Jay Dike.

The Jay Pipe is located approximately 1.2 km from the western shoreline of Lac du Sauvage and is covered by approximately 35 metres (m) of water. The Jay Project will include two water retaining structures, the Jay Dike and the North Dike, to allow for dewatering and operation of the Jay Pit. The North Dike will be constructed across a small channel that could be a persistent source of seepage into the dewatered area, to reduce potential inflow into the dewatered area and open pit. The Jay Dike will be a horseshoe shaped structure that will isolate the Jay Pipe from Lac du Sauvage and will connect to the shoreline in the south and at a small island in the north. Dike construction will be completed over 3 years. The Dike Review Panel will focus on the Jay Dike and not the North Dike.

Dominion Diamond moved forward with its commitment to assemble a Dike Review Panel following the commitment made at the Technical Sessions. In the summer and fall of 2015,

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Dominion reached out to experts in the field of dike construction to provide recommendations for Dike Review Panel Board Members (Board). The selected individuals are experts in their respective fields, with appropriate northern experience and meet the requirements of the Terms of Reference. The resumes for the three Board members are attached.

A Terms of Reference was developed and agreed on by the 3 members of the Board.

Key items in the Terms of Reference:

- An independent Board will be established to be in place for the design, construction, operation and closure of the Jay Dike;
- Board members require experience in dike construction, engineering, inspection and monitoring;
- Board members' term is 2 years;
- During the design phase, Board members will review dike design and make recommendations for improvement; and
- The Board will prepare a report following each meeting to capture activities completed during the design review process, comments and recommendations.

The first meeting was conducted on December 7-8, 2015. The report from this meeting dated February 12, 2016 is attached. At the time of the Board's formation, it was described as the "Jay Dike Geotechnical Review Board." Dominion recommends that the name be changed to the "Jay Dike Review Panel" going forward.

Key results and findings from the December 2015 meeting included:

- The Board reviewed the status of the investigations and studies relating to the design and construction planning of the Jay Dike;
- The Board confirmed that the site has been adequately characterized by means of field investigation programs;
- The Board judged the design concept to be robust, and comfort was also derived from the precedents with similar construction methods at other sites; and
- The Board provided recommendations for further testing, analyses and studies.

During the early part of 2016, the Jay Dike design team carried out follow-up activities to address part of the recommendations listed in the Board's report dated February 12, 2016:

- Additional field investigations were carried out in March 2016 to firm up quantities and reduce potential for unknown conditions;
- Soil samples were collected from the foundation areas of the Jay Dike for additional laboratory testing;
- Plans were made for additional geotechnical analyses to be completed once the results of the laboratory testing become available;
- A Jay Dike Design report was finalized considering the requirement for a more conservative approach on the geotechnical stability analyses; and

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- Additional studies for turbidity control were completed and the results included in the final version of the Jay Dike Design report.

In summary, many of the recommendations included in the Board's report have already been addressed within the final version of the Jay Dike Design Report (to be submitted with the Water Licence Application for Jay) and plans have been made to address the remainder of the recommendations through the second half of 2016. A technical memorandum confirming actions completed and plans moving forward has been prepared by the Jay Dike design team in May 2016 (attached).

As per the schedule for meetings outlined in the Terms of Reference, the second meeting of the Dike Review Panel is planned to take place on October 4-5, 2016 to review actions and progress on actions from the December 7-8, 2015 meeting and review any updates/changes of the design as a result of the recommendations.

On February 1, 2016, the Mackenzie Valley Environmental Impact Review Board (MVEIRB) released the Jay Report of Environmental Assessment (REA). As per Measure 4-4 relating to Dike Stability and Safety, MVEIRB requires Dominion to establish an independent dike review panel.

Measure 4-4 Dike Stability and Safety

> *To reduce the risk of dike failure and its associated significant impacts, Dominion will establish an independent dike review panel to evaluate and, if necessary, improve the design, construction, operation and maintenance of the dike. The panel will provide recommendations to the developer and the Wek'èezhìi Land and Water Board to ensure that impacts to the safety of people and the environment are minimized. The panel will, at a minimum:*
>
> - *review and accept the dike design prior to the commencement of dike construction*
> - *review the dike operation*
>
> *Dominion will engage with the Wek'èezhìi Land and Water Board, Government of the Northwest Territories and the Independent Environmental Monitoring Agency on the panel composition and tasks. Dominion will submit the review panel's final terms of reference to the Wek'èezhìi Land and Water Board.*

In accordance with REA Measure 4-4 above, Dominion is providing the attached documents on the Dike Review Panel composition and the Terms of Reference. Dominion is also providing the first report of the Dike Review Panel and the Technical Memorandum as supplemental information. The above referenced documents are an example of the work that the Dike Review Panel has completed to date and the actions resulting from the Board's recommendations.

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Dominion is requesting comments on the panel composition and the tasks as per Measure 4-4 in by June 30, 2016.

We trust that you will find the information herein and attached to be comprehensive. Dominion looks forward to receiving your comments related to Measure 4-4 above.

If you have any questions or concerns regarding the Dike Review Panel, please contact me at 867-669-6116 or Claudine.Lee@Ekati.DDCORP.CA.

Sincerely,

Claudine Lee, M.Sc., P.Geol.
Head – Environment and Communities

Attached:

Resume – Bob Dodds, Ph.D., P.Eng.
Resume – Anthony Ratue, P.Eng.
Resume – Cecil Urlich, P.Eng.
Jay Dike Terms of Reference
Jay Dike Geotechnical Review Board Report #1, December 7-8, 2015
Jay Dike Geotechnical Review Board Meeting No. 1 Report – Technical Memorandum

CC:

Laurie McGregor – GNWT
Andrea Patenaude – GNWT
Chuck Hubert - MVEIRB
Shin Shiga – NSMA
Alex Power – YKDFN
Jared Ottenhof – KIA
Don LeBlanc - Hamlet of Kugluktuk
Lauren King – LKDFN
Carol Ann Chaplin - DKFN
Shawn McKay - FRMC
Sjoerd Van der Wielen - Tlicho

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August 12, 2016

Ms. Claudine Lee, M.Sc. P. Geol.
Superintendent – Environment Operations
Dominion Diamond EKATI Corporation
1102 4920 52nd Street,
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X1A 3T1

Re: Jay Dike Geotechnical Review Board Terms of Reference

Dear Ms. Lee,

The Independent Environmental Monitoring Agency (Agency) has reviewed the terms of reference (ToR) for the formation of the Jay Dyke Geotechnical Review Board (Review Board). The Agency provides the follow comments on the document.

Mandate of the Review Board

The Agency notes that the mandate and term of the Review Board extend beyond the minimum established through Measure 4.4 of the MVEIRB Report of Environmental Assessment (review and accept the dike design prior to the commencement of dike construction; review the dike operation). The Agency believes Review Board Members have valuable expertise, knowledge and insights which can contribute to the safe design, construction, operation and closure of the Jay Dike and commends Dominion Diamond Ekati Corporation (DDEC) for taking this comprehensive dike life-cycle approach.

Obligations of the Review Board

Sections 4.2(a), 4.3(a) and 4.4(a) of the ToR obligate the Review Board to make visits to the Ekati mine site annually, bi-annually or upon the back-flooding of the Jay pit, respectively. As written, these sections may limit Dominion's ability to further call upon the Review Board to visit the Jay Dike should circumstances require it.

Recommendation: Sections 4.2(a), 4.3(a) and 4.4(a) be revised to enable DDEC, at their sole discretion, to call upon the Review Board to visit the site at other times in the event unplanned or unexpected circumstances or occurrences require Review Board Members' attention.

Reports of the Review Board

The ToR requires the Review Board to prepare and submit reports to DDEC throughout its term of existence. Section 6.1 establishes requirements for the submission, review and posting of reports and subsequent certifications to the public record. The Agency respects DDEC's desire to comment and propose changes to any draft report prepared by the Review Board and the Review Board's desire to consider any proposed changes prior to certifying (signing) the report. The Agency notes however, that DDEC's subsequent obligation to distribute the final report to the Agency and WLWB for inclusion on the public record is discretionary.

Recommendation: Section 6.1 be revised so that all final and certified reports prepared by the Review Board are available for inclusion on the public record. The Agency agrees that all final reports provided by the Review Board and/or DDEC will be posted on the Agency's web site.

Should you have any questions concerning these comments, the Agency would be pleased to discuss these at your convenience.

Sincerely,

Jaida Ohokannoak
Chairperson

Cc: DDEC – April Hayward
Tlicho Government - Sjoerd van der Wielen
Yellowknife Dene First Nation – Alex Power
Lutsel K'e Dene First Nation – Lauren King
North Slave Metis Alliance – Shin Shiga
Kitikmeot Inuit Association – Jared Ottenhof
Government of the Northwest Territories – Laurie McGregor
Indigenous and Northern Affairs Canada – Jennifer O'Neil

July 18, 2016

Ms. Claudine Lee
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Re: Comments on Jay Dike Design Panel Composition and Terms of References

As per your letter dated May 31, 2016 and the requirements of Environmental Assessment Measure 4-4 regarding Dike Stability and Safety, GNWT have provided comments on the Jay Dike Design Panel composition as well as the Terms of Reference. They have been outlined below in a response similar to the format of the Wek'èezhìi Land and Water Board as these comments have been provided through their online review system as well.

Topic: Terms of Reference - Timing

Comment:

GNWT notes that DDEC assembled the Review Panel in the fall of 2015 and the first meeting was conducted on December 7-8, 2015. This meeting led to recommendations that have already been included in the final version of the Jay Dike Design report. Thus it would appear that the panel has already been finalized, and have been actively completing tasks outlined in the Terms of Reference. As such, the timing of engagement between DDEC and the parties listed in Measure 4-4 (WLWB, GNWT and IEMA) is unclear.

Recommendation:

GNWT recommends that DDEC clarify why engagement was not completed prior to the establishment of the panel.

Topic: Terms of Reference

Comment:

Section 3.1 of the Terms of References states:

> *"Subject to section 3.2, the Board will consist of 3 members, selected at the sole discretion of Dominion."*

This statement appears to be in conflict with the requirement in Measure 4-4 for DDEC to engage with the parties listed above on the panel composition.

Recommendation:

GNWT believes that the selected Panel Members are well accomplished but would like DDEC to describe their Panel Members selection process.

Topic: Terms of Reference - North Dike

Comment:

In its letter dated May 31, 2016, DDEC states:

> *"The Dike Review Panel will focus on the Jay Dike and not the North Dike."*

However, in the "Jay Dike Geotechnical Review Board Terms of Reference" under "Definitions" in Section 1.1(g), the following definition for Jay Dike is provided:

> *" 'Jay Dike' means the primary water retention structure to be constructed in Lac du Sauvage, Northwest Territories, as part of the Jay Project, which, for greater certainty, includes the North Dike."*

There appears to be some inconsistencies on how the North Dike has been handled. It is not clear if it falls within the scope of the work to be completed by the Review Panel.

Recommendation:

GNWT recommends that the North Dike be included within the scope of review of work completed by the Review Panel.

Topic: Terms of Reference - Term

Comment:

The Terms of Reference lists the term of appointment at two years. It is not clear how the term was selected or if the term is too short. A longer term may provide the ability to review dike designs, review construction and as-built reports and assess initial performance of the structures.

Recommendation:

GNWT recommends that the terms of appointment for panel members be reviewed to consider a longer length.

Topic: Terms of Reference - Panel Name

Comment:

As per the May 31, 2106, DDEC suggested that the panel should be called the "Jay Dike Review Panel" as opposed to the "Jay Dike Geotechnical Review Board" going forward. GNWT concurs with this suggestion as Measure 4-4 makes reference to a "dike review panel" and this would also avoid any confusion moving forward. As such, all references in the Terms of Reference and other documents should be made to "the Panel" as opposed to "the Board". Note this would also remove potential confusion with the Wek'èezhìi Land and Water Board which is frequently referred to as the Board.

Recommendation:

GNWT concurs that the term "Jay Dike Review Panel" should be used going forward and this be reflected in all documents in future including a revised Terms of Reference.

Topic: Terms of Reference - Section 6.1 Format

Comment:

Section 6.1 states the Review Panel will submit recommendations in draft form prior to publication and that DDEC will have an opportunity to propose changes before the report is finalized. Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) states that the dike review panel is to operate independently of DDEC. As such, a copy of DDECs comments and an inclusion of a summary of changes that were made as a result with rationale should be included in the final recommendations to promote transparency.

Recommendation:

GNWT recommends that any final recommendations from the Review Panel include a summary table of comments made by DDEC on the initial drafts and outline any changes that were incorporated as a result.

GNWT recommends that the Terms of Reference be amended to align with Measure 4-4 which indicates that the panel is to operate independently from DDEC.

Topic: Terms of Reference - Section 6.1 Format

Comment:

Section 6.1 states:

> "Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record."

Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) requires that the Review Panel provide recommendations to DDEC and the Wek'èezhìi Land and Water Board (WLWB).

Recommendation:

GNWT recommends that Section 6.1 should be modified to read:

> "Dominion shall distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record."

Should you have any questions or comments, please contact Paul Green at Paul_Green@gov.nt.ca or 867-767-9234 Ext. 53112.

Regards,

Paul Green
A/Manager
Water – Regulatory
GNWT – Environment and Natural Resources

Cc: Ryan Fequet, Executive Director, WLWB
Marc Casas, Executive Director, IEMA

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September 2, 2016 File: W2013L2-0002

Ms. Claudine Lee
Dominion Diamonds Ekati Corporation
#1102, 4920-52nd Street
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Dear Ms. Lee,

Re: Response to Report of Environmental Assessment Measure 4-4 Dike Stability and Safety

On May 19, 2016 the Minister of Lands approved the Report of Environmental Assessment (REA) for the Jay Project along with the Review Board's recommended Measures. REA Measure 4-4, shown below, requires DDEC to establish a panel to advise on the design, construction, operation and maintenance of the dike over the life of the Jay Project.

> REA Measure 4-4 – Dike stability and safety: *To reduce the risk of dike failure and its associated significant impacts, Dominion will establish an independent dike review panel to evaluate and, if necessary, advise on the design, construction, operation and maintenance of the dike over the life of the Jay Project. The panel will provide recommendations to the developer to ensure that impacts to the safety of people and the environment from the dike are minimized. The panel will, at a minimum:*
>
> - *review and accepts the dike design prior to the commencement of dike construction*
> - *review the dike operation*
>
> *Dominion will engage with the Wek'èezhìi Land and Water Board [WLWB], Government of the Northwest Territories [GNWT], and the Independent Environmental Monitoring Agency [IEMA] on the panel composition and tasks. Dominion will submit the review panel's final terms of reference to the Wek'èezhìi Land and Water Board.*

On May 31, 2016 Dominion Diamonds Ekati Corporation (DDEC) submitted a response to REA Measure 4-4,[1] which included its Terms of Reference, Panel members' resumes, and past meeting notes. As required, DDEC requested

[1] See WLWB Online Registry at www.wlwb.ca for Ekati Jay Project - Dike Review Panel - Response to REA Measure 4-4 - May 31_16.pdf

comments from the Wek'èezhìi Land and Water Board (WLWB or the Board), the Independent Environmental Monitoring Agency (IEMA), and the Government of the Northwest Territories (GNWT) on the panel composition and the tasks. The Board distributed DDEC's submission for public review on June 28, 2016. Reviewer comments were received by the Government of Northwest Territories – Environment and Natural Resources (GNWT) and submitted by Board staff. After considering both reviewer comments and proponent responses, the Board has prepared this letter to provide input on the Jay Dike Review Panel's composition and tasks, per Measure 4-4. The complete Review Summary and Attachments[2] is available on the WLWB Public Registry for DDEC's consideration.

In its May 31, 2016 letter DDEC suggested that the Panel required by REA Measure 4-4 should be called the "Jay Dike Review Panel" as opposed to the "Jay Dike Geotechnical Review Board". The Board supports this name change.

DDEC stated that the Terms of Reference was developed and agreed upon by the three members of the Panel. During the review period DDEC confirmed that all new Panel members will be required to agree on the Terms of Reference (response to WLWB staff comment #5). The Board supports this commitment.

The Board understands Measure 4-4 to apply to the life of the Project and therefore in addition to DDEC's commitment to notify parties (response to WLWB staff comment #1), the Board expects DDEC will engage with IEMA, GNWT and the WLWB on any proposed changes to the Panel's composition or tasks, with adequate time to prepare a response.

REA Measure 4-4 requires DDEC to "establish an independent dike review panel"; the definition of independence was discussed during the public review period (WLWB staff comment #3; GNWT comment #7 and 8). DDEC stated that members would be considered independent as long "as they are not providing review services directly to the Engineering design team, at the same time as being a member of the Review Panel". The Board believes a Panel member that has provided review services directly to the Jay Engineering design team in the past, could be considered a conflict of interest. The Board acknowledges the Terms of Reference align with the *Guidelines for Health, Safety and Reclamation Code for Mines in British Columbia,* but encourages DDEC to define independence in the Terms of Reference, taking into consideration reviewer comments.

Section 3.3 of the Terms of Reference indicates that one of the qualifications for the Panel members is a "minimum 10 years' experience in a combination of design, construction, remediation and inspection of rock and soil based major water retention structures". The current panel members have between 38 and 45 years of experience each, which the Board believes to be more typical than 10 years of experience for an expert review panel such as this. The Board acknowledges DDEC's concern that the pool of potential candidates may be limited (response to WLWB comment #2), and recognizes that DDEC's engagement on changes to the Panel composition will allow the Board an opportunity to provide additional input prior to changes in membership of the Panel.

Section 3.4 of the Terms of Reference states that members will be appointed for a minimum term of two years. The Board believes that a two year term is relatively short compared to the anticipated life of the Jay Project and

[2] See WLWB Online Registry for W2013L2-0002 – Ekati Jay Project – Dike Review Panel – Review Summary and Attachments – Sep 2 16

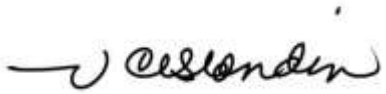
the amount of background knowledge required to get up to speed on the Project. The Board believes a longer term would provide greater continuity and encourages DDEC to consider this further.

Section 6.1 of the Terms of Reference state "Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record." The Board understands that it may be onerous to provide all information and correspondence generated by the Panel, however the Board believes that when information would be useful to inform or support a request or submission, or helpful in any other way, it should be provided to the Board for inclusion on the public record. The Board encourages DDEC to reflect this in the Terms of Reference.

The proceeding for consideration of the Jay Project Water Licence and Land Use Permit applications is underway. It is possible the proceeding may identify concerns related to the Jay Dike Review Panel and the Board may determine that conditions are necessary that would result in revisions to the Terms of Reference. The Board believes it would be beneficial to include a section in the Terms of Reference that outlines the process by which DDEC will revise the Terms of Reference.

Please contact Meghan Schnurr at (867) 765-4590 or by email at mschnurr@wlwb.ca, should you have any questions.

Sincerely,



Violet Camsell-Blondin
Chair, Wek'èezhìi Land and Water Board

Copied: Ekati Distribution List

Review Comment Table

Board:	WLWB
Review Item:	Ekati - Jay Project - DDEC's Response to REA Measure 4-4 Dike Stability and Safety
File(s):	W2013L2-0002
Proponent:	Dominion Diamond Ekati Corporation
Document(s):	DDEC Response to REA Measure 4-4 (2 MB)
Item For Review Distributed On:	June 28 at 17:06 Distribution List
Reviewer Comments Due By:	July 19, 2016
Proponent Responses Due By:	July 26, 2016
Item Description:	On May 19, 2016 the Minister of Lands approved the Report of Environmental Assessment (REA) for the Jay Project along with the Review Board's recommended Measures. On May 31, 2016 Dominion Diamonds Ekati Corporation (DDEC) submitted the attached documents on the Dike Review Panel composition and the Terms of Reference to the Wek'èezhìi Land and Water Board (WLWB or the Board) requesting comments on the panel composition and tasks, as per Measure 4-4. ***Measure 4-4 – Dike stability and safety:*** *To reduce the risk of dike failure and its associated significant impacts, Dominion will establish an independent dike review panel to evaluate and, if necessary, advise on the design, construction, operation and maintenance of the dike over the life of the Jay Project. The panel will provide recommendations to the developer to ensure that impacts to the safety of people and the environment from the dike are minimized. The panel will, at a minimum:* • *review and accepts the dike design prior to the commencement of dike construction* • *review the dike operation* *Dominion will engage with the Wek'éezhii Land and Water Board, Government of the Northwest Territories, and the Independent Environmental Monitoring Agency on the panel composition and*

	tasks. Dominion will submit the review panel's final terms of reference to the Wek'éezhii Land and Water Board. Reviewers are invited to submit comments and recommendations on the Dike Review Panel's composition and tasks prior to the reviewer comment deadline.
Contact Information:	Meghan Schnurr 867-765-4590

Comment Summary

Dominion Diamond Ekati Corporation (Proponent)				
ID	**Topic**	**Reviewer Comment/Recommendation**	**Proponent Response**	**Board Staff Response**
1	General File	**Comment** (doc) Letter with responses to GNWT comments. **Recommendation**		
GNWT - ENR: Central Email GNWT				
ID	**Topic**	**Reviewer Comment/Recommendation**	**Proponent Response**	**Board Staff Response**
1	General File	**Comment** (doc) The GNWT submitted comments directly to DDEC Ekati regarding their response to REA Measure 4-4. The letter is attached. **Recommendation**		
2	Topic 1: Terms of Reference - Timing	**Comment** GNWT notes that DDEC assembled the Review Panel in the fall of 2015 and the first meeting was conducted on December 7-8, 2015. This meeting led to recommendations that have already been included in the final version of the Jay Dike Design report. Thus it would appear that the panel has already been finalized, and have been actively completing tasks outlined in the	**July 26:** It is an industry best practice to have a technical review panel in place for projects of this magnitude that involve engineered structures such as dams and dikes. Measure 4-4 appeared in the Report of Environmental Assessment and Reasons for Decision Dominion Diamond Corp. Jay Project EA1314-01 (REA) which was released on February 1, 2016. Dominion Diamond first made the commitment to have a Dike Review Panel (the Panel) in the Technical Sessions which were held in	

		Terms of Reference. As such, the timing of engagement between DDEC and the parties listed in Measure 4-4 (WLWB, GNWT and IEMA) is unclear. **Recommendation** 1) GNWT recommends that DDEC clarify why engagement was not completed prior to the establishment of the panel.	April of 2015 during the environmental assessment process (refer to Commitment Number 9, Appendix C List of Developer's Commitments, REA). This commitment did not include engaging on panel composition and tasks. As with the other developer's commitments made during the environmental assessment process, Dominion Diamond moved forward with this particular commitment to assemble the Panel in between the time period when it was made (April 2015) and the release of the REA (February 2016). Thus, engagement was not completed prior to the establishment of the panel.	
3	Topic 2: Terms of Reference	**Comment** Section 3.1 of the Terms of References states: "Subject to section 3.2, the Board will consist of 3 members, selected at the sole discretion of Dominion." This statement appears to be in conflict with the requirement in Measure 4-4 for DDEC to engage with the parties listed above on the panel composition. **Recommendation** 1) GNWT believes that the selected Panel Members are well accomplished but would like DDEC to describe their Panel Members selection process.	**July 26:** The Panel member selection process included the development of a short list of potential candidates who were Professional Engineers, who had worked on previous projects in the North which included design, construction, and/or inspections of major water retention structures, or who were on other northern dike review boards. Dominion Diamond contacted potential candidates to confirm if they were interested in participating in the Panel, that they were free from conflict with the current dike engineering design team, and that they would be available for the required term. Dominion Diamond selected the three Panel members from this process based on their interest to participate, qualifications and availability.	

4	Topic 3: Terms of Reference - North Dike	**Comment** In its letter dated May 31, 2016, DDEC states: "The Dike Review Panel will focus on the Jay Dike and not the North Dike." However, in the "Jay Dike Geotechnical Review Board Terms of Reference" under "Definitions" in Section 1.1(g), the following definition for Jay Dike is provided: " 'Jay Dike' means the primary water retention structure to be constructed in Lac du Sauvage, Northwest Territories, as part of the Jay Project, which, for greater certainty, includes the North Dike." There appears to be some inconsistencies on how the North Dike has been handled. It is not clear if it falls within the scope of the work to be completed by the Review Panel. **Recommendation** 1) GNWT recommends that the North Dike be included within the scope of review of work completed by the Review Panel.	**July 26:** The North Dike is included in the scope of the review work being completed by the Jay Dike Review Panel. The statement in the May 31, 2016 covering letter referred to in this comment is not accurate.	
5	Topic 4: Terms of Reference - Term	**Comment** The Terms of Reference lists the term of appointment at two years. It is not clear how the term was selected or if the term is too short. A longer term may provide the ability to review dike designs, review construction and as-built reports and assess initial performance of the structures. **Recommendation** 1) GNWT recommends that the terms of	**July 26:** The term of appointment will be discussed with the Panel members at each annual meeting. More than two years could be considered, but is not considered necessary to complete the required activities of a Panel member.	

		appointment for panel members be reviewed to consider a longer length.		
6	Topic 5: Terms of Reference - Panel Name	**Comment** As per the May 31, 2106, DDEC suggested that the panel should be called the “Jay Dike Review Panel” as opposed to the “Jay Dike Geotechnical Review Board” going forward. GNWT concurs with this suggestion as Measure 4-4 makes reference to a “dike review panel” and this would also avoid any confusion moving forward. As such, all references in the Terms of Reference and other documents should be made to “the Panel” as opposed to “the Board”. Note this would also remove potential confusion with the Wek’?ezh?i Land and Water Board which is frequently referred to as the Board. **Recommendation** 1) GNWT concurs that the term “Jay Dike Review Panel” should be used going forward and this be reflected in all documents in future including a revised Terms of Reference.	**July 26:** "Jay Dike Review Panel" will be the term used going forward. This will be reflected in all documents in the future including the Terms of Reference should it be revised.	
7	Topic 6: Terms of Reference - Section 6.1 Format	**Comment** Section 6.1 states the Review Panel will submit recommendations in draft form prior to publication and that DDEC will have an opportunity to propose changes before the report is finalized. Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC’s Jay Project (EA1314-01) states that the dike review	**July 26:** Dominion Diamond disagrees with this recommendation. It is not a common practice to submit initial draft comments in addition to final reports. Other boards, consultants, and owners are currently operating on the basis of providing a final signed submission which does not include draft comments in addition to final. To clarify, the Review Panel is not independent of Dominion Diamond, but are in fact retained by Dominion	

		panel is to operate independently of DDEC. As such, a copy of DDECs comments and an inclusion of a summary of changes that were made as a result with rationale should be included in the final recommendations to promote transparency. **Recommendation** 1) GNWT recommends that any final recommendations from the Review Panel include a summary table of comments made by DDEC on the initial drafts and outline any changes that were incorporated as a result.	Diamond to carry out the review according to the terms of reference. However, review Panel members are Professional Engineers who are independent of the Engineering design team responsible for the Dike design. As Professional Engineers, the Panel members will provide an independent review of dike design, construction, and operations. The Province of British Columbia has recently released a guidance document (to part 10 of the Health, Safety and Reclamation Code for Mines in British Columbia, Version 1.0 July 2016) that lists of roles and responsibility for mine tailings dam review boards (see http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/health-and-safety/part_10_guidance_doc_10_20july_2016.pdf). The roles and responsibilities for the Independent Tailings Review Board in this document align with those of the Jay Dike Review Panel.	
8	None	**Comment** None **Recommendation** 2) GNWT recommends that the Terms of Reference be amended to align with Measure 4-4 which indicates that the panel is to operate independently from DDEC.	**July 26:** See response for GNWT comment 7.	
9	Topic 7: Terms of Reference - Section 6.1 Format	**Comment** Section 6.1 states: "Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record." Measure 4-4 of the	**July 26:** Dominion Diamond disagrees with this recommendation for rewording of the Terms of Reference. Reports and materials related to the Panel's review of the Jay Dike will be distributed to	

		Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) requires that the Review Panel provide recommendations to DDEC and the Wek'èezhìi Land and Water Board (WLWB). **Recommendation** 1) GNWT recommends that Section 6.1 should be modified to read: "Dominion shall distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record."	GNWT, IEMA, and the WLWB for inclusion on the public record.	
WLWB: Meghan Schnurr				
ID	**Topic**	**Reviewer Comment/Recommendation**	**Proponent Response**	**Board Staff Response**
1	Engagement on Panel Composition	**Comment** Measure 4-4 requires DDEC to engage with the Wek'Ã¨ezhÃ¬i Land and Water Board, Government of the Northwest Territories, and the Independent Environmental Monitoring Agency on the panel composition and tasks. Section 3 of the Terms of Reference states that members will be appointed for a minimum term of 2 years and be selected/renewed at the sole discretion of DDEC. **Recommendation** In consideration of the engagement on Panel composition required by Measure 4-4, please describe DDEC's process for engagement on any changes to the	**July 26:** The composition of the Panel aligns with the criteria identified to date. Should there be changes to the Panel composition and/or tasks over the life of the Jay project the Wek'èezhìi Land and Water Board, Government of the Northwest Territories, and the Independent Environmental Monitoring Agency will be notified and appropriate CVs provided. Changes in composition and/or tasks of the Panel will also be recorded and reflected in the minutes/reports submitted from the Panel meetings.	

		Panel composition and tasks over the life of the Jay project.		
2	Panel Qualifications	**Comment** Section 3.3 of the Terms of Reference indicate that one of the Qualifications for the Panel members is "minimum 10 years" experience in a combination of design, construction, remediation and inspection of rock and soil based major water retention structures". DDEC's three selected Panel members have from 38 to 45 years of experience each, which in staff's experience, is more typical than 10 years of experience for a review panel such as this. **Recommendation** Please provide rationale for setting a minimum of ten years rather than a higher level of experience.	**July 26:** Currently, all members of the Panel do have more than ten years of experience as defined by the Terms of Reference Qualifications. The ten years of experience is a minimum requirement and provides a starting place for the search for individuals. The selected individuals are experts in their respective fields, with appropriate northern experience and meet the requirements of the Terms of Reference. It is important to note that the pool of individuals who can do the review work required is limited and other factors are important (e.g. northern experience).	
3	Panel Independence	**Comment** Measure 4-4 states that DDEC will establish an independent review panel. DDEC states that the Terms of Reference establish the framework within which the Board may be constituted for the purposes of providing Dominion with an independent review of the design, construction, operations and closure of the proposed Jay Dike. Section 3.3 of the Terms of Reference states that members of the Board shall be unbiased and free from any conflict of	**July 26:** 1) See response to Government of the Northwest Territories comment on Terms of Reference-Section 6.1 Format (ORS #7). 2) Yes. As long as they are not providing review services directly to the Engineering design team, at the same time as being a member of the Review Panel.	

		interest in relation to both Dominion and the Jay Project. **Recommendation** (1) Please provide additional detail on how DDEC defines independence and (2) Does DDEC consider a Panel member to be independent if they have previous work related with DDEC, Ekati mine, or the Jay Project?		
4	Revisions to the Terms of Reference	**Comment** Measure 4-4 indicates that the Panel will review and accept the dike design prior to the commencement of dike construction. The Board has not yet determined if and how this will be reflected in the conditions of the Water Licence. Depending on the outcome of the Water Licence proceeding, it is possible DDEC may need to update the Terms of Reference. **Recommendation** (1) Should the Terms of Reference require revision based on the outcome of the Water Licence proceeding, how does DDEC envision the process for revision (which may include additional engagement)? (2) Does DDEC believe the the Terms of Reference should include a section that outlines how and when they can be revised?	**July 26:** (1) Should there be a need to revise the Terms of Reference either via a condition in the Water Licence or by way of a directive from the Wek'èezhi`i Land and Water Board, Dominion Diamond will do so and provide the updated Terms of Reference to be added to the public registry. Further engagement would not be required as a full review and engagement process through the Water Licence process would have been completed. (2) Dominion Diamond does not believe the Terms of Reference should include a section that outlines how and when they would be revised. However, it is reasonable that the Terms of Reference will be reviewed with Panel members periodically through the life of the Jay Project.	
5	Terms of Reference	**Comment** DDEC stated in its covering letter that the Terms of Reference was developed and agreed on by the three members of the Board.	**July 26:** Yes, any new members of the Jay Dike Review Panel will be required to agree on the Terms of Reference.	

		Recommendation In the case that the composition of the Panel/Board changes, will a requirement for the new member(s) be that they agree on the Terms of Reference?		

July 18, 2016

Ms. Claudine Lee
Dominion Diamond Ekati Corporation
#1102, 4920 -52nd Street
Yellowknife, NT
X1A 3T1

Re: Comments on Jay Dike Design Panel Composition and Terms of References

As per your letter dated May 31, 2016 and the requirements of Environmental Assessment Measure 4-4 regarding Dike Stability and Safety, GNWT have provided comments on the Jay Dike Design Panel composition as well as the Terms of Reference. They have been outlined below in a response similar to the format of the Wek'èezhìi Land and Water Board as these comments have been provided through their online review system as well.

Topic: Terms of Reference - Timing

Comment:

GNWT notes that DDEC assembled the Review Panel in the fall of 2015 and the first meeting was conducted on December 7-8, 2015. This meeting led to recommendations that have already been included in the final version of the Jay Dike Design report. Thus it would appear that the panel has already been finalized, and have been actively completing tasks outlined in the Terms of Reference. As such, the timing of engagement between DDEC and the parties listed in Measure 4-4 (WLWB, GNWT and IEMA) is unclear.

Recommendation:

GNWT recommends that DDEC clarify why engagement was not completed prior to the establishment of the panel.

Topic: Terms of Reference

Comment:

Section 3.1 of the Terms of References states:

> *"Subject to section 3.2, the Board will consist of 3 members, selected at the sole discretion of Dominion."*

This statement appears to be in conflict with the requirement in Measure 4-4 for DDEC to engage with the parties listed above on the panel composition.

Recommendation:

GNWT believes that the selected Panel Members are well accomplished but would like DDEC to describe their Panel Members selection process.

Topic: Terms of Reference - North Dike

Comment:

In its letter dated May 31, 2016, DDEC states:

> *"The Dike Review Panel will focus on the Jay Dike and not the North Dike."*

However, in the "Jay Dike Geotechnical Review Board Terms of Reference" under "Definitions" in Section 1.1(g), the following definition for Jay Dike is provided:

> *" 'Jay Dike' means the primary water retention structure to be constructed in Lac du Sauvage, Northwest Territories, as part of the Jay Project, which, for greater certainty, includes the North Dike."*

There appears to be some inconsistencies on how the North Dike has been handled. It is not clear if it falls within the scope of the work to be completed by the Review Panel.

Recommendation:

GNWT recommends that the North Dike be included within the scope of review of work completed by the Review Panel.

Topic: Terms of Reference - Term

Comment:

The Terms of Reference lists the term of appointment at two years. It is not clear how the term was selected or if the term is too short. A longer term may provide the ability to review dike designs, review construction and as-built reports and assess initial performance of the structures.

Recommendation:

GNWT recommends that the terms of appointment for panel members be reviewed to consider a longer length.

Topic: Terms of Reference - Panel Name

Comment:

As per the May 31, 2106, DDEC suggested that the panel should be called the "Jay Dike Review Panel" as opposed to the "Jay Dike Geotechnical Review Board" going forward. GNWT concurs with this suggestion as Measure 4-4 makes reference to a "dike review panel" and this would also avoid any confusion moving forward. As such, all references in the Terms of Reference and other documents should be made to "the Panel" as opposed to "the Board". Note this would also remove potential confusion with the Wek'èezhìi Land and Water Board which is frequently referred to as the Board.

Recommendation:

GNWT concurs that the term "Jay Dike Review Panel" should be used going forward and this be reflected in all documents in future including a revised Terms of Reference.

Topic: Terms of Reference - Section 6.1 Format

Comment:

Section 6.1 states the Review Panel will submit recommendations in draft form prior to publication and that DDEC will have an opportunity to propose changes before the report is finalized. Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) states that the dike review panel is to operate independently of DDEC. As such, a copy of DDECs comments and an inclusion of a summary of changes that were made as a result with rationale should be included in the final recommendations to promote transparency.

Recommendation:

GNWT recommends that any final recommendations from the Review Panel include a summary table of comments made by DDEC on the initial drafts and outline any changes that were incorporated as a result.

GNWT recommends that the Terms of Reference be amended to align with Measure 4-4 which indicates that the panel is to operate independently from DDEC.

Topic: Terms of Reference - Section 6.1 Format

Comment:

Section 6.1 states:

> "Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record."

Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) requires that the Review Panel provide recommendations to DDEC and the Wek'èezhìi Land and Water Board (WLWB).

Recommendation:

GNWT recommends that Section 6.1 should be modified to read:

> "Dominion shall distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record."

Should you have any questions or comments, please contact Paul Green at Paul_Green@gov.nt.ca or 867-767-9234 Ext. 53112.

Regards,

Paul Green
A/Manager
Water – Regulatory
GNWT – Environment and Natural Resources

Cc: Ryan Fequet, Executive Director, WLWB
Marc Casas, Executive Director, IEMA

DOMINION DIAMOND

July 26, 2016

Paul Green – A/Manager
Department of Environment and Natural Resources
Government of the Northwest Territories
P.O. Box 1320
Yellowknife, NT X1A 2L9

Dear Mr. Paul Green:

COMMENTS ON JAY DIKE DESIGN PANEL COMPOSITION AND TERMS OF REFERENCE, MEASURE 4-4 REPORT OF ENVIRONMENTAL ASSESSMENT

Dominion Diamond Ekati Corporation (Dominion Diamond) would like to thank the Government of the Northwest Territories (GNWT) for the comments submitted on the Jay Dike Design Panel Composition and Terms of Reference. Dominion Diamond's responses to your comments and recommendations can be found in the attached or on the Wek'èezhìi Land and Water Board's Online Review System.

If you have any questions or concerns please contact me at 867-669-6116 or Claudine.Lee@Ekati.DDCORP.CA.

Sincerely,

Claudine Lee, M.Sc., P.Geol.
Head – Environment and Communities

Attachment

Record #: HSE RCD ENV 482
Document Owner: Environment Department
Date: 26-07-2016
Template # EKA TEM 1852.13

DOMINION DIAMOND

Preamble / Comment	Recommendation	Response
GNWT notes that DDEC assembled the Review Panel in the fall of 2015 and the first meeting was conducted on December 7-8, 2015. This meeting led to recommendations that have already been included in the final version of the Jay Dike Design report. Thus it would appear that the panel has already been finalized, and have been actively completing tasks outlined in the Terms of Reference. As such, the timing of engagement between DDEC and the parties listed in Measure 4-4 (WLWB, GNWT and lEMA) is unclear.	GNWT recommends that DDEC clarify why engagement was not completed prior to the establishment of the panel.	It is an industry best practice to have a technical review panel in place for projects of this magnitude that involve engineered structures such as dams and dikes. Measure 4-4 appeared in the Report of Environmental Assessment and Reasons for Decision Dominion Diamond Corp. Jay Project EA1314-01 (REA) which was released on February 1, 2016. Dominion Diamond first made the commitment to have a Dike Review Panel (the Panel) in the Technical Sessions which were held in April of 2015 during the environmental assessment process (refer to Commitment Number 9, Appendix C List of Developer's Commitments, REA). This commitment did not include engaging on panel composition and tasks. As with the other developer's commitments made during the environmental assessment process, Dominion Diamond moved forward with this particular commitment to assemble the Panel in between the time period when it was made (April 2015) and the release of the REA (February 2016). Thus, engagement was not completed prior to the establishment of the panel.
Section 3.1of the Terms of References states: *"Subject to section 3.2, the Board will consist of 3 members, selected at the sole discretion of Dominion."* This statement appears to be in conflict with the requirement in Measure 4-4 for DDEC to engage with the parties listed above on the panel composition.	GNWT believes that the selected Panel Members are well accomplished but would like DDEC to describe their Panel Members selection process.	The Panel member selection process included the development of a short list of potential candidates who were Professional Engineers, who had worked on previous projects in the North which included design, construction, and/or inspections of major water retention structures, or who were on other northern dike review boards. Dominion Diamond contacted potential candidates to confirm if they were interested in participating in the Panel, that they were free from conflict with the current dike engineering design team, and that they would be available for the required term. Dominion Diamond selected the three Panel members from this process based on their interest to participate, qualifications and availability.
In its letter dated May 31, 2016, DDEC states: *"The Dike Review Panel will focus on the Jay Dike and not the North Dike."* However, in the "Jay Dike Geotechnical Review Board Terms of Reference" under "Definitions" in Section 1.1(gL the following definition for Jay Dike is	GNWT recommends that the North Dike be included within the scope of review of work completed by the Review Panel.	The North Dike is included in the scope of the review work being completed by the Jay Dike Review Panel. The statement in the May 31, 2016 covering letter referred to in this comment is not accurate.

DOMINION DIAMOND

Preamble / Comment	Recommendation	Response
provided: *" 'Jay Dike' means the primary water retention structure to be constructed in Lac du Sauvage, Northwest Territories, as part of the Jay Project, which, for greater certainty, includes the North Dike."* There appears to be some inconsistencies on how the North Dike has been handled. It is not clear if it falls within the scope of the work to be completed by the Review Panel.		
The Terms of Reference lists the term of appointment at two years. It is not clear how the term was selected or if the term is too short. A longer term may provide the ability to review dike designs, review construction and as-built reports and assess initial performance of the structures.	GNWT recommends that the terms of appointment for panel members be reviewed to consider a longer length.	The term of appointment will be discussed with the Panel members at each annual meeting. More than two years could be considered, but is not considered necessary to complete the required activities of a Panel member.
As per the May 31, 2106, DDEC suggested that the panel should be called the "Jay Dike Review Panel" as opposed to the "Jay Dike Geotechnical Review Board" going forward. GNWT concurs with this suggestion as Measure 4-4 makes reference to a "dike review panel" and this would also avoid any confusion moving forward. As such, all references in the Terms of Reference and other documents should be made to "the Panel" as opposed to "the Board". Note this would also remove potential confusion with the Wek'eezhli Land and Water Board which is frequently referred to as the Board.	GNWT concurs that the term "Jay Dike Review Panel" should be used going forward and this be reflected in all documents in future including a revised Terms of Reference.	"Jay Dike Review Panel" will be the term used going forward. This will be reflected in all documents in the future including the Terms of Reference should it be revised.

DOMINION DIAMOND

Preamble / Comment	Recommendation	Response
Section 6.1 states the Review Panel will submit recommendations in draft form prior to publication and that DDEC will have an opportunity to propose changes before the report is finalized. Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) states that the dike review panel is to operate independently of DDEC. As such, a copy of DDECs comments and an inclusion of a summary of changes that were made as a result with rationale should be included in the final recommendations to promote transparency.	GNWT recommends that any final recommendations from the Review Panel include a summary table of comments made by DDEC on the initial drafts and outline any changes that were incorporated as a result. GNWT recommends that the Terms of Reference be amended to align with Measure 4-4 which indicates that the panel is to operate independently from DDEC.	Dominion Diamond disagrees with this recommendation. It is not a common practice to submit initial draft comments in addition to final reports. Other boards, consultants, and owners are currently operating on the basis of providing a final signed submission which does not include draft comments in addition to final. To clarify, the Review Panel is not independent of Dominion Diamond, but are in fact retained by Dominion Diamond to carry out the review according to the terms of reference. However, review Panel members are Professional Engineers who are independent of the Engineering design team responsible for the Dike design. As Professional Engineers, the Panel members will provide an independent review of dike design, construction, and operations. The Province of British Columbia has recently released a guidance document (to part 10 of the Health, Safety and Reclamation Code for Mines in British Columbia, Version 1.0 July 2016) that lists of roles and responsibility for mine tailings dam review boards (see http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/health-and-safety/part_10_guidance_doc_10_20july_2016.pdf). The roles and responsibilities for the Independent Tailings Review Board in this document align with those of the Jay Dike Review Panel.
Section 6.1 states: "Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record." Measure 4-4 of the Report of Environmental Assessment and Reasons for Decision for DDEC's Jay Project (EA1314-01) requires that the Review Panel provide recommendations to DDEC and the Wek'eezhli Land and Water Board (WLWB).	GNWT recommends that Section 6.1 should be modified to read: "Dominion shall distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record."	Dominion Diamond disagrees with this recommendation for rewording of the Terms of Reference. Reports and materials related to the Panel's review of the Jay Dike will be distributed to GNWT, IEMA, and the WLWB for inclusion on the public record.

October 3, 2016

Jaida Ohokannoak - Chair
Independent Environmental Monitoring Agency
PO Box 1192
Yellowknife, NT
X1A 2N8

Dear Ms. Ohokannoak:

COMMENTS ON JAY DIKE REVIEW PANEL COMPOSITION AND TERMS OF REFERENCE, MEASURE 4-4 REPORT OF ENVIRONMENTAL ASSESSMENT

Dominion Diamond Ekati Corporation (DDEC) would like to thank the Independent Environmental Monitoring Agency (IEMA) for the comments submitted on the Jay Dike Review Panel Composition and Terms of Reference. DDEC's responses to your comments and recommendations can be found in the table below.

Comment/Recommendation	Response
Obligations of the Review Board Sections 4.2(a), 4.3(a) and 4.4(a) of the ToR obligate the Review Board to make visits to the Ekati mine site annually, bi-annually or upon the back-flooding of the Jay pit, respectively. As written, these sections may limit Dominion's ability to further call upon the Review Board to visit the Jay Dike should circumstances require it. Recommendation: Sections 4.2(a), 4.3(a) and 4.4(a) be revised to enable DDEC, at their sole discretion, to call upon the Review Board to visit the site at other times in the event unplanned or unexpected circumstances or occurrences require Review Board Members' attention.	DDEC understands that Sections 4.2, 4.3, and 4.4, as currently written, allow Dominion Diamond to call upon the Jay Dike Review Panel "at such times reasonably requested by Dominion" which is in the introductory sentence to each of these sections. As well, under each of these sections, there is allowance for site visits at various times in item (d) under each of these sections which states: *at Dominion's reasonable request, participate in briefings, discussions and meetings with Dominion, any governmental authority, or any other affected person or entity as may be required to carry out the above.*

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Comment/Recommendation	Response
Reports of the Review Board The ToR requires the Review Board to prepare and submit reports to DDEC throughout its term of existence. Section 6.1 establishes requirements for the submission, review and posting of reports and subsequent certifications to the public record. The Agency respects DDEC's desire to comment and propose changes to any draft report prepared by the Review Board and the Review Board's desire to consider any proposed changes prior to certifying (signing) the report. The Agency notes however, that DDEC's subsequent obligation to distribute the final report to the Agency and WLWB for inclusion on the public record is discretionary. Recommendation: Section 6.1 be revised so that all final and certified reports prepared by the Review Board are available for inclusion on the public record. The Agency agrees that all final reports provided by the Review Board and/or DDEC will be posted on the Agency's web site.	Reports and materials related to the Panel's review of the Jay Dike will be distributed to GNWT, IEMA, and the WLWB for inclusion on the public record.

If you have any questions or concerns please contact me at 867-669-6116 or Claudine.Lee@Ekati.DDCORP.CA.

Sincerely,

Claudine Lee

Claudine Lee, M.Sc., P.Geol.
Head – Environment and Communities

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October 3, 2016

Violet Camsell-Blondin - Chair
Wek'èezhìi Land and Water Board
#1, 4905 – 48th Street
Yellowknife, NT
X1A 3S3

Dear Ms. Camsell-Blondin:

COMMENTS ON JAY DIKE REVIEW PANEL COMPOSITION AND TERMS OF REFERENCE, MEASURE 4-4 REPORT OF ENVIRONMENTAL ASSESSMENT

Dominion Diamond Ekati Corporation (DDEC) would like to thank the Wek'èezhìi Land and Water Board (WLWB) for the comments submitted on the Jay Dike Review Panel Composition and Terms of Reference. In addition to the responses found to comments on the Online Review System (ORS), DDEC's responses to your letter dated September 2, 2016 can be found in the table below.

Comment/Recommendation	Response
In its May 31, 2016 letter DDEC suggested that the Panel required by REA Measure 4-4 should be called the "Jay Dike Review Panel" as opposed to the "Jay Dike Geotechnical Review Board". The Board supports this name change.	Acknowledged.
DDEC stated that the Terms of Reference was developed and agreed upon by the three members of the Panel. During the review period DDEC confirmed that all new Panel members will be required to agree on the Terms of Reference (response to WLWB staff comment #5). The Board supports this commitment.	Acknowledged.

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Comment/Recommendation	Response
The Board understands Measure 4-4 to apply to the life of the Project and therefore in addition to DDEC's commitment to notify parties (response to WLWB staff comment #1), the Board expects DDEC will engage with IEMA, GNWT and the WLWB on any proposed changes to the Panel's composition or tasks, with adequate time to prepare a response.	As per DDEC's response to WLWB #1, should there be changes to the Panel composition and/or tasks over the life of the Jay project the Wek'èezhìi Land and Water Board, Government of the Northwest Territories, and the Independent Environmental Monitoring Agency will be notified and appropriate CVs provided.
REA Measure 4-4 requires DDEC to "establish an independent dike review panel"; the definition of independence was discussed during the public review period (WLWB staff comment #3; GNWT comment #7 and 8). DDEC stated that members would be considered independent as long "as they are not providing review services directly to the Engineering design team, at the same time as being a member of the Review Panel". The Board believes a Panel member that has provided review services directly to the Jay Engineering design team in the past, could be considered a conflict of interest. The Board acknowledges the Terms of Reference align with the *Guidelines for Health, Safety and Reclamation Code for Mines in British Columbia,* but encourages DDEC to define independence in the Terms of Reference, taking into consideration reviewer comments.	DDEC will add in the definition of Independent Review Board as per the *Guidance Document Health, Safety and Reclamation Code for Mines in British Columbia*, Version 1.0, July 2016. The definition will align with that found on Page 7 of this document for "Independent Review Board" which is: *"Made up of independent subject matter experts not currently involved in or responsible for the design, operation or construction of the facility".*

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Comment/Recommendation	Response
Section 3.3 of the Terms of Reference indicates that one of the qualifications for the Panel members is a "minimum 10 years' experience in a combination of design, construction, remediation and inspection of rock and soil based major water retention structures". The current panel members have between 38 and 45 years of experience each, which the Board believes to be more typical than 10 years of experience for an expert review panel such as this. The Board acknowledges DDEC's concern that the pool of potential candidates may be limited (response to WLWB comment #2), and recognizes that DDEC's engagement on changes to the Panel composition will allow the Board an opportunity to provide additional input prior to changes in membership of the Panel.	Acknowledged.
Section 3.4 of the Terms of Reference states that members will be appointed for a minimum term of two years. The Board believes that a two year term is relatively short compared to the anticipated life of the Jay Project and the amount of background knowledge required to get up to speed on the Project. The Board believes a longer term would provide greater continuity and encourages DDEC to consider this further.	DDEC acknowledges that it would be good to keep the current 3 Panel members engaged during the entire construction period and beyond. The minimum term of 2 years for the appointment of the geotechnical Review Panel is based on the initial agreement that was set up with the 3 members. It is difficult to obtain a commitment for any longer term, particularly at the onset. DDEC confirms that the term of appointment will be discussed with the Panel members at each annual meeting.

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Comment/Recommendation	Response
Section 6.1 of the Terms of Reference state "Dominion may distribute the Board's report and subsequent certification(s), if any, to IEMA and WLWB for inclusion on the public record." The Board understands that it may be onerous to provide all information and correspondence generated by the Panel, however the Board believes that when information would be useful to inform or support a request or submission, or helpful in any other way, it should be provided to the Board for inclusion on the public record. The Board encourages DDEC to reflect this in the Terms of Reference.	The Terms of Reference do not preclude DDEC from providing information believed to be useful to inform or support a request or submission to the Board for inclusion on the public record. Reports and materials related to the Panel's review of the Jay Dike will be distributed to GNWT, IEMA, and the WLWB for inclusion on the public record.
The proceeding for consideration of the Jay Project Water Licence and Land Use Permit applications is underway. It is possible the proceeding may identify concerns related to the Jay Dike Review Panel and the Board may determine that conditions are necessary that would result in revisions to the Terms of Reference. The Board believes it would be beneficial to include a section in the Terms of Reference that outlines the process by which DDEC will revise the Terms of Reference.	In the case of conditions identified as a result of the Water Licence and Land Use Permit that result in a revision of the Terms of Reference, DDEC is legally bound to comply with water licence and land use permit conditions. This is not something to appear in the Terms of Reference for the Jay Dike Review Panel.

If you have any questions or concerns please contact me at 867-669-6116 or Claudine.Lee@Ekati.DDCORP.CA.

Sincerely,

Claudine Lee

Claudine Lee, M.Sc., P.Geol.
Head – Environment and Communities

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