

Maritz E. Rykaart

Practice Leader and Principal Engineer


Profession

Civil/Geotechnical Engineer

Education

BEng (Civil), Rand Afrikaans University, South Africa, 1991.
MEng (Civil), Rand Afrikaans University, South Africa, 1993.
PhD Geotechnical Engineering, University of Saskatchewan, Canada, 2001.

**Registrations/
Affiliations**

PEng, (BC, SK, YT, MB, NWT/NT), Canada
Member of Canadian Geotechnical Society
Member of Canadian Dam Association
Executive of Cold Regions Group (CGS)

Specialisation

Geotechnical engineering; Permafrost engineering; Soil cover design and construction; Mine waste management system design and closure; Tailings containment system design and construction.

Expertise

- Unsaturated soils, including teaching of short courses
- Mine waste system cover design, construction and performance monitoring
- Design and implementation of soil geotechnical field investigations
- Design, construction and inspection of earthen embankment and tailings dams
- Design and construction of mine water management systems, including surface water diversion structures, spillways, storm water channels etc.
- State-of-the-art drain-down modeling for tailings and heap leach facilities
- Mine closure plan development, including closure cost estimating
- Permafrost engineering
- Project management, including large multi-disciplinary projects

Employment

2009/4 – Present	SRK Consulting (Canada) Inc., Practice Leader, Vancouver, Canada.
2006/4 – 2009/3	SRK Consulting (Canada) Inc., Principal Consultant, Vancouver, Canada.
2001/10 – 2006/3	SRK Consulting (Canada) Inc., Senior Consultant, Vancouver, Canada.
1998/9 – 2001/9	University of Saskatchewan, Ph.D. Candidate & Research Assistant, Saskatoon, Canada.
1996/9 – 1998/8	Wates, Meiring & Barnard (Pty) Ltd., Geotechnical/Civil Engineer, Midrand, South Africa.
1996/1 – 1996/8	Thuthuka Project Managers (Pty) Ltd. Site Engineer/Project Manager, Springs, South Africa.
1993/7 – 1995/12	Wates, Meiring & Barnard (Pty) Ltd., Geotechnical/Civil Engineer, Midrand, South Africa.
1992/1 – 1993/6	Rand Afrikaans University, M.Eng. Candidate & Research Assistant, South Africa.

Publications

57, including refereed journal papers, conference proceedings and invited lectures

Languages

English, Afrikaans

NUNAVUT IMPACT REVIEW BOARD

Date: May 8, 2018

Exhibit No: 5h

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Key Experience: Project Specific

Hope Bay Project (Doris, Madrid, Boston), Hope Bay Mining Ltd, (formerly Miramar Mining Company) (NU, Canada)

- Project Manager, 18 years ongoing support associated with geotechnical and tailings engineering, permitting, field characterization, capital and closure cost estimating, strategic planning
- Project Manager, multiple licence amendments, inputs to prefeasibility studies and environmental impact assessment
- Project Manager and Engineer of Record, all surface infrastructure including precedent setting frozen core dam
- Project Manager, detailed engineering for all surface infrastructure designs including frozen core dam
- Project Manager, geohydrological, geotechnical and geochemical characterization studies of mine expansion plans
- Principal Engineer, seven annual geotechnical inspections
- Project Manager, Stage 2 Study input pertaining to mine geotechnics, geohydrology, overburden, geochemistry, various geotechnical designs and tailings design from 40 to 100 million tonnes
- Project Manager, multiple geotechnical and hydrogeological field programs (including submarine CPT testing)
- Principal, site wide (80 km by 20 km regional belt) overburden characterization report
- Principal, design of overburden pit slopes (in permafrost and talik)
- Principal, multiple tailings options assessments including methods and sites (evaluated over 100 different sites)
- Principal, design and costing of tailings impoundment, including tailings characterization testing
- Principal, design and costing of three dewatering dikes multiple kilometres in length
- Principal, design and costing of all-weather roads (over 100 km) and airstrips
- Principal, options assessment, detailed design, permitting and closure cost estimating for 10 km all-weather road, including free-span river crossing using add-freeze piles
- Principal, closure costing for Doris, Boston, Windy and Patch sites
- Principal, complete project closure cost estimate
- Principal, site wide water balance (multiple iterations)
- Principal, support with site wide environmental management plans
- Project Manager, two geotechnical field programs
- Senior Engineer, various site reconnaissance studies
- Senior Engineer, scoping study input, including tailings costing
- Senior Engineer, pre-feasibility study input, including tailings costing
- Senior Engineer, tailings and waste rock management conceptual designs
- Project Manager, conceptual designs for various mine surface infrastructure including: roads, airstrips, tank farms, explosives magazines, mill pads and causeways
- Senior Engineer, conceptual designs of large dykes to allow in-lake open pit mining
- Principal Engineer, tailings and waste rock cover options evaluation and cost trade-off analysis
- Principal Engineer, detailed waste rock and tailings cover designs
- Principal Engineer, support with regulatory consultation and approval
- Principal Engineer, tailings and waste rock cover cost estimates for bonding and feasibility study purposes

Doris North Mine, Hope Bay Mining Ltd, (formerly Miramar Mining Company) (NU, Canada)

- Senior Engineer, geotechnical design of all mine surface infrastructure
- Project Manager, construction of mine surface infrastructure
- Project Manager, design of frozen core tailings dams
- Project Manager, design and construction of marine jetty for barge offloading
- Project Manager, pre-feasibility study input, including tailings and surface infrastructure costing
- Project Manager, feasibility study input, including tailings and surface infrastructure costing
- Project Manager, carry out seven permafrost geotechnical investigations
- Senior Engineer, carry out numerous field reconnaissance surveys
- Project Manager, carry out three submarine geotechnical investigations
- Senior Engineer, assist in Environmental Impact Assessment
- Senior Engineer, assist in Regulatory Permitting
- Senior Engineer, complete tailings alternative assessment
- Senior Engineer, assist in obtaining Schedule II MMER Permit

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- Project manager, develop various trade-off studies and financial analysis
- Principal Engineer, tailings and waste rock cover options evaluation and cost trade-off analysis
- Principal Engineer, detailed waste rock and tailings cover designs
- Principal Engineer, support with regulatory consultation and approval
- Principal Engineer, tailings and waste rock cover cost estimates for bonding and feasibility study purposes

Back River Project, Sabina Gold & Silver (NU, Canada)

- Project Manager, Preliminary Economic Assessment (all disciplines)
- Principal Engineer, Tailings options analysis, tailings management system design, infrastructure designs and cost estimate for PEA
- Project Manager, Feasibility study (tailings, geohydrology, geotechnical, geochemistry, water management and closure disciplines)
- Project Reviewer, Tailings management system, water management and water and load balance, geohydrological model and closure plan
- Project Engineer, Revised tailings options analysis moving from single large impoundment to small starter impoundment followed by in-pit disposal
- Project Engineer, Geotechnical field investigation program design and oversight – permafrost characterization
- Project Engineer, tailings and waste rock cover options evaluation and cost trade-off analysis
- Project Engineer, tailings and waste rock cover design
- Project Engineer, tailings and waste rock cover reclamation bond estimate review

Gunnar Mine, SRC (SK, Canada)

- Project Manager and Principal Engineer, senior technical reviewer for waste rock and hazardous waste landfill cover options evaluation and cost-trade-off analysis
- Project Engineer and Reviewer, Mine closure options analysis, conceptual design and costing
- Principal engineer, waste rock and hazardous waste landfill cover detailed engineering
- Principal engineer, landform design
- Principal engineer, support with regulatory consultation and approval

Patch Lake Tank Farm, Hope Bay Mining Ltd, (formerly Miramar Mining Company) (NU, Canada)

- Senior Engineer and Project Manager, design & construction of fuel tank farm secondary containment facility
- Project Manager, closure plan development including cost estimates
- Project Manager, hydrocarbon contamination investigation and design of remedial options
- Principal Engineer, permafrost damaged cover options evaluation and cost trade-off analysis
- Principal Engineer, permafrost damaged rock cover designs
- Principal Engineer, support with regulatory consultation and approval
- Principal Engineer, permafrost damaged over cost estimates for bonding and feasibility study purposes

Boston Advanced Exploration Camp, Hope Bay Mining Ltd, (formerly Miramar Mining Company) (NU, Canada)

- Principal Engineer, eight annual geotechnical investigations
- Project Manager, closure plan development including cost estimates
- Project Manager, hydrocarbon contamination investigation and design of remedial options
- Principal Engineer, tailings and waste rock cover options evaluation and cost trade-off analysis
- Principal Engineer, detailed waste rock and tailings cover designs
- Principal Engineer, support with regulatory consultation and approval
- Principal Engineer, tailings and waste rock cover cost estimates for bonding and feasibility study purposes

Windy Advanced Exploration Camp, Hope Bay Mining Ltd, (formerly Miramar Mining Company) (NU, Canada)

- Principal Engineer, eight annual geotechnical investigations
- Project Manager, closure plan development including cost estimates
- Project Manager, hydrocarbon contamination investigation and design of remedial options

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Cold Regions Covers, INAC (International)

- Project Manager, in-depth review of cover performance in cold regions
- Project Manager, develop research proposals to enhance the state of knowledge with respect to cold region covers

Cold Regions Cover Review, MEND (International)

- Project Manager, review of cold region (arctic and high altitude alpine regions) mine waste cover practice
- Project Manager, develop research recommendations to enhance the state of knowledge

Environment Canada, Mining & Processing Division (ON, Canada)

- Project Manager & Principal Engineer, development of "Guideline for the Assessment of Alternatives for Mine Waste Disposal"

International Cover Review, WISMUT GMBH (International)

- Senior Engineer, review of mine waste cover design and construction practices (included over 200 mine sites in 26 countries)

Baker Lake, Hatch Ltd. (NU, Canada)

- Project Manager, preliminary design of jetty (barge landing)

SRK Chile, Santiago (Chile)

- Course Developer and Presenter, 3-day short course on unsaturated soil mechanics and modeling

SRK Australia, Perth (Australia)

- Course Developer and Presenter, 2-day short course on unsaturated soil mechanics and modeling

Antilla Project, Panoro (Peru)

- Principal, Review of tailings management system design and cost estimate as qualified person.

Tres Estrada, Aguia Resources Ltd. (Brazil)

- Project Engineer, PEA Tailings management system options analysis, design and costing; Water supply dam options analysis, design and costing; Access roads and railway siding design and costing; Waste rock pile siting assessment and design recommendations

Hycroft Mine, allied Nevada Gold (Nevada)

- Principal Reviewer, Tailings draindown analysis

Gibraltar Mine (BC, Canada)

- Principal Reviewer, Heap leach pad draindown analysis

Sulfur Rose Project, Guyana Goldfields (Guyana)

- Principal Engineer, PEA Tailings management system options analysis, design and costing

Keno Hill Mine, Alexco (YK, Canada)

- Principal Reviewer, Werneke tailings closure and water management plan

Yukon Government, Alaska Highway (YK, Canada)

- Principal Reviewer, Permafrost characterization and identification using geophysical techniques
- Principal Reviewer, Permafrost stabilization designs and thermal analysis of highway section.

Maricunca Mine, Kinross (Chile)

- Principal Engineer and Project Reviewer, Mine waste rock cover modeling and heap draindown modeling

Curraughnault Project, Dalradian (Ireland)

- Peer Reviewer and Technical Specialist, Dry-stack tailings cover conceptual designs

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Cannington Mine, BHP (Australia)

- Peer Reviewer, Cover soil borrow characterization program
- Peer reviewer, Cover modeling
- Peer Reviewer, Trial cover performance monitoring detailed design

Mt. Whaleback, BHP (Australia)

- Peer Reviewer, Waste rock and pit hydrologic modeling and waste rock pile water balance

Long Canyon Project, Newmont Mining Corp. (Nevada, USA)

- Principal Engineer, closure cover modeling for tailings and waste rock areas
- Principal Engineer, numerical seepage analysis for Waste Rock Storage Facility

Lorado Mill Area Tailings Project, SRC (SK, Canada)

- Project Manager and Principal Engineer, tailings cover re-evaluation and optimization
- Principal Engineer, tailings cover numerical modeling
- Principal Engineer, landform design
- Principal Engineer, Tailings cover system design, detailed engineering and construction over 2-year period
- Principal Engineer, tailings cover construction quality assurance and as-built reporting
- Principal Engineer, support with regulatory approvals for tailings cover design

SK Abandoned Mines, MOE (SK, Canada)

- Project Engineer and reviewer, mine closure options assessment and closure liability cost estimate for five abandoned mines
- Project Engineer, options evaluations and cost trade-off analysis for cover systems on tailings and waste rock at five (5) abandoned mines
- Project Engineer, cover designs for all of these facilities were subsequently prepared and liability costs estimates developed

Hay River Highway, NOR-Ex (NT, Canada)

- Principal Reviewer, Permafrost monitoring instrumentation design and installation

Romero Project, JDS Engineering (Dominical Republic)

- Principal Reviewer, PEA tailings storage facility options evaluation (dry-stack selected), design and costing.

Santa Fe Project (Nevada)

- Project Engineer, Numerical assessment of shallow groundwater infiltration below waste rock pile

Amapari Mine, NewGold (Amapa, Brazil)

- Principal, tailings options assessment
- Principal, Care and Maintenance Plan
- Principal, Closure Plan

Brucejack Mine, Pretium Resources, BC, Canada)

- Project Manager & Principal Engineer, Development of sub-aqueous waste rock and tailings management plan.
- Principal, Detailed engineering and construction of waste rock pile deposited into deep lake of soft lake bed sediments.
- Principal, Review of tailings deposition plans prepared by third party, including tailings characterization testing.
- Principal, Assessment of waste rock dump failure and development of mitigation strategy going forward.

Bul River, Purcell Basin Minerals (BC, Canada)

- Project Manager & Principal Engineer, Dry-stack tailings design for permit application for restart of a mine. Includes options assessment transitioning from historic conventional slurry tailings deposition strategy.

San Dimas Mine, NewGold (Mexico)

- Project Manager & Principal Engineer, due diligence review of dry-stack tailings facility

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Rainy River Project, NewGold (ON, Canada)

- Project Manager & Principal Engineer, due diligence review of greenfields project, evaluation of tailings impoundment

Post Ovoid Project, VALE (NS, Canada)

- Peer Reviewer, review of tailings options assessment

Pipe Kipper Project, VALE (Manitoba, Canada)

- Project Manager & Principal Engineer, tailings options evaluation

Hudson Bay Mining & Smelting (SK, Canada)

- Principal Engineer, tailings closure cover design
- Principal Engineer, tailings cover bonding estimate
- Peer Reviewer, closure plan review

Sabodala Project, Oromin (Senegal)

- Project Manager & Principal Engineer, detailed geotechnical investigation in support of water supply dam detailed engineering
- Project Manager & Principal Engineer, detailed design of water supply dam
- Peer Reviewer, site wide water balance
- Principal, tailings options assessment
- Principal, pre-feasibility design of tailings impoundment
- Principal, pre-feasibility design of water supply dam
- Principal, geotechnical investigation in support of dam and surface infrastructure foundations
- Principal, pre-feasibility design of waste rock piles
- Principal, pre-feasibility design of saprolites pit slopes

Elk Valley Coal, Teck Coal Limited (BC, Canada)

- Project Manager, design and construction of 12 large scale lysimeters to evaluate waste rock infiltration
- Project Manager, design and installation of instrumentation for 12 large scale lysimeters
- Project Manager, lysimeter data analysis

Union Bay Coal Spoil Pile, SEACOR Environmental (for West Fraser) (BC, Canada)

- Senior Engineer, conceptual and feasibility level cover design
- Project Manager, regional and local borrow source assessment
- Project Manager, detailed landscape and reshaping design of coal pile
- Peer reviewer, engineering review of stream restoration works
- Senior Engineer, permitting assistance

Union Bay Coal Spoil Pile, SNC-Lavalin (BC, Canada)

- Project Manager, conceptual cover design and numerical modeling

Mt. Washington (BC, Canada)

- Peer Reviewer, review of cover design

Con Mine (NT, Canada)

- Project Manager & Principal Engineer, peer review of tailings and hazardous waste cover design
- Project Manager & Principal Engineer, re-evaluation of tailings and hazardous waste closure options including re-assessment of cover design
- Project Manager, tailings and hazardous waste cover options evaluation and cost trade-off analysis
- Project Manager, tailings and hazardous waste cover numerical modeling
- Project manager, tailings and hazardous waste cover construction quality assurance and as-built reporting
- Project Manager, detailed engineering of tailings and hazardous waste cover designs

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Confidential, AIC (Namibia)

- Principal Engineer, due diligence on tailings reprocessing options

Boss Mountain Mine, Confidential (BC, Canada)

- Project Manager & Principal Engineer, due diligence on tailings impoundment

Minto Mine (YT, Canada)

- Project Manager & Principal Engineer, design of closure covers for tailings and waste rock
- Principal Engineer, tailings and waste rock covers options analysis and cost trade-off analysis
- Principal Engineer, tailings and waste rock cover numerical modeling
- Principal engineer, landform design
- Principal engineer, design and construction of progressive reclamation landform design components
- Principal Engineer, tailings options assessment
- Principal engineer, design of Main Dam (earth embankment dam)
- Principal engineer, design and management of field programs to support Main Dam

Endako Mine, Confidential (BC, Canada)

- Principal Engineer, due diligence on mine closure and tailings management

Thompson Creek Mine, Confidential (Idaho, USA)

- Principal Engineer, due diligence on mine closure and tailings management

Mt. Milligan Mine, Confidential (BC, Canada)

- Principal Engineer, due diligence on tailings management

Brutica Project, Confidential (Peru)

- Principal Reviewer, qualified person sign-off on tailings management

Ollachea Project, Confidential (Peru)

- Principal Engineer, due diligence on tailings management

Huckleberry Mine (BC, Canada)

- Senior Engineer, design support for de-sulferised tailings and water cover
- Project Manager, geotechnical field program

Meliadine Project, Comaplex Minerals (NU, Canada)

- Project Manager, geotechnical field program
- Peer reviewer, adequacy review of tailings and waste management data
- Peer reviewer, recommendations for tailings options assessment

Anvil Range Mining Complex (Faro Mine), Deloitte & Touché and Yukon Government (YT, Canada)

- Senior Engineer, tailings and waste rock cover options evaluation and cost trade-off analysis
- Senior Engineer & Project Manager, tailings and waste rock cover numerical modeling
- Senior Engineer, tailings and waste rock cover design
- Principal Engineer & Project Manager, design, construction, instrumentation and monitoring (6 years) of six large scale cover test plots
- Principal Engineer & Project Manager, design, construction, instrumentation and monitoring (4 years) of two large scale lysimeters
- Senior Engineer, design, construction, instrumentation and monitoring of two large scale tailings cover test plots
- Senior Engineer, desk study of tailings relocation
- Project Manager, landform engineering
- Peer Reviewer, groundwater dewatering system design

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Giant Mine, Indian & Northern Affairs Canada, (NT, Canada)

- Senior Engineer, tailings cover options assessment and cost-trade-off analysis
- Senior Engineer, tailings cover numerical modeling
- Senior Engineer, tailings cover design
- Senior Engineer, landform design
- Project Manager, design, construction, instrumentation and monitoring of two large scale tailings cover test plots
- Senior Engineer, site investigation into integrity of existing stream diversion
- Senior Engineer, design & construction of water retaining earth embankment dam
- Senior Engineer, geotechnical review of all site dams
- Senior Engineer, conceptual design of hazardous landfills including underliner and cover
- Project Manager, borrow source investigation
- Senior Engineer, closure plan for tailings dams
- Senior Engineer, costing & conceptual design for preserving permafrost over frozen arsenic chambers

Granduc Mine, Castle Resources (BC, Canada)

- Project Manager & Principal Engineer, tailings impoundment site selection
- Project Manager & Principal Engineer, scoping level tailings impoundment design
- Project Manager & Principal Engineer, waste rock pile stability assessment

Whitehorse Copper Mine (YT, Canada)

- Peer Reviewer, tailings impoundment stability assessment

Santo Domingo Project, Ausenco (Chile)

- Principal Engineer, PFS tailings evaluation

Bahuerachi Copper Project, Ausenco (Mexico)

- Principal Engineer, review and audit of tailings and surface geotechnical design elements for FS

Hounde Project, Avion Gold (Burkina Faso)

- Principal Engineer, PEA tailings and waste rock design

Galore Creek (BC, Canada)

- Project Manager, conceptual design of ARD rock management (waste rock) containment facilities, including cover system

Colomac Mine, Department of Indian & Northern Affairs (NT, Canada)

- Peer Reviewer, annual geotechnical inspection report
- Senior Engineer, tailings cover options evaluation and cost trade-off analysis
- Senior Engineer, tailings cover design
- Senior Engineer, design, construction, instrumentation and monitoring of multi-year tailings test covers
- Senior Engineer, geotechnical investigations to assess seepage problems in a tailings dam
- Senior Engineer, borrow source investigation
- Senior Engineer, design of seepage remediation measures for tailings dam
- Senior Engineer, carry out annual dam safety inspection
- Senior Engineer, carry out three annual ditch inspection surveys
- Senior Engineer, design and implement ditch efficiency monitoring program
- Senior Engineer, design & construction of 8 km diversion ditches around tailings facility

Deloro Mine, CH2MHill (for Ontario Ministry of Environment) (ON, Canada)

- Peer Reviewer, final tailings cover design
- Senior Engineer, dam safety review
- Senior Engineer, geotechnical field program
- Senior Engineer, conceptual tailings cover design
- Senior Engineer, final tailings cover design

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Ajax Project, KGHM (BC, Canada)

- Practice Leader, Project Manager and Principal Engineer, technical due diligence of tailings management plan

Beaverlodge Mine, Cameco (SK, Canada)

- Peer Reviewer, review of construction specifications for tailings cover repairs
- Peer Reviewer, annual review of tailings cover performance

Jacobina Mine, Yamana Gold (Bahia, Brazil)

- Practice Leader, Project Manager and Principal Engineer, review of tailings design and development of conceptual design changes for future development and closure

Key Lake Mine, Cameco (SK, Canada)

- Senior Engineer, waste rock pile (Gaertner) detailed closure design
- Senior Engineer, final waste rock pile and landform closure design, including cover options evaluation, which concluded that a cover was not required

Synchrude Oil Sands Mine (AB, Canada)

- Engineer, overburden dump cover instrumentation design and installation

Detour Lake Mine, Placer Dome Canada (ON, Canada)

- Engineer, tailings impoundment soil cover performance numerical modeling
- Engineer, mine closure feasibility study

Goose Lake and George, Sabina Gold & Silver (NU, Canada)

- Project Manager, airstrip and road design
- Project Manager, geotechnical investigation in support of airstrip and road design
- Principal Engineer, tailings site selection study
- Principal engineer, PEA infrastructure designs
- Practice Leader, PEA report

Prosperity Mine, Taseko (BC, Canada)

- Peer Reviewer, tailings and waste rock alternatives assessment

Brule Coal, Western Canadian Coal (BC, Canada)

- Project Manager, geotechnical field program
- Project Manager, borrow source assessment
- Senior Engineer, conceptual waste rock pile cover design and options assessment

Victor Kimberlite Project, De Beers (ON, Canada)

- Senior Engineer, geotechnical soil characterization for deep (200 m) overburden drilling

Britannia Mine (BC, Canada)

- Senior Engineer, preliminary design of surface water diversion structures to limit surface water inflow into collapsed mine adits and glory holes

Kemess North Underground (BC, Canada)

- Principal Engineer, peer review of tailings and surface infrastructure designs for FS

Red Mountain Mine, Seabridge (BC, Canada)

- Senior Engineer, tailings dam design review
- Senior Engineer, alternative tailings dam conceptual design
- Senior Engineer, scoping study input, including tailings costing
- Senior Engineer, design and costing of tailings cover system
- Senior Engineer, revisiting costing components
- Senior Engineer, site reconnaissance survey for annual inspection

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Practice Leader and Principal Engineer

Kenary Cove, SEACOR (for Private Property Developer) (BC, Canada)

- Senior Engineer, conceptual design of coffer dam

Princess Colliery, Rescan (for PWGSC) (NS, Canada)

- Peer reviewer, review of waste rock cover design

Kitsault Mine (BC, Canada)

- Senior Engineer, review and specialist input for waste rock cover design and construction support

Nanisivik Mine, DIAND (NU, Canada)

- Senior Engineer, final closure cost estimate in RECLAIM format

North Country Gold (Nunavut, Canada)

- Practice Leader & Principal Engineer, review and design analysis of all-weather airstrip

Golden Sunlight Mine, Placer Dome (Montana, USA)

- Engineer, design & installation of tailings cover instrumentation

Seabee Mine, Claude Resources (SK, Canada)

- Principal Engineer, tailings and waste rock cover options evaluation and cost trade-off analysis
- Principal Engineer, tailings cover design
- Principal Engineer, tailings cover cost estimate for closure bonding purposes
- Peer Reviewer, comprehensive closure plan
- Peer Reviewer, tailings expansion design
- Project Manager & Principal Engineer, detailed design of tailings expansion including geotechnical field investigation
- Practice Leader & Engineer-of-Record, construction of tailings raise test section including regulatory negotiations

Tepal Project, Geologix (Mexico)

- Principal Engineer, tailings site selection
- Principal Engineer, PEA tailings design and cost estimate

Spingpole Project (ON, Canada)

- Principal Engineer, tailings site selection
- Principal Engineer, PEA tailings design and cost estimate

Tulsequah Chief, Chieftain Metals (BC, Canada)

- Peer Reviewer, PEA tailings evaluation

Riacho dos Machados, MacQuarie (Brazil)

- Principal Engineer, due diligence review of tailings design

Springpole Gold Project, Gold Canyon Resources (ON, Canada)

- Principal Engineer, tailings site selection
- Principal Engineer, PEA tailings design and cost estimate
- Principal engineer, PEA pit dewatering dikes design and cost estimate

Amisk Lake Project, Claude Resources (SK, Canada)

- Peer Reviewer, tailings alternatives assessment
- Principal Engineer, PEA tailings design and cost estimate

Tiger and Silver Range Projects, ATAC resources (Yukon, Canada)

- Principal Engineer, PEA tailings design and cost estimate

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Mount Margaret Mines (Queensland, Australia)

- Peer Reviewer, cover design and infiltration modeling

San Manuel Mine, BHP Billiton (Arizona, USA)

- Senior Engineer, conceptual cover design
- Senior Engineer, geotechnical field program
- Senior Engineer, in-situ material characterization

Coral Gold Mine (Nevada, USA)

- Senior Engineer, cover design and numerical modeling
- Senior Engineer, geotechnical field program

Elder Creek Mine (Nevada, USA)

- Senior Engineer, cover design and numerical modeling

Northumberland Project (Nevada, USA)

- Senior Engineer, tailings options assessment
- Senior Engineer, pre-feasibility study dry-stack tailings design and cost estimate
- Senior Engineer, pre-feasibility study waste rock pile design

Pampa de Pongo (Chile)

- Senior Engineer, conglomerate pit slope design

Kutcho Project, Sherwood Copper (YT, Canada)

- Senior Engineer, tailings options assessment
- Project Manager, geotechnical field investigation
- Senior Engineer, pre-feasibility study dry-stack tailings design and cost estimate
- Senior Engineer, pre-feasibility study waste rock pile design

Florida Canyon Mine (Nevada, USA)

- Peer reviewer, cover design review

Glamis Marigold Mine (Nevada, USA)

- Peer reviewer, cover design review
- Senior Engineer, comparative numerical modeling using different models
- Senior Engineer, EIS input relating to cover designs

Bald Mountain Mine, Placer Dome (Nevada, USA)

- Senior Engineer, cover design modeling review (Yankee)
- Senior Engineer, review of draindown modeling (Yankee)
- Senior Engineer, develop new draindown model (Yankee)
- Senior Engineer, geotechnical site investigation (Mooney)
- Senior Engineer, review of the Casino/Winrock heap leach pad final closure water balance

Cortez Gold Mine, Crescent Valley (Nevada, USA)

- Senior Engineer, review of final heap leach pad closure water balance
- Senior Engineer, review of heap draindown
- Senior Engineer, review of cover design

Newmont Mining Company (Nevada, USA)

- Senior Engineer, closure plan for tailings dam
- Course Developer and Presenter, 3-day cover design short course

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Rock Creek Mine (Montana, USA)

- Principal Engineer, review of capital updated cost estimate for tailings impoundment

Round Mountain, Kinross Mining (Nevada, USA)

- Project Manager, geotechnical field program
- Principal, draindown modeling (tailings and heap leach pads)
- Principal, conceptual cover design, cover modeling

Standard Mine Expansion (Colorado, USA)

- Principal, conceptual cover design review

Mt. Emmons Property, Thompson Creek Metals Company Inc. (Colorado, USA)

- Peer reviewer, tailings impoundment site selection and design

Mt. Hope (Nevada, USA)

- Senior Engineer, conceptual cover design

Norse Windfall Mine, BLM (Nevada, USA)

- Senior Engineer, geotechnical site investigation
- Senior Engineer, cover design

Atlanta Gold Mine (Idaho, USA)

- Project Manager, geotechnical site investigation
- Senior Engineer, cover design
- Senior Engineer, feasibility study for land application disposal system (LAD)
- Senior Engineer, draindown modeling

Ridgeway Gold Mine, Kennecott Minerals (South Carolina, USA)

- Engineer, geotechnical and geochemical site investigation
- Engineer, in-situ material characterization

Holden Mine (Washington, USA)

- Project Manager, geotechnical site investigation
- Project Manager, cover design

Kidston Gold Mine, Placer Dome (Queensland, Australia)

- Engineer, design & installation of cover performance instrumentation
- Engineer, develop closure water balance for tailings impoundment
- Engineer, direct revegetation of tailings as closure

Olympic Dam, Western Mining Company (South Australia, Australia)

- Peer Reviewer, cover modeling
- Senior Engineer, preliminary cover design
- Senior Engineer, design of field characterization and testing plan to confirm cover suitability
- Senior Engineer, review of operational and closure infiltration estimates for waste rock piles

Illuka Mine, (Australia)

- Peer Reviewer, cover design and cover modeling

Goro, INCO (New Caledonia)

- Senior Engineer, lysimeter design for tailings dam cover performance monitoring

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WISMUT, Lichtenberg Pit (Ronneburg, Germany)

- Senior Engineer, analysis of test cover performance data
- Senior Engineer, predictive cover performance modeling

Quiruvilca, Pan American Silver (Chile)

- Senior Engineer, conceptual cover design

Silangan Project, Philex (Phillipines)

- Peer Reviewer, project expansion tailings alternatives assessment

Haliliaga Project, Pilot Gold (Turkey)

- Principal Engineer, tailings and water supply dam site selection
- Principal Engineer, tailings and water supply dam PEA design and cost estimate; Two different project PEA's completed at different project sizes

Bronson Slope, Skyline Gold (BC, Canada)

- Peer Reviewer, tailings options

Confidential, Mitsui, (Mongolia)

- Principal Engineer, technical due diligence of tailings impoundment system design

Tac & Corac Project, Mediterranean Mining (Turkey)

- Principal Engineer, PEA tailings impoundment site and method selection (dry-stack), design and cost estimate

Tanco Mine, Cabot Corporation (ON, Canada)

- Principal Engineer, due diligence review of tailings management system
- Project Manager, Mine redevelopment project, scoping, prefeasibility, feasibility, detailed engineering and construction
- Project Engineer, Geotechnical investigations (in lake), dewatering dikes and other water management structures
- Project engineer, Detailed engineering of surface infrastructure, construction support

Quimsacocha, IamGold (Peru)

- Senior Engineer, tailings and waste rock management designs
- Senior Engineer, pre-Feasibility study tailings and waste management inputs

Rio Paracatu, Rio Tinto, (Minas Gerais, Brazil)

- Senior Engineer, cover designs
- Senior Engineer, design, installation and monitoring of cover trials

Golden Meadows Project, Midas Gold (Idaho, USA)

- Principal Engineer, PEA tailings impoundment site selection, design and cost estimate
- Project Manager, geotechnical field investigation in support of PFS surface infrastructure

Minas da Fortaleza, Rio Tinto, (Minas Gerais, Brazil)

- Senior engineer, conceptual cover designs
- Senior Engineer, closure plan inputs

Mauro Tunnel (Chile)

- Senior Engineer, conceptual cover design

Tatasi Mine (Bolivia)

- Senior Engineer, evaluate soil cover alternatives for final closure of tailings dam
- Senior Engineer, develop current and closure water balance for mine site

Maritz E. Rykaart

Practice Leader and Principal Engineer

Pascua Lama Mine (Peru)

- Senior Engineer, review of proposed tailings dam soil cover for closure purposes

Canariaco, Candente Resources (Peru)

- Senior Engineer, tailings and mine waste management design
- Senior Engineer, water supply dam design
- Senior Engineer, gap analysis re. mine waste management
- Project Manager, geotechnical field program
- Senior Engineer, feasibility study input

Coal Waste Cover Project, Water Research Commission (Natal, South Africa)

- Senior Engineer, Design and installation of test cell cover instrumentation
- Senior Engineer, Calibration modeling for cover designs

Cover Design Guidelines, Department of Water Affairs & Forestry (Natal, South Africa)

- Engineer, design guideline for cover design

West Driefontein Mine (Carltonville, South Africa)

- Engineer, tailings dam closure and rehabilitation design

RMP Properties, Rand Mines (Johannesburg, South Africa)

- Senior Engineer, feasibility study and concept design for rehabilitation of tailings impoundment

Tweefontein Colliery (Witbank, South Africa)

- Senior Engineer, waste dump rehabilitation feasibility study
- Engineer, environmental management program report

Goedgevonden Colliery (Witbank, South Africa)

- Senior Engineer, river diversion feasibility study
- Senior Engineer, river diversion conceptual design
- Senior Engineer, support with River Diversion permit application

Vlakklaagte Colliery (Witbank, South Africa)

- Senior Engineer, river diversion feasibility study
- Senior Engineer, river diversion conceptual design
- Senior Engineer, support with River Diversion permit application

Greenside Colliery (Witbank, South Africa)

- Senior Engineer, design & construction of River Diversion
- Senior Engineer, design & construction of storm water control channel
- Senior Engineer, permit application for River Diversion
- Senior engineer, design & contract documentation for pollution control dam
- Senior Engineer, design & contract documentation for storm water return dam

Heidelberg Colliery (Heidelberg, South Africa)

- Senior Engineer, river diversion design
- Senior Engineer, support with River Diversion permit application

Hayford Colliery (Witbank, South Africa)

- Senior Engineer, river diversion design
- Senior Engineer, support with River Diversion permit application

Design of Air Injection Nozzles, Water Research Commission (Johannesburg, South Africa)

- Engineer, potable water treatment research
- Senior Engineer, design and testing of injection nozzles for dissolved air flotation

Maritz E. Rykaart

Practice Leader and Principal Engineer

Air Stripping, H2O Groundwater Systems (California, USA)

- Engineer, developed mathematical model for an air stripper used for groundwater contamination clean-up

Kriel Colliery (Kriel, South Africa)

- Engineer, feasibility study into flooding the underground workings with excess polluted water

Landfill Design, Krugersdorp Municipality (Krugersdorp, South Africa)

- Engineer, feasibility design for new municipal landfill

Alpha Colliery (Natal, South Africa)

- Engineer, geohydrological assessment for surface water aspects

Sappi Ngodwana (Nelspruit, South Africa)

- Senior Engineer, dewatering of river front, feasibility study and concept design
- Senior Engineer, dewatering of river front, detailed design, contract documentation and site supervision

Hayford Colliery (Witbank, South Africa)

- Engineer, environmental management program report

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Environmental audit, AECI (Benoni, South Africa)

- Engineer, audit of all surface water management components of industrial complex

Middle Steelpoort Groundwater Management Plan, Department of Water Affairs & Forestry (Steelpoort, South Africa)

- Engineer, Review and design of all surface water management components
- Project Manager, technical liaison for all disciplines for final documents
- Project Manager, audit and review of six mining and processing complexes

Wapadskloof Vanadium toxicity investigation, Department of Water Affairs & Forestry (Wapadskloof, South Africa)

- Engineer, review and design of all surface water management components
- Project Manager, technical liaison for all disciplines for final documents
- Project manager, audit and review of complete vanadium processing complexes

West Driefontein Mine (Carltonville, South Africa)

- Senior Engineer, emergency design to repair breach of tailings dam
- Senior Engineer, construction supervision
- Engineer, modeling maximum rate of rise for gold tailings dam

Enstra Waste Water Treatment Plant, Sappi Enstra (Springs, South Africa)

- Overall Project Manager and Site Engineer for construction of an upgrade to a pulp and paper mill water treatment plant

