Nutrien Ltd.

Annual Information Form
Year Ended December 31, 2020

February 18, 2021

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Following is a table of contents of this Annual Information Form ("AIF") referencing the applicable requirements of Form 51-102F2 of the Canadian Securities Administrators. Certain portions of this AIF are disclosed in Nutrien Ltd.'s Management's Discussion & Analysis ("2020 MD&A") and Consolidated Financial Statements for the years ended December 31, 2020 and 2019 ("Consolidated Financial Statements") and are incorporated by reference herein to the extent noted below and throughout this AIF and are available on the Canadian Securities Administrators' SEDAR website at www.sedar.com and on the EDGAR section of the United States ("US") Securities and Exchange Commission's ("SEC") website at www.sec.com.

2 – Advisories

2.1 Forward-Looking Information

Certain statements and other information included in this AIF, including within the documents incorporated by reference, constitute "forward-looking information" or "forward-looking statements" (collectively, "forward-looking statements") under applicable securities laws (such statements are often accompanied by words such as "anticipate", "forecast", "expect", "believe", "may", "will", "should", "estimate", "intend" or other similar words). All statements in this document, other than those relating to historical information or current conditions, are forward-looking statements, including, but not limited to:

- Expectations regarding our liquidity;
- Expectations regarding performance of our operating segments, including the impact of our ammonia plant closure on our Nitrogen segment;
- Our market outlook for 2021, including agriculture and crop nutrient markets and the impact of the novel strain of coronavirus ("COVID-19") pandemic thereon, and including anticipated supply and demand for our products and services, expected market and industry conditions with respect to crop nutrient application rates, planted acres, crop mix, prices and the impact of currency fluctuations and import and export volumes;
- Expectations regarding changes in the agriculture space, including greater farm consolidation in the US and other developed markets and the continued advancement and adoption of technology and digital innovations;
- Acquisitions and divestitures (including expected timing of closing thereof), and the expected synergies associated with various acquisitions, including timing thereof;
- Expectations regarding environmental compliance requirements and costs, including estimates of asset retirement obligations and site assessment and remediation costs;
- Expectations regarding our sustainability, climate change and greenhouse gas ("GHG") emissions reduction strategy and related programs and initiatives, including our Carbon Program; and
- Expectations regarding our mineral reserve and resource estimates, and the annual nameplate capacity and operational capability of our mines and associated mine life estimates.

These forward-looking statements are subject to a number of assumptions, risks and uncertainties, many of which are beyond our control, which could cause actual results to differ materially from such forward-looking statements. As such, undue reliance should not be placed on these forward-looking statements.

All of the forward-looking statements are qualified by the assumptions that are stated or inherent in such forward-looking statements, including the assumptions referred to below and elsewhere in this document. Although we believe that these assumptions are reasonable, this list is not exhaustive of the factors that may affect any of the forward-looking statements and the reader should not place an undue reliance on these assumptions and such forward-looking statements. The additional key assumptions that have been made include, among other things:

- Assumptions with respect to our ability to successfully complete, integrate and realize the anticipated benefits of our already completed and future acquisitions, and that we will be able to implement our standards, controls, procedures and policies in respect of any acquired businesses to realize the expected synergies;
- That future business, regulatory and industry conditions will be within the parameters expected by us, including with respect to prices, margins, demand, supply, product availability, supplier agreements, availability and cost of labor and interest, exchange and effective tax rates;
- Assumptions with respect to global economic conditions and the accuracy of our market outlook expectations for 2021 and in the future;
- Our expectations regarding the impacts, direct and indirect, of the COVID-19 pandemic on our business, customers, business partners, employees, supply chain, other stakeholders and the overall economy;
- The adequacy of our cash generated from operations and our ability to access our credit facilities or capital markets for additional sources of financing;
- Our ability to identify suitable candidates for acquisitions and divestitures and negotiate acceptable terms; and
- Our ability to maintain investment-grade ratings and achieve our performance targets.

Events or circumstances that could cause actual results to differ materially from those in the forward-looking statements include, but are not limited to:

- General global economic, market and business conditions;
- Failure to complete announced and future acquisitions or divestitures at all or on the expected terms and within the expected timeline;
- Climate change and weather conditions, including impacts from regional flooding and/or drought conditions;
- Crop planted acreage, yield and prices;
- The supply and demand and price levels for our products;
- Governmental and regulatory requirements and actions by governmental authorities, including changes in government policy (including tariffs, trade restrictions and climate change initiatives), government ownership requirements, changes in environmental, tax and other laws or regulations and the interpretation thereof;
- Political risks, including civil unrest, actions by armed groups or conflict and malicious acts including terrorism;
- The occurrence of a major environmental or safety incident;
- Innovation and cybersecurity risks related to our systems, including our costs of addressing or mitigating such risks;
- Counterparty and sovereign risk;
- Delays in completion of turnarounds at our major facilities;
- Interruptions of or constraints in availability of key inputs, including natural gas and sulfur;
- Any significant impairment of the carrying value of certain assets;
- Risks related to reputational loss;
- Certain complications that may arise in our mining processes;
- The ability to attract, engage and retain skilled employees and strikes or other forms of work stoppages;
- The COVID-19 pandemic and its resulting effects on economic conditions, restrictions imposed by public health authorities or governments, fiscal and monetary responses by governments and financial institutions and disruptions to global supply chains; and
- Other risk factors detailed from time to time in Nutrien reports filed with the Canadian securities regulators and the SEC in the US.

In addition to the factors mentioned above, see “Risk Factors” discussed in this AIF for a description of other factors affecting forward-looking statements.

The forward-looking statements in this document are made as of the date hereof and we disclaim any intention or obligation to update or revise any forward-looking statements in this AIF as a result of new information or future events, except as may be required under applicable Canadian securities legislation or applicable US federal securities laws.

2.2 Basis of Presentation

Nutrien consolidated financial information for 2020, 2019 and 2018 presented and discussed in this AIF is prepared in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board. This AIF is dated February 18, 2021, and the information contained herein is current as of such date, unless otherwise specified.

Unless expressly stated, the information contained on, or accessible from, our website or any other website or any other report or document we file with or furnish to applicable Canadian or US securities regulatory authorities is not incorporated by reference into this AIF.

3 – Corporate Structure

In this AIF, unless otherwise specified, the term “Nutrien” refers to Nutrien Ltd. and, unless the context requires otherwise, the terms “we”, “us”, “our”, “Nutrien” and the “Company” refer to Nutrien and its direct and indirect subsidiaries, individually or in any combination, as applicable. References to “dollars”, “$”, and “US$” are to United States dollars and references to “CAD$” are to Canadian dollars.

3.1 Name, Address and Incorporation

Nutrien is a corporation incorporated under the *Canada Business Corporations Act* (“CBCA”).

Nutrien’s registered head office is Suite 500, 122 – 1st Avenue South, Saskatoon, Saskatchewan, Canada S7K 7G3. We also have corporate offices at 13131 Lake Fraser Drive SE, Calgary, Alberta, Canada T2J 7E8 and 5296 Harvest Lake Drive, Loveland, Colorado, US 80538.

3.2 Intercorporate Relationships

Principal Subsidiaries [1]	Jurisdiction of Incorporation or Organization	Ownership
Potash Corporation of Saskatchewan Inc. (“PotashCorp”)	Canada	100%
Agrium Inc. (“Agrium”)	Canada	100%
Agrium Canada Partnership	Alberta, Canada	100%
Agrium Potash Ltd.	Canada	100%
Agrium U.S. Inc.	Colorado, US	100%
Combined Rural Traders Pty Limited	New South Wales, Australia	100%
Cominco Fertilizer Partnership	Texas, US	100%
Loveland Products Inc.	Colorado, US	100%
Nutrien Ag Solutions (Canada) Inc.	Canada	100%
Nutrien Ag Solutions, Inc.	Delaware, US	100%
Nutrien Ag Solutions Limited	Western Australia, Australia	100%
PCS Nitrogen Fertilizer, LP	Delaware, US	100%
PCS Nitrogen Trinidad Limited	Trinidad	100%
PCS Phosphate Company, Inc.	Delaware, US	100%
Potash Holding Company, Inc.	Delaware, US	100%

1 In aggregate, our remaining subsidiaries not listed herein accounted for less than 20 percent of our consolidated assets or 20 percent of our consolidated sales as at and for the year ended December 31, 2020.

4 – General Development of the Business

4.1 Three-Year History

The Merger

Effective January 1, 2018, pursuant to the merger of equals transaction (the “Merger”) contemplated by the arrangement agreement dated September 11, 2016 between PotashCorp and Agrium, PotashCorp and Agrium became wholly owned subsidiaries of Nutrien pursuant to a court-approved plan of arrangement under Section 192 of the CBCA.

Pursuant to the Merger, the holders of common shares of PotashCorp (“PotashCorp Shares”) received common shares of Nutrien (“Common Shares”) at a ratio of 0.40 of a Common Share for each PotashCorp Share and the holders of common shares of Agrium (“Agrium Shares”) received Common Shares at a ratio of 2.23 Common Shares for each Agrium Share.

Acquisitions

The table below provides information on our acquisitions of Nutrien Ag Solutions (“Retail”) businesses, including Ruralco Holdings Limited (“Ruralco”), completed during the last three fiscal years.

	Ruralco	Other Retail Acquisitions		
Acquisition date	**September 30, 2019**	**2020**	**2019**	**2018**
Purchase price (US$ millions)	330	233	581	433
Number of Retail operating locations	~250	43	68	53
Description	Agriservices business in Australia	Various digital agriculture, proprietary products, retail and agricultural services businesses in North America, South America and Australia		

Dispositions

In 2020, due to a strategic decision, we sold our 26 percent equity investment in Misr Fertilizers Production Company S.A.E. (“MOPCO”), a nitrogen producer based in Egypt.

Company Name	Proceeds [1] (US$ millions)
MOPCO	540

1 Cash proceeds resulting from the sale of shares and settlement of legal claims.

In 2018, in connection with antitrust approvals necessary for the completion of the Merger, we completed the disposition of the following minority equity interests:

Company Name	Proceeds [1] (US$ millions)
Sociedad Química y Minera de Chile S.A. (“SQM”)	5,126
Israel Chemicals Ltd. (“ICL”)	685
Arab Potash Company (“APC”)	501

1 Proceeds are net of commissions.

In addition to the above dispositions of minority equity interests, in 2018, we also completed the sale of our (i) Conda, Idaho phosphate production facility and adjacent phosphate mineral rights; and (ii) North Bend, Ohio nitric acid facility and related assets.

Impairment of Assets

In 2020, we identified an impairment indicator in our Phosphate cash-generating units due to lower long-term forecasted global phosphate prices. We recorded non-cash impairments to our property, plant and equipment at our Aurora, North Carolina and White Springs, Florida sites of $545 million and $215 million, respectively.

In 2018, after a strategic portfolio review was completed, we determined the New Brunswick Potash operations would no longer be part of our medium- or long-term strategic plans. As a result, the New Brunswick Potash operations were permanently shut down. The decision to shut down these operations resulted in a non-cash impairment in 2018 of $1,809 million to the property, plant and equipment of the New Brunswick Potash operations.

Normal Course Issuer Bid (“NCIB”)

The tables below provide information on our share repurchase programs during the last three fiscal years.

	Commencement Date	Expiry	Maximum Shares for Repurchase
2020 NCIB [1]	February 27, 2020	February 26, 2021	28,572,458
2019 NCIB	February 27, 2019	February 26, 2020	42,164,420
2018 NCIB	February 23, 2018	February 22, 2019	50,363,686

1 The 2020 NCIB permits the repurchase of up to 5 percent of our outstanding Common Shares for cancellation and can expire earlier than the date above if we acquire the maximum number of Common Shares allowable or otherwise decide not to make any further repurchases. As at February 18, 2021, we had repurchased 710,100 of the maximum shares for repurchase.

	2020	2019	2018
Number of Common Shares repurchased for cancellation [1]	3,832,580	36,067,323	36,332,197

1 Purchases have been made under the applicable NCIB through open market purchases at market prices.

On February 17, 2021, our board of directors (“Board”) approved a share repurchase program of up to a maximum of 28,468,448, or 5 percent of our outstanding Common Shares for cancellation. Subject to acceptance by the Toronto Stock Exchange (“TSX”), the 2021 share repurchase program will commence on March 1, 2021 and will expire on the earlier of February 28, 2022, the date on which we have acquired the maximum number of Common Shares allowable or the date we determine not to make any further repurchases.

Notes Issuances and Repayments

In March 2020, we filed a universal base shelf prospectus in Canada and the US qualifying the issuance of up to $5.0 billion of Common Shares, debt securities and other securities during a period of 25 months from March 16, 2020. In May 2020, we issued $1.5 billion in notes as described below.

The following tables summarize our long-term debt issuances and repayment activities in 2020 and 2019:

	Rate of Interest (%)	Maturity Date	Amount (US$ Millions)
Notes issued 2020	1.900	May 13, 2023	500
Notes issued 2020	2.950	May 13, 2030	500
Notes issued 2020	3.950	May 13, 2050	500
Notes issued 2019	4.200	April 1, 2029	750
Notes issued 2019	5.000	April 1, 2049	750

The notes issued in 2020 and 2019 are unsecured, rank equally with our existing unsecured debt, and have no sinking fund requirements prior to maturity. Each series is redeemable and provides for redemption prior to maturity, at our option, at specified prices. Except as described in "– Debt Exchange" below, there were no issuances or repayments of notes in 2018.

	Rate of Interest (%)	Maturity Date	Amount (US$ Millions)
Notes repaid 2020	4.875	March 30, 2020	500
Notes repaid 2019	6.500	May 15, 2019	500
Notes repaid 2019	6.750	January 15, 2019	500

Debt Exchange

In 2018, an aggregate of $7,578 million of PotashCorp senior notes and Agrium debentures (other than Agrium's 7.800 percent debentures due 2027) were tendered to exchange offers made by Nutrien and accepted by the holders of such senior notes and debentures in exchange for the same amount of new notes issued by Nutrien, which have interest rates and maturities identical to those of the applicable exchanged series of senior notes or debentures. In addition, we solicited consents from the holders of PotashCorp senior notes and Agrium debentures to amend the terms and remove certain financial reporting covenants and events of default under the indentures governing those senior notes and debentures. A small portion of senior notes and debentures (including Agrium's 7.800 percent debentures due 2027) were not exchanged and remain outstanding with the relevant issuing subsidiary.

Credit Facilities

On March 11, 2020, the World Health Organization declared the spread of COVID-19 a global pandemic. In response to the COVID-19 pandemic, we took steps to enhance our liquidity position in the first half of 2020. We added $1.5 billion of new credit facilities in March and April 2020, which we subsequently closed in May 2020 after the issuance of the new notes described above. We continue to monitor our liquidity position.

In 2018, we replaced PotashCorp's $3.5 billion unsecured revolving credit facility and Agrium's $2.5 billion multijurisdictional unsecured revolving credit facility with a Nutrien $4.5 billion unsecured revolving term credit facility ("Nutrien Credit Facility"). The Nutrien Credit Facility matures on April 10, 2023, subject to extension at the request of Nutrien provided that the resulting maturity date shall not exceed five years from the date of the request.

In 2018, we also replaced PotashCorp's $75 million unsecured line of credit with a $500 million uncommitted revolving demand facility.

Commercial Paper Program

In 2018, we launched a commercial paper program with an aggregate authorized amount of $4.5 billion. The amount drawn under the commercial paper program is backstopped by the Nutrien Credit Facility. Concurrent with the launch, we discontinued new issuances under the commercial paper programs of PotashCorp and Agrium that existed prior to the completion of the Merger.

Accounts Receivable Securitization Program

In 2019, we terminated our existing trade accounts receivable securitization program in North America. Under this program, we sold certain trade account receivables to a special purpose vehicle, a consolidated entity within Nutrien, and we controlled and retained substantially all the risks and rewards of the receivables sold to the special purpose vehicle. There were no loan drawdowns made under this program in 2019.

5 – Description of the Business

We are a world-class integrated provider of crop inputs and services, playing a critical role in helping growers around the globe increase food production in a sustainable manner. We supply growers through our leading global Retail network – including crop nutrients, crop protection products, seed and merchandise, as well as agronomic and application services. We operate more than 2,000 retail locations across the US, Canada, Australia and South America, servicing more than 500,000 grower accounts.

Nutrien is the world's largest provider of crop inputs and services, producing the three crop nutrients: potash, nitrogen and phosphate. We produce and distribute approximately 27 million tonnes of crop nutrient products from our facilities in Canada, the US and Trinidad, and our Canadian Potash operations represent more than one-fifth of global nameplate capacity.

As of December 31, 2020, we estimate our Potash operations represented 21 percent of global potash capacity, our Nitrogen operations represented 3 percent of global nitrogen capacity and our Phosphate operations represented 3 percent of global phosphate capacity.

We report our results in four operating segments: Retail, Potash, Nitrogen and Phosphate. Our reporting structure reflects how we manage our business. Sales classified by operating segment and applicable category of products and services are provided in Note 3 of the 2020 Consolidated Financial Statements. Sales or transfers to certain entities in which the Company has an investment that is accounted for under the equity method are provided in Note 3 of the 2020 Consolidated Financial Statements.

5.1 Nutrien Ag Solutions ("Retail") Operations

Overview

Our Retail segment markets crop nutrients, crop protection products, seed and merchandise, as well as agronomic application services and solutions through more than 2,000 retail locations across the US, Canada, Australia and South America. Our North American retail locations include more than 800 branches, which are facilities supporting a specific market area and customer base, and more than 500 satellites, which are used to position equipment and product to specific markets and customers in support of a branch. Retail's products and services are as follows:

Product	% of Retail Sales	Description
Crop nutrients	2020 – 35 2019 – 38	- dry and liquid macronutrient products which include potash, nitrogen and phosphate, proprietary liquid micronutrient products and nutrient application services: o custom blend to suit specific nutrient requirements for each grower's field typically based on soil fertility tests or plant tissue sampling o custom crop nutrient application services using large fleet of application equipment to apply these nutrients at prescribed rates - precision application using global positioning system ("GPS") technology, which allows nutrient application rates to be adjusted when required, based on GPS grid soil sample test results and other data
Crop protection products	2020 – 38 2019 – 38	- third-party supplier and proprietary products designed to maintain crop quality and manage plant diseases, weeds and other pests - private label and proprietary crop protection products through our Loveland Products, Inc. business across North America, South America and Australia
Seed	2020 – 12 2019 – 13	- third-party supplier seed brands and proprietary seed product lines - private label seed product line under the brand names Dyna-Gro® and Proven™ - proprietary seed product line in Brazil under the brand name Sementes Goiás - seed treatment applying chemicals to seeds prior to planting to protect them from pests and disease
Nutrien Financial	2020 – 1 2019 – nil	- flexible financing solutions offered to our customers in the United States and Australia: o extended payment terms, typically up to one year, to facilitate alignment of grower crop cycles with cash flows - revenue primarily earned through interest and services fees charged to our Retail branches or directly to our customers - 2020 was the first full year of operations for this business

Product	% of Retail Sales	Description
Merchandise	2020 – 6 2019 – 4	- livestock-related merchandise including fencing, feed supplements, animal identification merchandise and various animal health products and services - storage and irrigation equipment and other products - primarily in Australia
Services and other	2020 – 8 2019 – 7	- custom application services, crop scouting and precision agriculture services, soil and leaf testing - performance of soil and leaf testing for growers in the US - monitoring of crop disease conditions and irrigation requirements in high-value crops using system of weather tracking stations in Western US - digital tools that provide customer account management, online ordering, agronomic insights and hands-on customer support that drive economic value and can provide environmental benefits for our growers, including our Echelon® precision agriculture offering, which includes services such as yield data mapping, record keeping, soil fertility management, variable-rate fertility and variable-rate seeding recommendations - various other services, including wool sales and marketing, livestock marketing and auction services, water services, insurance products and real estate agency services in Australia

Transportation, Storage and Distribution

We have an extensive infrastructure system to store and transport our Retail products, strategically located across distribution points in regions where we operate to serve our customers across the US, Canada, Australia and South America.

Number	Nature	Description
93	Terminals	- used to receive large quantities of crop nutrients for redistribution to retail centers and to growers directly
32	Distribution centers	- used to effectively distribute crop protection products and seed - used to coordinate product supply to the retail centers and allow us to manage inventory levels across our distribution network
1,902	Branches, satellites, others	
28,891	Vehicles and application equipment	

Due to the bulk nature of our crop nutrient and seed products, delivery to end users through the supply chain can often take a significant amount of time. Supply chain management, utilizing our extensive storage and distribution network and transportation capabilities, allows us to ensure that crop nutrients and seed products are available to customers at the necessary time as growers have a short application and planting window, the precise timing of which is unpredictable due to both the seasonal nature of crop planting and the impact of weather.

Competitive Position

The market for Nutrien's retail products and services is highly competitive in the countries in which we operate. The principal competitors in the distribution of crop production inputs include agricultural co-operatives, other major agriculture retailers and smaller independent retailers and distributors. Retail also produces a range of high-quality proprietary crop protection, seed and crop nutrient products that generate higher margins for our Retail segment. Retail offers a digital tool that provides customer account management, online ordering, agronomic insights and hands-on customer support that we believe drives economic value for our growers.

5.2 Potash Operations

Overview

Our Potash operations include the mining and processing of potash, which is predominantly used as fertilizer. The Saskatchewan Ministry of Energy and Resources has granted Nutrien the exclusive right to mine potash on approximately 381,000 hectares (or approximately 941,000 acres) of Crown land pursuant to subsurface mineral leases. Of the approximately 381,000 hectares, approximately 253,000 hectares comprise our Potash operations at the Allan, Cory, Lanigan, Patience Lake, Rocanville, and Vanscoy mines. In 2020, the Allan, Cory and Vanscoy Crown subsurface mineral leases were amended, resulting in a substantial and favorable net gain of Crown mineral rights at each of the three Potash operations. In 2020, we also executed a Crown lease purchase agreement providing approximately 26,000 hectares (or approximately 65,000 acres) of subsurface mineral rights north-west of our Rocanville potash mine. Leases also exist with freehold mineral rights owners within the Crown subsurface mineral lease areas and elsewhere in Saskatchewan.

Subsurface mineral leases with the Province of Saskatchewan are for 21-year terms, renewable at our option at each of our producing mines. Our subsurface mineral leases with other parties are also for 21-year terms. Such other leases are renewable at our option, provided generally that production is continuing and that there is continuation of the applicable lease with the Province of Saskatchewan.

We sell potash outside Canada and the US exclusively through Canpotex Limited ("Canpotex"). Canpotex is owned in equal shares by us and another potash producer in Canada. Canpotex, which was incorporated in 1970 and commenced operations in 1972, acts as an export company providing integrated sales, marketing and distribution for all Canadian potash produced by its shareholders/producers that is exported to destinations outside the US and Canada. Each shareholder of Canpotex has an equal voting interest as a shareholder and a right to equal representation on the Canpotex board of directors. In 2020, sales of potash to Canpotex represented 49 percent of our total potash sales (2019 – 56 percent).

In general, Canpotex sales volumes are allocated among Canpotex producers based on production capacity. In 2020, Nutrien supplied approximately 64 percent of Canpotex's product supply requirements (2019 – approximately 64 percent). Canpotex sells potash to buyers in export markets pursuant to term and spot contracts at agreed upon prices. Canpotex has a long history of being a reliable supplier of potash to international markets and of proven logistics and marketing capabilities. Other major potash exporting countries include Russia, Belarus and Germany.

Transportation, Storage and Distribution

Transportation costs can be a significant component of the total cost of potash. Producers may have an advantage in serving markets close to their sources of supply depending on prevailing transportation costs. International shipping cost variances permit offshore producers to effectively compete with our potash production in many geographies.

Most of our potash for North American customers is shipped by rail. We believe we have a strategic advantage in the North American market with approximately 300 owned or leased potash distribution points and a fleet of approximately 6,300 owned and leased railcars. We believe this is the most extensive domestic distribution network in the potash business. Shipments are also made by rail from each of our Saskatchewan mines to Thunder Bay, Ontario for shipment by lake vessel to our warehouses and storage facilities in Canada and the US.

In the case of our sales to Canpotex, Canpotex is responsible for managing and directing all aspects of its logistics infrastructure platform, including the transportation of its potash by way of rail to port facilities where it is handled, stored and loaded onto ocean-going vessels. We have an equity interest in Canpotex Bulk Terminals Limited, which is a part owner of the port facilities utilized by Canpotex in Vancouver, British Columbia. Canpotex also utilizes port facilities in Portland, Oregon, Saint John, New Brunswick and Thunder Bay, Ontario.

Production Methods

We generally produce potash primarily using conventional mining methods, except for our Patience Lake mine, which was originally a conventional underground mine, but began employing a solution mining method in 1989. In conventional operations, shafts are sunk to the ore body, which is approximately one kilometer below the surface. Mining machines cut out the ore, which is hoisted to the surface for processing. The ore is a mixture of potassium chloride, salt and insoluble particles. In solution mining, the potash is dissolved in warm brine and pumped to the surface for processing. Removing the clay and salt through a milling process produces saleable potash. Seven grades of potash are produced to suit different preferences of the various markets we serve.

In 2020, our nameplate capacity represented 55 percent of the North American total capacity (based on our nameplate capacity, see the table below for further information) and our potash production represented 57 percent of North American production. We allocate production among our mines on the basis of various factors, including cost efficiency and the grades of product that can be produced.

The following table sets forth, for each of the past two years, the production of ore, mill feed grade and finished product for each of our potash mines in Saskatchewan:

	Annual Nameplate Capacity [1]	Annual Operational Capability [2]		2020 Production			2019 Production		
		2021	2020						
	Finished Product (millions of tonnes)	Finished Product (millions of tonnes)	Finished Product (millions of tonnes)	Ore (millions of tonnes)	Grade % K_2O	Finished Product (millions of tonnes)	Ore (millions of tonnes)	Grade % K_2O	Finished Product (millions of tonnes)
Rocanville	6.5	5.4	5.4	17.02	22.3	5.29	15.96	23.2	5.14
Allan	4.0	2.8	2.8	7.85	25.1	2.79	6.15	25.1	2.18
Vanscoy	3.0	0.8	1.7	1.53	25.5	0.51	4.06	25.2	1.42
Lanigan	3.8	2.5	2.3	7.28	23.6	2.33	5.83	22.0	1.75
Cory	3.0	1.6	1.0	4.60	23.3	1.40	3.46	24.0	0.97
Patience Lake	0.3	0.3	0.3	–	–	0.27	–	–	0.24
Totals [3]	**20.6**	**13.4**	**13.5**	**38.28**		**12.59**	**35.46**		**11.70**

1 Represents estimates of capacity as of December 31, 2020. Estimates are based on capacity as per design specifications or Canpotex entitlements once determined. In the case of Patience Lake, estimate reflects current operational capability. Estimates for all other facilities do not necessarily represent operational capability.

2 Estimated annual achievable production level at current staffing and operational readiness (estimated at beginning of year and may vary during the year and year-to-year including between our facilities). Estimate does not include inventory-related shutdowns and unplanned downtime.

3 2020 average mineral grade of 23.40 percent potassium oxide ("K_2O") mined and an average grade of 60.95 percent K_2O produced. Averages are weighted proportionately to tonnes produced at our conventional mines.

The mining of potash is a capital-intensive business subject to the normal risks and capital expenditure requirements associated with mining operations. The production and processing of ore may be subject to delays and costs resulting from mechanical failures and hazards, such as unusual or unexpected geological conditions, subsidence, water inflows, and other conditions involved in mining potash ore.

Competitive Position

Potash is a commodity, characterized by minimal product differentiation, and, consequently, producers compete based on price, quality and service. We price competitively, sell high-quality products and provide high-quality service to our customers. Our service includes maintaining warehouses, leasing railcars and chartering vessels to enhance our delivery capabilities. The high cost of transporting potash affects competition in various geographic areas.

In 2020, our principal competitors in North America included PA Belaruskali, EuroChem Group AG, ICL, Intrepid Potash Inc., K+S Group, The Mosaic Company ("Mosaic") and PJSC Uralkali. In 2020, Canpotex competed with producers such as APC, PA Belaruskali, EuroChem Group AG, ICL, K+S Group, SQM and PJSC Uralkali.

Sources of Raw Materials

The production of potash requires a sustained fresh water supply for the milling process, which comes from nearby sources including subsurface aquifers, reservoirs or the Saskatchewan River.

5.3 Nitrogen Operations

Overview

We own and operate nitrogen production facilities at which we produce the following products:

Plant Locations	Nitrogen Products Produced
Augusta, Georgia	Ammonia, urea, urea ammonium nitrate ("UAN"), diesel exhaust fluid ("DEF"), nitric acid and ammonium nitrate
Borger, Texas	Ammonia, urea and DEF
Carseland, Alberta	Ammonia and urea
Fort Saskatchewan, Alberta	Ammonia and urea
Geismar, Louisiana	Ammonia, UAN, DEF and nitric acid
Joffre, Alberta	Ammonia
Lima, Ohio	Ammonia, urea, UAN, DEF, nitric acid and ammonium nitrate
Point Lisas, Trinidad	Ammonia and urea
Redwater, Alberta	Ammonia, urea, ammonium nitrate, UAN and ammonium sulfate

In September 2020, we announced the indefinite closure of the smallest of our four ammonia plants at our Trinidad facility. The closure is expected to enhance the competitiveness at that facility.

We operate a number of facilities that upgrade ammonia and urea to other products such as UAN, ammonium nitrate, nitric acid and Environmentally Smart Nitrogen® ("ESN®").

Plant Locations	Nitrogen Products Produced
Americus, Georgia	Rainbow plant food
Carseland, Alberta	ESN®
Granum, Alberta	UAN
Kennewick, Washington	UAN, ammonium nitrate and nitric acid
New Madrid, Missouri	ESN®
Standard, Alberta	UAN

Our owned and operated facilities have a combined annual gross ammonia nameplate capacity of approximately 7.1 million tonnes.

We also have a 50 percent joint venture ownership in Profertil S.A. ("Profertil"), a joint venture that owns a nitrogen facility in Bahia Blanca, Argentina.

We sold our investment in MOPCO in December 2020, through which we held a 26 percent equity interest in a nitrogen facility located in Egypt.

Transportation, Storage and Distribution

We distribute our nitrogen products by vessel, barge, railcar and truck to our customers and, in high-consumption areas, through our strategically located storage terminals. In North America, we lease or own approximately 200 nitrogen distribution points, as well as a fleet of approximately 5,100 owned or leased railcars. We also lease dry and liquid storage capacity in Europe. These locations provide a network of field and production site storage capacity sufficient to serve local dealers during the peak seasonal demand period and are also used to provide off-season storage.

We distribute products from Trinidad primarily to markets in the US, South America, Europe, Asia and North Africa. We employ four long-term chartered ocean-going vessels and utilize short-term and spot charters as necessary for the transportation of ammonia for our marine distribution operations in Trinidad. All bulk urea production from Trinidad is shipped through third-party carriers. In addition, Profertil's terminal on the Parana River includes a dedicated berth and two 100,000-tonne dry storage buildings in a key agricultural region of Argentina.

Production Methods

Ammonia is produced by taking nitrogen from the air and reacting it with a hydrogen source, usually natural gas reformed with steam.

Ammonia is the feedstock used to produce a full line of upgraded products, including urea, ammonium nitrate, nitric acid and nitrogen solutions, including both UAN solutions and DEF products, ammonium sulfate and ESN®. Urea is produced by combining ammonia with carbon dioxide ("CO_2") and forming liquid urea, which can be further processed into a solid form. UAN solutions are liquid fertilizers that are produced by combining liquid urea, liquid ammonium nitrate and water. Urea solutions are produced by combining liquid urea with water. ESN® is a patented coated-fertilizer product that is made by coating the urea substrate with layers of polymers, allowing for more efficient delivery of nitrogen to the plant.

Ammonia, urea and nitrogen solutions are sold as fertilizers to agricultural customers and to industrial customers for various applications. Nitric acid and ammonium nitrate are sold to industrial customers for various applications. Urea is also sold for feed applications. ESN® is sold to agricultural customers.

Ammonium sulfate is produced by reacting ammonia and sulfuric acid and then granulated to form a solid granular product. At our Redwater, Alberta facility, we produce sulfuric acid from purchased sulfur. In 2019, we repurposed this facility, ceasing monoammonium phosphate ("MAP") production in May 2019, in order to increase our ammonium sulfate capacity. A second ammonium sulfate train was commissioned in September 2019 at Redwater, increasing our production capacity from approximately 360,000 tonnes to approximately 710,000 tonnes.

Competitive Position

Nitrogen-based fertilizer is a global commodity, and customers, including end-users, dealers and other fertilizer producers and distributors, base their purchasing decisions principally on the delivered price and availability of the product. The relative cost of, and availability of transportation for, raw materials and finished products to manufacturing facilities are also important competitive factors.

Within North America, transportation costs play a factor in regional price differences and we compete with other domestic producers, including CF Industries Holdings, Inc., CVR Partners, L.P., Koch Industries, Inc., LSB Industries, Inc., OCI N.V., and Yara International ASA, and with imported product from suppliers in the Middle East, North Africa, Trinidad, Central and Eastern Europe and China. In the offshore market, we compete with a wide range of offshore and domestic producers. Nitrogen is also an input into industrial production of a wide range of products. Many manufacturers want consistent quality and just-in-time delivery to keep their plants running.

Our North American plants are geographically well positioned to service agriculture, industrial and feed customers across Canada and the US. Our robust North American distribution network provides in-market support, during seasonal peak demand, ensuring timely product availability. Trinidad mainly supplies our international fertilizer and industrial customers.

Our US production has continued to benefit from the low cost of natural gas, and to a greater extent our Western Canadian production, which utilizes natural gas indexed to the Alberta benchmark price, has also benefited. In Trinidad, the price at which we purchase natural gas varies primarily with ammonia market prices, and annual escalating floor prices. Ammonia and urea predominate our offshore sales of nitrogen and originate primarily from Trinidad, with other sales coming from purchased product locations. For 2020, our offshore sales of nitrogen products represented 18 percent (2019 – 18 percent) of our total nitrogen sales.

Sources of Raw Materials

Natural gas is the primary raw material used for producing ammonia, which is the base for virtually all nitrogen products.

In North America, we may enter into natural gas hedging transactions with the goal of minimizing risk from volatile gas prices. We purchase most of our natural gas from producers or marketers at the point of delivery of the natural gas into the pipeline system, then pay the pipeline company and, where applicable, the local distribution company to transport the natural gas to our nitrogen facilities. Approximately 90 percent of our North American consumption of natural gas by our Nitrogen operations is delivered pursuant to firm transportation contracts, which do not permit the pipeline or local distribution company to interrupt service to, or divert natural gas from, the plant.

In Trinidad, natural gas is purchased under contract using a pricing formula related to the market price of ammonia. We are currently operating under a five-year gas supply contract, set to expire in 2023, which includes minimum take or pay requirements, to provide the entire Trinidad ammonia complex with approximately 90 percent of its expected requirements for 2019 through 2023.

5.4 Phosphate Operations

Overview

Our Phosphate operations include the manufacture and sale of solid and liquid phosphate fertilizers, phosphate feed and purified phosphoric acid, which is used in feed and industrial products. We have phosphate mines and mineral processing plant complexes in Aurora, North Carolina and White Springs, Florida. We also have three Phosphate feed plants in the US.

Our Phosphate properties include:

Plant Locations	Primary Products Produced [1]
Aurora, North Carolina	DAP, MAP, SPA, liquid fertilizer, purified acid, merchant grade phosphoric acid ("MGA"), hydrofluosilicic acid, defluorinated merchant grade acid and low magnesium SPA ("LOMAG")
Cincinnati, Ohio	Blended purified acid products
Joplin, Missouri	Animal feed
Marseilles, Illinois	Animal feed
Weeping Water, Nebraska	Animal feed
White Springs, Florida	SPA, MGA [2], LOMAG, MAP and MAP MST

1 The following scientific terms have the following meanings:

DAP	diammonium phosphate, 46 percent P_2O_5 (solid)
MAP	monoammonium phosphate, 52 percent P_2O_5 (solid)
MAP MST	sulfur enhanced MAP
SPA	superphosphoric acid, 70 percent P_2O_5 (liquid)

2 All of the MGA from White Springs is consumed internally in the production of additional products.

In connection with the 2018 sale of our Conda phosphate production facility and adjacent mineral rights, we entered into long-term supply and offtake agreements with Itafos Conda LLC. Based on these agreements, which extend through 2023, we expect to market an estimated 330,000 tonnes per year of MAP produced at Conda, Idaho.

We execute offshore marketing and sales of our solid phosphate fertilizer through PCS Sales (USA), Inc.

Transportation, Storage and Distribution

With respect to Phosphate, we have approximately 145 owned or leased phosphate distribution points and a fleet of approximately 5,100 owned and leased railcars. We have long-term leases on shipping terminals in Morehead City and Beaufort, North Carolina through which we store Aurora facility's finished product. Most of our offshore phosphate sales are shipped through the terminal at Morehead City. We use barges and tugboats to transport solid products, phosphoric acid and sulfur between the Aurora facility and shipping terminals. Raw materials and products, including sulfur, are also transported to and from the Aurora facility by rail and truck.

Sulfur is delivered to the White Springs facility by rail and truck from Canada and the US. Most of the phosphoric acid and chemical fertilizers produced at the White Springs facility are shipped to North American destinations by rail. Ammonia for the Aurora and White Springs facilities is supplied by rail and truck from our production facilities in Lima, Ohio and Augusta, Georgia.

Production Methods

We extract phosphate ore using surface mining techniques. At each mine site, the ore is mixed with recycled water to form a slurry, which is pumped from the mine site to our processing facilities. The ore is then screened to remove coarse materials, washed to remove clay and floated to remove sand to produce phosphate "rock." The annual production capacity of our mines is currently 7.4 million tonnes of phosphate rock. During 2020, the Aurora facility's total production of phosphate rock was 3.94 million tonnes and the White Springs facility's total production of phosphate rock was 1.81 million tonnes. The sequence for mining portions of the Aurora property was identified in the permit issued by the US Army Corps of Engineers in June 2009. The permit authorizes mining in excess of 20 years. Phosphate rock is the major input in our phosphate processing operations. Substantially all the phosphate rock produced is used internally for the production of phosphoric acid, SPA, chemical fertilizers, purified phosphoric acid and animal feed products.

In addition to phosphate ore, the other principal raw materials we require are sulfur and ammonia. The production of phosphoric acid requires substantial quantities of sulfur, which we purchase from third parties. Any significant disruption in our sulfur supply to the phosphate facilities could adversely impact our financial results. We produce sulfuric acid at the Aurora and White Springs facilities from purchased sulfur.

Our Phosphate operations purchase all their ammonia at market rates from or through our Nitrogen and sales subsidiaries. Phosphoric acid is reacted with ammonia to produce DAP, MAP and MAP MST as well as liquid fertilizers.

We produce MGA at our Aurora and White Springs facilities. Some MGA from the Aurora facility is sold to foreign and domestic fertilizer producers and industrial customers. We further process the balance of the MGA to make solid fertilizers (DAP and MAP), liquid fertilizers, animal feed supplements for the poultry and livestock markets, and purified phosphoric acid for use in a wide variety of food, technical and industrial applications.

Competitive Position

Markets for phosphate fertilizer products are highly competitive and based largely on price, reliability and deliverability. Significant low-cost capacity has been commissioned over the past few years, most notably in Morocco and Saudi Arabia. The ability of these countries to add low-cost capacity and operate under less restrictive environmental regulation is resulting in a long-term oversupply in the global market. Our principal advantages at the Aurora and White Springs facilities are that we produce higher-value, diversified products and that we operate integrated phosphate mine and phosphate processing complexes. Our in-market distribution network ensures product supply during peak demand periods.

Our key competitors for North American phosphate fertilizer sales are Mosaic, J.R. Simplot Company and offshore imports primarily from Morocco, Russia and Saudi Arabia. A petition filed on June 25, 2020 by Mosaic with the US Department of Commerce led to Morocco and Russia stopping shipments to the US and a resultant increase in phosphate fertilizer prices. A preliminary determination by the US Department of Commerce on November 24, 2020 found that phosphate fertilizer imports from Morocco and Russia benefit from countervailable subsidies. Final determinations by the US Department of Commerce are expected in the first quarter of 2021.

In offshore markets, we compete primarily with OCP S.A. (“OCP”) from Morocco and other producers from Africa, Middle East and Russia. For 2020, our offshore sales of phosphate products represented 11 percent (2019 – 15 percent) of our total phosphate sales.

Within the animal feed supplement business in the Phosphate segment opportunities exist to differentiate products based on nutritional content. We have a significant presence in the domestic feed supplement market segments. We compete with Mosaic, J.R. Simplot Company, OCP and Chinese and Russian producers for feed sales.

Industrial products are the least commodity-like of the phosphate products as product quality is a more significant consideration for customer buying decisions. We market industrial phosphate products principally in the US and we compete with ICL, Innophos Holdings, Inc., Prayon Group, OCP and Chinese producers for North American industrial sales.

Sources of Raw Materials

Phosphate rock is the major input in our phosphate processing operations, and is mined at our Aurora and White Springs facilities.

In addition to phosphate ore, the other principal raw materials we require are sulfur and ammonia. The production of phosphoric acid requires substantial quantities of sulfur, which we purchase from third parties. Any significant disruption in our sulfur supply to the phosphate facilities could adversely impact our financial results. We produce sulfuric acid at the Aurora and White Springs facilities from purchased sulfur. Ammonia for our Aurora facility is supplied by rail and truck from our production facilities in Lima, Ohio and Augusta, Georgia. Ammonia for our White Springs facility is primarily supplied by truck from our Augusta nitrogen plant.

5.5 Specialized Skill and Knowledge

We believe our success is dependent on the performance of our management and key operational employees, many of whom have specialized skills and knowledge relating to the retail, potash, nitrogen and phosphate industries, and to the conduct of the Retail, Potash, Nitrogen and Phosphate operations. We believe that we have adequate personnel with the specialized skills and knowledge to successfully carry out our business and operations.

5.6 Intangible Properties

We have registered and pending trademarks and patents in Canada, the US and other countries where our products are sold. In addition, it has been our practice to seek patent protection for inventions and improvements that are likely to be incorporated into our products, where appropriate, and to protect the freedom to use our inventions in its manufacturing processes. We consider several factors in assessing the materiality of our patents including, but not limited to, scope and breadth of claims, sales volumes of products incorporating the technology, strategic importance, and patent duration.

While these trademarks and patents constitute valuable assets, we do not regard any single trademark or patent as being material to our operations as a whole. See Note 14 of the 2020 Consolidated Financial Statements for disclosure on estimated useful lives of intangible assets.

5.7 Seasonality

The agricultural products business is seasonal. Crop input sales are generally higher in the spring and fall application seasons. Crop nutrient inventories are normally accumulated leading up to each application season. Our cash collections generally occur after the application season is complete, while customer prepayments made to us are concentrated in December and January and inventory prepayments paid to our vendors are typically concentrated in the period from November to January. Feed and industrial sales are more evenly distributed throughout the year. See “Risk Factors” below for a description of the risks related to seasonality.

5.8 Environmental Matters

Our operations are subject to numerous environmental requirements under federal, provincial, state and local laws, regulations and permits of the countries in which we operate. These laws, regulations and permits govern matters such as air emissions, wastewater discharges, land use and reclamation, groundwater quality, and solid and hazardous waste management. Many of these laws, regulations and permit requirements continue to become increasingly stringent, and the cost of compliance with these requirements can be expected to increase over time.

Future environmental capital expenditures are subject to a number of uncertainties, including changes to environmental laws and regulations and interpretations by regulatory authorities or changes in circumstances affecting the Company’s operations. At this time, we are unable to estimate the capital expenditures we may make in future years to meet pollution prevention and emissions control objectives, as well as other environmental requirements.

Environmental Requirements, Permits and Regulatory Approvals

Many of our operations and facilities are subject to a variety of regulatory requirements, permits and approvals, all of which vary depending on the specific operation. Licenses, permits and approvals at operating sites are obtained in accordance with applicable laws and regulations, which may limit or regulate: operating conditions, rates and efficiency; land, water and raw material use and management; product storage, quality and transportation; waste storage and disposal; and emissions and other discharges. Additional legal requirements may apply where site impacts predate the current applicable regulatory framework, where remediation is ongoing or where there is otherwise evidence that historic remediation activities have not been successful in minimizing impacts to the environment. These additional requirements may result in an environmental remediation liability that must be mitigated.

We believe that we are currently in material compliance with existing regulatory requirements, permits and approvals. Permits and approvals are typically required to be renewed or reissued periodically. We may also become subject to new laws or regulations that impose new requirements or require us to obtain new or additional permits or approvals; however, there can be no assurance that such permits or approvals will be issued in the ordinary course of operations. Further, the terms and conditions of future regulations, permits and approvals may be more stringent and may require increased expenditures by the Company.

Air Quality

With respect to air emissions, we anticipate that additional actions and expenditures may be required to meet increasingly stringent federal, provincial and state regulatory and permit requirements in the areas in which we operate, including existing and anticipated regulations under the US federal *Clean Air Act*. We continue to monitor developments in these various programs and assess their potential impact on our operations. The calciners at our Aurora, North Carolina phosphoric acid plant are subject to mercury emission limits adopted by the US Environmental Protection Agency (“EPA”) in 2015, which do not reflect actual emissions during normal operations. The EPA published a final rule on November 3, 2020 that addresses this issue and removes the need for the state consent order under which the calciners have been operating. In 2015, we entered a consent decree that requires reductions in sulfur dioxide emissions at specified sulfuric acid plants with the final compliance dates occurring at the beginning of 2020. All such emission limits have been met by the dates specified in the consent decree schedule.

In Canada, the *Multi-Sector Air Pollutant Regulations* were issued in 2016. These regulations established oxides of nitrogen emission standards for gas-fired boilers, heaters and stationary spark-ignition engines. Facilities must ensure regulated equipment meets mandated emission standards by either 2026 or 2036, depending on the equipment’s baseline emission levels. Our Canadian nitrogen and potash facilities operate equipment subject to the regulations. Equipment testing is ongoing to assess the baseline emission levels in order to determine if any equipment will require replacement or modification.

Water Quality

There are international, federal, provincial and state regulatory initiatives underway that may result in new regulatory restrictions on discharges of nutrients, including discharges of nitrogen and phosphorus to waters in the US ("Nutrient Criteria"). There are also ongoing litigation efforts in several jurisdictions of the US that seek to require US environmental agencies to develop new Nutrient Criteria. These litigation and regulatory proceedings may result in new Nutrient Criteria that apply to water discharges from several of the Company's facilities in the US. Some of the proposed restrictions imposed through Nutrient Criteria also have the potential to require our customers to reduce or eliminate their uses of the Company's products. These Nutrient Criteria could have a material effect on either the Company or its customers, but the impact is not currently predictable or quantifiable with reasonable certainty because many of these initiatives are in relatively early stages and compliance alternatives may be available that do not create material impacts. We are closely monitoring and evaluating the impact of these initiatives on our operations.

Waste Management

In 2003, the EPA began investigating the phosphate industry as part of its National Enforcement Initiative regarding the mineral processing industry. The purpose of the EPA's National Enforcement Initiative is to ensure that waste resulting from mineral processing is managed in accordance with regulations under *The Resource Conservation and Recovery Act*, which is the US federal statute that governs the generation, transportation, treatment, storage and disposal of hazardous wastes. The EPA is also evaluating the mineral processing industry's compliance with the *Emergency Planning and Community Right to Know Act* and the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* ("CERCLA").

Several of the Company's phosphoric acid production facilities have received notices of violation or entered orders with the EPA as a result of the EPA's National Enforcement Initiative. These facilities include the Conda, Idaho phosphate production facility divested in January 2018, for which we retain environmental liabilities attributable to our historic activities. We are negotiating with the EPA and the relevant state environmental agencies to resolve the matters relating to these facilities, and these negotiations are ongoing. In these negotiations, we are seeking to minimize the costs and impacts to our future operations consistent with applicable legal requirements, including financial assurance for the future closure, maintenance and monitoring of phosphogypsum stack systems. The full scope of the costs that we may ultimately incur to bring these matters to a conclusion could be material to our operations but are not currently predictable or quantifiable with reasonable certainty. See Note 29 of the 2020 Consolidated Financial Statements for additional information.

Asset Retirement Obligations

Provisions are recognized when: (i) the Company has a present legal or constructive obligation as a result of past events; (ii) it is probable that an outflow of resources will be required to settle the obligation; and (iii) the amount can be reliably estimated.

The major categories of our asset retirement obligations include reclamation and restoration costs at our Potash and Phosphate mining operations (phosphate mining, in particular), including the management of materials generated by mining and mineral processing, such as: various mine tailings and phosphogypsum; land reclamation and revegetation programs; decommissioning of underground and surface operating facilities; general clean-up activities aimed at returning the areas to an environmentally acceptable condition; and post-closure care and maintenance.

The estimation of the costs of asset retirement obligations depends on the development of environmentally acceptable closure and post-closure plans. In some cases, this may require significant research and development to identify preferred methods for such plans that are economically sound and that, in most cases, may not be implemented for several decades. We have continued to use appropriate technical resources, including outside consultants, to develop specific site closure and post-closure plans in accordance with the requirements of the various jurisdictions in which we operate.

The asset retirement obligations are generally incurred over an extended period. As at December 31, 2020, we had accrued a total of $1,209 million for asset retirement obligations, the current portion of which totaled $121 million. For additional information, see Note 22 of the 2020 Consolidated Financial Statements.

Site Assessment and Remediation

We are also subject to environmental statutes that may require investigation and, where appropriate, remediation of impacted properties. Canadian federal and provincial laws as well as CERCLA and other US federal and state laws impose liability on, among others, past and present owners and operators of properties or facilities at which hazardous substances have been released into the environment. Liability under these laws may be imposed jointly and severally and without regard to fault or the legality of the original actions, although such liability may be divided or allocated according to various equitable and other factors. We have incurred and expect to continue to incur costs and liabilities in respect of our current and former operations, including those of divested and acquired businesses. We have generated and, with respect to our current operations, continue to generate substances that could result in liability for us under these laws.

As at December 31, 2020, we had accrued environmental costs of $550 million for costs associated with site assessment and remediation, including consulting fees, related to the clean-up of impacted sites currently or formerly associated with the Company or its predecessors' businesses. As at December 31, 2020, the current portion of these costs totaled $41 million. The accrued amounts include the Company's and its subsidiaries' expected final share of the costs for the site assessment and remediation matters to the extent future outflow of resources is probable and can be reliably estimated. For additional information, see Note 22 of the 2020 Consolidated Financial Statements.

It is often difficult to estimate and predict the potential costs and liabilities, including natural resource damages, associated with our current and former operations, and there is no guarantee that we will not in the future be identified as potentially responsible for additional costs associated with our operations, either as a result of changes in existing laws and regulations or as a result of the identification of additional matters or properties subject to environmental costs. For certain matters, we are unable to make a reliable estimate of the amount and timing of any financial effect in excess of the amounts accrued for various reasons including: complexity of the matters; early phases of most proceedings; lack of information on the nature and timing of future actions in the matters; dependency on the completion and findings of investigations and assessments; and the lack of specific information as to the nature, extent, timing and cost of future remediation with respect to those matters. Until we have greater clarity as to our liability and the extent of our financial exposure, it is not practicable to make a reliable estimate of the financial effect. For additional information, see Note 29 of the 2020 Consolidated Financial Statements.

Climate Change and Greenhouse Gas ("GHG") Emissions

Nutrien generates GHG emissions directly and indirectly through the production, distribution and use of its products. These emissions may be subject to climate change policies and regulations, all of which are developing in unique ways within various federal, provincial and state jurisdictions. Increasing regulation of GHGs may impact our operations by requiring changes to our production processes or increasing raw material, energy, production or transportation costs in order to ensure compliance. There are also significant differences in the climate change policies of countries where Nutrien operates as only some are parties to the Paris Agreement, negotiated in December 2015, under the United Nations Framework Convention on Climate Change.

Sources of GHGs from our production operations include emissions from the reforming of natural gas to produce hydrogen, which is used to synthesize ammonia, as well as process emissions from some of our nitric acid plants. We estimate that the production stage of our operations accounts for approximately 95 percent of our overall emissions. Approximately two-thirds of the natural gas required to produce ammonia – the basic building block of all nitrogen fertilizer – is used to provide the necessary hydrogen for the process. Given current economically viable technologies, the CO_2 emissions related to this process are fixed by the laws of chemistry and cannot be reduced. We have developed strategies to attempt to improve energy efficiency in our production operations, to capture and store carbon, and to reduce the amount of nitrous oxide ("N_2O") emissions from our nitric acid facilities. We are also investing in developing new precision agriculture technologies and agronomic services that are expected to improve the efficiency of fertilizer applications within our Retail operations, so more grain can be produced with the same amount of fertilizer and with reduced impact to the environment.

Our Canadian manufacturing facilities are primarily located in the provinces of Alberta and Saskatchewan and are subject to a variety of federal and provincial requirements to reduce GHG emissions ranging from carbon taxes to emissions-intensity reduction requirements. We attempt to minimize our Canadian compliance costs through the implementation of various efficiency and emissions reduction projects, including: overall efforts to increase operational efficiency; operating a cogeneration facility in partnership with TransCanada Energy Ltd., a subsidiary of TC Energy Corporation, at Carseland, Alberta that captures waste heat and produces emission offset credits; operating a cogeneration facility in partnership with SaskPower at our Cory, Saskatchewan potash mine that captures waste heat and provides all of the mine's steam requirements; and the implementation of the Quantification Protocol for Agricultural Nitrous Oxide Emissions Reduction designed to generate emission offset credits for Alberta farmers who reduce their N_2O emissions. We have also partnered with Enhance Energy Inc. to supply CO_2 from the Redwater nitrogen facility to the Alberta Carbon Trunk Line to be captured and used for enhanced oil recovery in Central Alberta. The project began its first CO_2 injection in December 2019 and operated throughout 2020. The Redwater facility sent approximately 165,000 tonnes of CO_2 to the Alberta Carbon Trunk Line in 2020.

In June 2018, Canada enacted the *Greenhouse Gas Pollution Pricing Act* ("GGPPA") which establishes minimum standards for carbon pricing that makes up part of Canada's strategy for meeting its commitments under the Paris Agreement. The GGPPA is designed to act as a backstop to apply in provinces that do not establish their own carbon pricing systems that meet the minimum federal stringency criteria. The GGPPA comprises two parts: a federal fuel charge beginning at CAD$20 per tonne of carbon dioxide equivalents ("CO_2e") in 2019 and rising by CAD$10 per CO_2e tonne per year through 2022 ("Federal Fuel Charge"), and an output-based pricing system ("OBPS") for large industrial emitters. The Federal Fuel Charge applies to all carbon-based fuels in provincial jurisdictions that have not implemented their own provincial carbon tax. Similarly, the federal OBPS applies in those provinces that have not enacted systems deemed equivalent to the federal OBPS. Large emitting facilities regulated under an acceptable OBPS are exempt from the fuel charge. In December 2020, the Canadian federal government announced a

strengthened climate plan entitled: A Healthy Environment and a Healthy Economy. Under the strengthened plan the Federal Fuel Charge is proposed to increase by an additional CAD$15 per CO_2e tonne per year for the years 2023 to 2030 resulting in a final carbon levy of CAD$170 per CO_2e tonne in 2030.

Application of Federal Fuel Charge in Alberta and Saskatchewan

As part of Alberta's *Climate Leadership Act*, Alberta had a provincial carbon levy in place from January 2017 until it was repealed in May 2019. The GGPPA Federal Fuel Charge backstop was then implemented in Alberta in January 2020. Currently, Ontario, New Brunswick, Manitoba, Saskatchewan, Alberta, Yukon and Nunavut have the Federal Fuel Charge in place, while the other provinces and territory have provincial/territorial fuel levies.

Application of Federal OBPS in Alberta and Saskatchewan

The federal OBPS currently applies in Ontario, New Brunswick, Manitoba, Prince Edward Island, Saskatchewan (for electricity generation and natural gas transmission only), Yukon and Nunavut, while the other provinces and territory have provincial/territorial systems that have been deemed equivalent to the federal OBPS. In 2018, the Province of Saskatchewan proclaimed the *Management and Reduction of Greenhouse Gases Act*, which provided the authority to establish a provincial output-based emissions management framework. This legislation, along with its supporting regulations, was considered to meet the stringency criteria of the federal GGPPA for large industrial facilities. As such, all six of our potash facilities received exemptions from the federal GGPPA fuel charge. Under the Saskatchewan framework, potash facilities must achieve a 5 percent emission intensity reduction from a site-specific three-year baseline by 2030. Beginning in 2019, the facility intensity baseline benchmark will decline 0.42 percent per year until the full 5 percent intensity reduction target is established in 2030. All six of our potash facilities submitted third-party verified benchmark applications in 2019, which were subsequently approved by the Saskatchewan Ministry of Environment in the fall of 2020. The 2019 emission year was the first compliance year under the Saskatchewan output-based framework, and our 2019 potash facility emission returns were submitted in the fourth quarter of 2020. The 2020 emission returns will be submitted in 2021, along with any compliance payments for the 2019 and 2020 emission years. After that, emission returns and compliance payments will be submitted every second year per the provincially established Emissions and Compliance Return Schedule. The provincial framework that will create a credit trading system and provincial technology fund for meeting emission compliance obligations is still under development; however, our aggregated potash compliance obligation for the 2019 emission year is estimated to be minimal based on a Federal Fuel Charge of CAD$20 per CO_2e tonne in 2019. For 2020, our aggregated potash compliance obligation is estimated to be minimal based on a Federal Fuel Charge of CAD$30 per CO_2e tonne in 2020. In accordance with the GGPPA backstop, the Federal Fuel Charge will increase to CAD$40 per CO_2e tonne in 2021.

In Alberta, large final emitters (industrial facilities emitting over 100,000 tonnes of CO_2e per year) have been subject to emission reduction requirements and a GHG pricing system since implementation of the *Specified Gas Emitters Regulation* ("SGER") in 2007. Under the SGER program, large final emitters were required to either meet progressively stricter emission intensity reduction targets, or to achieve compliance for excess emissions using Alberta registered Emission Performance Credits ("EPCs"), Alberta registered emission offset credits or payment into a provincial technology fund. Our Carseland, Fort Saskatchewan and Redwater facilities were subject to compliance reporting and carbon pricing under this program. In 2018, the Alberta government replaced SGER with industry specific, output-based emission allocations under the *Carbon Competitiveness Incentive Regulation* ("CCIR"). Similar to the SGER, emissions in excess of the output-based allocations were required to achieve compliance using EPCs, offset credits or technology fund payments. Under the CCIR, our aggregated 2019 emission compliance costs for our Alberta regulated facilities were approximately $3 million.

Nutrien's Joffre facility opted-in to the CCIR program in 2019. While Joffre is not deemed a "large final emitter" as its annual emissions are less than 100,000 tonnes CO_2e, the CCIR contained a provision to allow lower emitting facilities to opt-in to the program if they compete against a facility regulated under the CCIR or if the facility has greater than 50,000 tonnes of annual emissions and high emissions intensity and trade exposure. Opting into the CCIR granted the Joffre facility an exemption from the provincial carbon levy as carbon costs associated with its emissions would be covered under the CCIR program. Since the Joffre facility manufactures ammonia using a hydrogen by-product feedstock supplied by an industrial neighbor, rather than producing it on site from a natural gas feedstock using an emission intensive steam methane reforming process, Joffre is able to generate Emission Performance Credits under CCIR as its emission intensity is below the Alberta ammonia intensity benchmark. These credits can be banked and used to offset a portion of future compliance obligations for Nutrien's other Alberta-based nitrogen facilities.

On January 1, 2020, the Alberta government replaced the CCIR with the *Technology Innovation and Emissions Reduction Regulation* ("TIER"). Under this program, facilities that emit 100,000 tonnes or more of CO_2e per year are subject to the less stringent of a product-specific high-performance benchmark ("HPB") based on the emission intensity of the most efficient facilities, or a facility-specific benchmark based on a 10 percent emission intensity reduction relative to the facility's own historical baseline. The stringency of facility-specific benchmarks will increase by 1 percent annually beginning in 2021 until the facility benchmark reaches the HPB. The tightening rate will not apply to industrial process emissions, which are fixed by chemistry and cannot be

reduced through efficiency improvements. TIER was designed to meet federal GGPPA carbon standards with a carbon price of CAD$30 per CO_2e tonne in 2020. By aligning with the federal carbon standard for emission compliance, large emitting facilities are not subject to the Federal Fuel Charge. In November 2020, the Alberta government issued a Ministerial Order that increased the TIER carbon price to CAD$40 per CO_2e tonne in 2021, ensuring continued alignment with the federal GGPPA carbon price through 2021. The Alberta government has not yet committed to an increased carbon price of CAD$50 per CO_2e tonne for 2022 to maintain alignment with the GGPPA.

TIER also includes an 'opt-in' allowance for lower emitting facilities that compete with large emitting TIER regulated facilities, and Joffre also opted into the TIER program. As a result, Joffre remains exempt from the Federal Fuel Charge and will be able to continue to generate EPCs under TIER.

2020 TIER compliance submissions and payments are due by June 30, 2021. Emission quantification and compliance costs are subject to third-party verification prior to submission, and as such are not yet finalized. Our aggregated TIER compliance costs for 2020 are estimated to be approximately $1 million.

Saskatchewan, Ontario and Alberta have launched legal challenges to the constitutionality of the GGPPA. Provincial appeal courts in Saskatchewan and Ontario upheld the GGPPA; however, the Alberta Court of Appeal ruled in favor of the Province of Alberta. These provincial court of appeal decisions have all been appealed to the Supreme Court of Canada, which heard arguments in September 2020. A final ruling has not yet been issued.

The Canadian federal government is also currently conducting consultations with stakeholders to implement a federal Clean Fuel Standard that will apply to liquid fuels beginning in 2022 and gaseous fuels beginning in 2023. This standard will be designed to incent the development and use of lower carbon fuels. Nutrien is tracking development of the standard and will remain engaged through the consultation process.

In the US, the EPA has issued GHG emissions regulations that establish a reporting program for emissions of CO2, methane and other GHGs, as well as a permitting program for certain large GHG emissions sources. Beyond that, there is uncertainty regarding full implications of new or amended federal GHG regulations in the US under the current presidential administration. There is the potential for some movement on US Federal Climate policy during the current presidential administration, but the scope of any legislation will depend heavily on the ability to pass such legislation through the US House and Senate. As such, the potential impact on the Company cannot be determined at this time. Apart from federal regulation of GHGs, some US states have also enacted laws concerning GHG emissions that we are monitoring for impacts on our operations.

The impacts of climate change and future restrictions on emissions of GHGs on the Company's operations could be material but cannot be determined with any certainty at this time.

Facility and Product Security

Through our Safety, Health and Environment department, we regularly evaluate and address actual and potential security issues and requirements associated with our operations in the US and elsewhere using approved security vulnerability methodologies. Additional actions and expenditures may be required in the future. In the US, chemical facilities are regulated under the *Maritime Transportation Security Act*, the Chemical Facility Anti-Terrorism Standards, and the *Food Safety Modernization Act (Mitigation Strategies to Protect Food Against Adulteration)*. It is anticipated that the US Congress will continue to consider federal legislation designed to reduce the risk of any future terrorist acts at industrial facilities. We believe that we are in material compliance with applicable security requirements, and we have also developed and adopted security measures and enhancements beyond those presently required at both our regulated and non-regulated facilities. To date, neither the security regulations nor our expenditures on security matters have had a material adverse effect on our financial position or results of operations. We are unable to predict the potential future costs to us of any new governmental programs or voluntary initiatives.

5.9 Employees

At December 31, 2020, we employed approximately 23,100 people. The approximate breakdown of employees is as follows:

Business Unit	Number of Employees
Retail	15,200
Potash	2,700
Nitrogen	1,700
Phosphate	1,500
Corporate	1,700
Shared services group [1]	300
Total	**23,100**

1 Our shared services group provides sales and logistics services to our Potash, Nitrogen and Phosphate operations.

We have entered into 14 collective bargaining agreements with labor organizations representing employees. The following table sets forth the plant locations where we have entered into collective bargaining agreements and their respective expiry dates.

Plant Location	Collective Bargaining Agreement Expiry Date
Allan, Saskatchewan	April 30, 2022
Cory, Saskatchewan	April 30, 2022
Lanigan, Saskatchewan	January 31, 2021 [1]
Patience Lake, Saskatchewan	April 30, 2022
Regina, Saskatchewan	December 31, 2024
Regina, Saskatchewan	December 31, 2024
Rocanville, Saskatchewan	May 31, 2023
Vanscoy, Saskatchewan	April 30, 2018 [1]
Mulberry, Florida	May 31, 2021
White Springs, Florida	December 10, 2021
Americus, Georgia	June 30, 2023
Greenville, Mississippi	August 27, 2021
Cincinnati, Ohio	November 1, 2024
Lima, Ohio	October 31, 2022

1 The terms of this collective bargaining agreement, including new expiry date, remain under renegotiation as of the date hereof.

We believe we have an effective working relationship with our employees, and the unions representing them.

5.10 Social and Environmental Policies

Code of Ethics

Nutrien's most important assets are our employees, customers, shareholders, suppliers and the communities in which we operate. It is critical that we maintain the trust of each of these stakeholders. Our Code of Ethics ("Code") helps us fulfill our responsibilities by: committing to the public and our stakeholders our uncompromising integrity in every aspect of our business; describing our values and principles of business conduct, including our own high standards and fundamental respect for the rule of law; guiding employees on how to engage in ethical decision making in all of our operations around the world; and outlining our approach to interacting ethically with stakeholders and acting in the best interest of shareholders. The Code also outlines our commitment to the safety of people and protection of the environment.

We actively promote integrity through the Code and numerous supporting policies, which are reinforced by risk assessments, due diligence procedures, training and our compliance hotline. In 2020, all Nutrien employees received formal training on the Code and other compliance-related topics. Our confidential 24-hour, 365 days a year, externally administered compliance hotline allows employees to report any violations or suspected violations of the Code or other associated Nutrien policies, or any other illegal or unethical behavior. The Code also clearly sets out our non-retaliation policy which is designed to enable employees to raise good faith issues in a safe environment without fear of retaliation.

Anti-Corruption Policy

We operate in a wide range of jurisdictions and are vigilant and proactive in detecting and preventing corruption. Our Anti-Corruption Policy requires those who work on behalf of Nutrien to ensure that their own conduct fulfils Nutrien's commitment to compliance with all applicable anti-bribery and anti-corruption laws. It applies to Nutrien's directors, officers, employees, representatives, consultants, and other agents of Nutrien and each of its subsidiaries and in every country where we do business.

Nutrien maintains an anti-corruption program that includes:

- Identifying high-risk third parties, including acquisition targets and potential joint venture partners, and conducting appropriate diligence;
- Incorporating anti-corruption clauses in contracts and/or obtaining certifications that include anti-corruption language for high-risk third parties;
- Requiring anti-corruption training and other risk mitigation steps where appropriate, such as annual certification or continued monitoring to identify and address any potential issues; and
- Maintaining appropriate books and records and an appropriate system of internal accounting controls.

Workplace Policies

We have adopted a robust diversity and inclusion strategy that focuses on increasing gender diversity and match-to-market representation of visible minorities, including Indigenous peoples in Canada. Within the strategy, we are committed to increasing diversity of our workforce while increasing inclusive practices and a sense of belonging for our employees. We implemented a Respect in the Workplace Policy, an Inclusive Workplace Commitment Statement, and an Equal Employment and Affirmative Action Policy. Implementation of our workplace diversity and inclusion initiatives is supported by training and workshops, employee resource groups, and ongoing monitoring of internal employment trends (new hires, promotion and turnover) for diverse employee groups. We benchmark our inclusion maturity using a comparison of our practices to the Global Diversity and Inclusion Benchmark model as a basis for continuous improvement.

Supplier Code of Ethics and Procurement Procedure

Our Supplier Code of Ethics ("Supplier Code") is aligned with our commitment to the 10 principles of the United Nations Global Compact and international standards. The Supplier Code identifies the values that we expect our suppliers to embrace and applies to those suppliers that provide products or services to us around the world.

Commitment by our suppliers to the principles of the Supplier Code is significant in our decision-making process. Our legal and compliance teams support the due diligence process for high-risk suppliers, which includes ensuring that appropriate language is included in contracts with various suppliers and a requirement that the supplier adhere to our Supplier Code. Where suppliers refuse to follow the principles of the Supplier Code or show signs that they are not committed to improving their practices to comply with its principles, Nutrien will review its relationship with the supplier. Where contractual commitments and applicable laws permit, this review may include termination of our relationship with the non-compliant supplier.

We are also committed to supporting diversity and inclusion throughout the procurement process. Our procurement policies and procedures – including our Procurement Diversity and Inclusion Procedure – are designed to ensure that fair consideration is given to all potential suppliers. We have developed an Aboriginal Content Playbook to assist suppliers in developing local Aboriginal content in their own organizations and supply chains. In addition, we work with Aboriginal opportunity partner companies to provide contracting opportunities at our worksites. We believe in building and maintaining relationships of mutual respect with Aboriginal communities through our procurement practices and extend this further by providing employment and training opportunities and community investments.

Safety, Health and Environment ("SH&E") Policy

We are committed to the care and protection of our people, environment, community and customers. We honor that commitment by making safety a core value of our organization, as we grow our world from the ground up.

Under our SH&E Policy, our goals are to:

- Protect our people, assets, facilities, communities and environment;
- Proactively prevent incidents and minimize risk by continuously improving our safety, health and environmental performance;
- Promote employee physical and mental health and well-being; and
- Drive excellence in safety, health and environment across our operations and supply chain.

We strive to accomplish these goals through our SH&E strategy of "home safe, every day," which brings our safety vision, principles and priorities to life and guides our daily actions and behaviors. Nutrien will ensure leaders and their teams are well-supported with SH&E expertise and resources to help everyone go home safe, every day.

Our SH&E culture continues to evolve, purposefully focused on "Growing a Culture of Care" rallying around four pillars: Lead, Collaborate, Challenge and Trust as our consistent base. Nutrien's SH&E management further focuses on people, systems, processes and tools to accomplish continual improvement.

SH&E performance, measurement, analysis and continuous improvement occur with engagement at multiple organization levels. The Safety and Sustainability Committee assists the Board to fulfill its oversight responsibilities with respect to activities related to safety, health, the environment and security, sustainability and the integrity of Nutrien personnel, assets and products. Policies and strategy are reviewed annually for relevance and modified as appropriate. Committees meet on a recurring basis to monitor performance against annual and longer-term performance goals, discuss plans, strategies and processes, in addition to evaluating opportunities for improving our SH&E systems.

Leadership, commitment, resource allocation, responsibility, communication, learning and technology are examples of our continually evolving SH&E systems. Nutrien provides further details in its defined SH&E policies, programs and processes addressing specific hazards, risks, operations and tasks.

We lead through the integration of an SH&E management system, including methods of governance, expectations, reference documentation and communication of consistent SH&E management and performance expectations applicable to our organization. Our business units and, where appropriate, individual facilities strengthen our management system expectations with further evaluation, elimination, mitigation and controls necessary to manage risks unique to their operations. Development of SH&E systems, guidance, standards and continuous improvement occurs at the business unit level through operational committees integrated with the central SH&E teams. Performance and risk management matters are identified, evaluated, addressed and communicated throughout our organization.

Technical support and assurance for our operations are managed at multiple levels within the organization, including central or corporate, business unit, and site levels. We share responsibility for maintaining integrated systems, performance monitoring, providing technical expertise and conducting business unit SH&E audits. The use of an integrated and structured assurance program enables us to achieve continuous improvement and consistent management practices at our facilities and in our operations. In addition to a central SH&E team providing a consistent resource across our organization, we have established SH&E organizations in each business unit with clear lines of responsibility, accountability and visibility. This central and distributed structure enables us to focus on both oversight and governance as well as direct engagement in our operations and activities.

We maintain global ongoing working relationships with industry associations and regulatory agencies. These relationships ensure new or changing regulations are identified, understood, evaluated and communicated in advance of change. Industry association relationships enhance our risk management compliance with regulatory expectations and provide opportunities to share best practice, innovation and leading SH&E enhancement technologies.

Sustainability

In 2020, we continued to develop our sustainability strategy to advance resilient agricultural practices and strengthen sustainable food production through innovative solutions that balance environmental, social and economic factors in our business and across our value chain. Nutrien's sustainability strategy complements our corporate strategy by providing key enablers for organizational success and bringing our purpose to life.

We published our first Environmental, Social and Governance ("ESG") report in April 2020, which was designed to provide the investment community and other stakeholders with information about how we are managing ESG topics relevant to Nutrien. The report can be viewed on the Company's website at www.nutrien.com.

In 2020, we announced Nutrien's unique end-to-end Carbon Program that partners directly with growers from crop planning to harvest with the goal of supporting sustainable agriculture and enhancing grower profitability. We continue to develop our climate and ESG strategies and disclosures with specific near- and long-term ESG targets. We anticipate providing this information when we issue our 2021 ESG report in the first half of 2021.

5.11 Risk Factors

Our performance and our future operations are and may be affected by a wide range of risks. The following section describes our key risks and uncertainties. Any or all of these risks, or other risks not presently known to us or that we do not deem material, could have a material adverse effect on our business, financial condition, results of operations, cash flows, value of our debt securities and, in certain cases, our reputation.

Significant changes and trends in agriculture could adversely impact our business

The agricultural landscape continues to evolve at an increasingly fast pace as a result of factors including, but not limited to, farm and industry consolidation, agricultural productivity, technology developments, soil health and climate change.

Farm consolidation in the US and other developed markets has been ongoing for decades and is expected to continue as grower demographics shift and advancements in innovative technology and equipment enable farmers to manage larger operations to create economies of scale in a lower-margin, more capital-intensive environment. Increased consolidation in the crop nutrient industry has resulted in greater resources dedicated to expansion, research and development opportunities, leading to increased competition in advanced product offerings and innovative technologies. Some of these competitors have greater total resources than us or are state-supported, which make them less vulnerable to industry downturns and better positioned to pursue new expansion and development opportunities.

The advancement and adoption of technology and digital innovations in agriculture and across the value chain have increased and are expected to further accelerate as grower demographics shift and pressures from consumer preferences, governments and climate change initiatives evolve. The development of seeds that require less crop nutrients, development of full or partial substitutes for our products, or developments in the application of crop nutrients such as improved nutrient use or efficiency through use of precision agriculture could also emerge, all of which have the potential to adversely affect the demand for our products and results of operations.

The prospective impact of climate change on our operations and those of our customers and farmers remains uncertain. The impacts of climate change include changing rainfall patterns, water shortages, wildfires, rising sea levels, changing storm patterns and intensities, and increasing temperature levels. These impacts vary by geographic location and the risk relating to the impact of climate change could include acute risks resulting from increased severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns. Risks also arise from a wide variety of policy, regulatory, legal, technological and market responses to the challenges posed by climate change.

These factors as well as other factors affecting long-term demand for our products and services (such as population growth and changes in dietary habits) could adversely impact our strategy, demand for our products and financial performance.

Shifting market fundamentals may result in a prolonged agriculture downturn

Global macro-economic conditions and shifting market fundamentals, including trade tariffs and restrictions and increased price competition, or a significant change in agriculture production or consumption trends, could lead to a sustained environment of reduced demand for our products, and/or low commodity prices.

We are subject to intense price competition from both domestic and foreign sources, including state-owned and government-subsidized entities. Crop nutrients, including potash, nitrogen and phosphate, are global commodities with little or no product differentiation, and customers make their purchasing decisions principally on the basis of delivered price and, to a lesser extent, on customer service and product quality. Historically, selling prices for our products have fluctuated in response to periodic changes in supply and demand conditions. Supply is affected by available capacity and operating rates, raw material costs and availability, government policies and global trade that could adversely affect our operating results.

Periods of high demand, high-capacity utilization and increasing operating margins tend to result in investment in production capacity, which may cause supply to exceed demand and capacity utilization and realized selling prices for our products to decline, resulting in possible reduced profit margins. Such conditions could also include write-downs in the value of our inventory and production assets, and temporary or permanent curtailments of production. Competitors and potential new entrants in the markets for potash, nitrogen and phosphate have in recent years expanded capacity, begun construction of new capacity, or announced plans to expand capacity or build new facilities. The extent to which current global or local economic and financial conditions, changes in such conditions or other factors may cause delays or cancellation of some of these ongoing or planned projects, or result in the acceleration of existing or new projects, is uncertain. Future growth in demand for our products may not be sufficient to absorb excess industry capacity.

Our business is cyclical, which can result in periods of industry oversupply during which our results of operations may be negatively impacted, as the price at which we sell our products typically declines during such period, resulting in possible reduced profit margins, and could include writedowns in the value of our inventory and temporary or permanent curtailments of production.

We are impacted by global market and economic conditions that could adversely affect agriculture commodity trade flows and demand for crop nutrients or increase prices for, or decrease availability of, raw materials and energy necessary to produce our products. These conditions include international trade disputes, international crises or risks thereof (such as pandemics or epidemics, including the continued uncertainty in the global market resulting from the ongoing COVID-19 pandemic), rising incomes in developing countries, the relative value of the US dollar and its impact on the importation of fertilizers, foreign agricultural policies, and the existence of, or changes in, import or foreign currency exchange barriers in certain foreign markets and other regulatory policies of foreign governments, as well as the laws and policies affecting foreign trade and investment.

Trade disputes, tariffs and other restrictions may lead to volatility in commodity prices, disruptions in historical trade flows and shifts in planting patterns that could have an adverse effect on our business, financial condition and results of operations. Additionally, some of our customers require access to credit to purchase our products and a lack of available credit to customers in one or more countries, due to this deterioration, could adversely affect demand for crop nutrients as there may be a reluctance to replenish inventories in such conditions.

Our business may be adversely affected by changing regulations

We are subject to numerous federal, state, provincial and local environmental, health and safety laws and regulations, including laws and regulations relating to land, water and raw material use and management; the emission of contaminants to the air or water; land reclamation; the generation, treatment, storage, transportation, disposal and handling of hazardous substances and wastes; the clean-up of hazardous substance releases; royalties and taxes (including income taxes); and the demolition of existing plant sites upon permanent closure. Specifically, our mining and manufacturing processes release CO_2 and other GHGs and consume energy generated by processes that result in GHG emissions.

We incur significant costs and associated liabilities in connection with these laws and regulations. There are substantial uncertainties as to the nature and timing of any future regulations with many of the laws and regulations continuing to become increasingly stringent, and the cost of compliance can be expected to increase over time. New or revised laws or regulations may result from pressure on law makers and regulators to address climate change, transition to a low-carbon economy or to address concerns related to fertilizer and food prices, accidents, terrorism or transportation of potentially hazardous substances. Increased or more stringent laws or regulations, if enacted, could impact our ability to produce or transport certain products, increase our raw material, energy, transportation, and compliance costs, reduce our efficiency, require us to make capital improvements to our facilities and have a negative effect on our customer satisfaction, reputation and financial performance. To the extent that such regulations, including GHG restrictions, are not imposed in the countries where our competitors operate or are less stringent than regulations that may be imposed in the US, Canada or the other jurisdictions in which we operate, our competitors may have cost or other competitive advantages over us.

We hold numerous environmental, mining and other governmental permits and approvals authorizing operations at each of our facilities. Continuation and/or expansion of our operations is dependent upon renewing or securing the necessary environmental or other permits or approvals. A decision by a government agency to deny or delay issuing a new or renewed material permit or approval, or to revoke or substantially modify an existing permit or approval, could materially adversely affect our ability to continue operations at the affected facility.

Various stakeholders, including legislators and regulators, shareholders and non-governmental organizations, as well as companies in many business sectors, including Nutrien, are continuing to examine ways to reduce GHG emissions. The regulation of GHG emissions could result in additional costs to Nutrien in the form of taxes or emission allowances, facilities improvements, energy costs or otherwise, which, in turn, could increase Nutrien's operational costs. In addition, the regulation of GHG emissions may cause increased input costs and compliance-related costs for agricultural customers, which could result in lower demand for our products and reduced revenues. Because the impact of any future GHG-related legislative or regulatory requirements on Nutrien's business and products is dependent on the timing and design of such requirements, Nutrien is unable to predict with any certainty the potential impact on it at this time.

We are also subject to antitrust laws in various countries throughout the world. A significant portion of our business activities are conducted in countries under existing trade agreements and regulations. Changes in antitrust laws, trade agreements or regulations may limit our operations or the operations of Canpotex, and could negatively impact opportunities for future acquisitions or organic growth.

Our information technology systems, infrastructure and data may become the target of cybersecurity attacks

Information technology systems are embedded in our business and operational control systems and, as we expand our digital platform, financial lending programs and process automation systems, we may become more exposed to cyberattacks, which continue to become increasingly sophisticated. Further, remote working arrangements during the COVID-19 pandemic have required adjusted tactics to respond to a changing threat landscape and may result in increased cybersecurity risk exposure. Cybersecurity risks include attacks on information technology and infrastructure by hackers, damage or loss of information due to viruses, the unintended disclosure of confidential information and/or personally identifiable information, the misuse or loss of control over computer control systems, and breaches (intentional or otherwise). Targeted attacks on our systems (or on systems of third parties that we rely on), failure or non-availability of a key information or operations technology systems, or a breach in security measures designed to protect our technology systems could result in property damage, theft, misuse, modification and destruction of information, including trade secrets and confidential business information and/or personally identifiable information, and cause business disruptions, reputational damage, extensive personal injury and third-party claims, which could negatively impact our operations and our financial performance.

Nutrien collects certain personally identifiable information and other data integral to parts of its business processes and activities. This information and other data is subject to a variety of US, Canadian and foreign laws and regulations, including oversight by various regulatory or other governmental bodies, and laws and regulations concerning the collection and use of such information and other data obtained from their residents or by businesses operating within their jurisdictions. Any inability, or perceived inability, to adequately address privacy and data protection concerns, even if unfounded, or to comply with applicable laws, regulations,

policies, industry standards, contractual obligations or other legal obligations (including at newly acquired companies) could result in additional cost and liability to Nutrien or its officials, damage our reputation, inhibit sales and otherwise adversely affect our business.

Our operations may be affected by political, economic and social instability in the areas in which we operate

We are a global business with significant operations in Canada and the US as well as operations outside of North America, including Australia, South America, European countries and Trinidad, with a focus on expanding our international presence in Brazil. We also hold equity investments primarily in China and Argentina.

We are subject to numerous risks and uncertainties relating to international sales and operations, including: difficulties and costs associated with complying with a wide variety of complex laws, treaties and regulations; abrupt or unexpected changes in regulatory environments; increased government regulation of the economy and/or state ownership of enterprises; changes in tax or royalty laws and regulations; forced divestures or changes to or nullification of existing agreements, mining permits or leases; political and economic instability, including the possibility for civil unrest, inflation and adverse economic conditions resulting from governmental attempts to reduce inflation, such as imposition of higher interest rates and wage and price controls; nationalization of properties or assets by foreign governments; the imposition of tariffs, exchange controls, trade barriers or other restrictions; restrictions on monetary distributions; public health crises, including the ongoing COVID-19 pandemic, and actions taken and measures imposed by government or regulatory bodies in connection therewith; and currency exchange rate fluctuations between the US dollar and foreign currencies.

The occurrence of any of the above risks and uncertainties in the countries in which we operate or elsewhere could jeopardize or limit our ability to transact business and could adversely affect our revenue and operating results and the value of our assets located in such countries.

Our governance and compliance processes, which include the review of internal control over financial reporting and specific internal controls in relation to offers of things of value to government officials and representatives of state-owned enterprises, may not prevent potential violations of law, accounting or governance practice. Our Code, together with our mandatory policies, such as our anti-corruption and anti-fraud policies, may not prevent instances of fraudulent behavior and dishonesty nor guarantee compliance with legal or regulatory requirements. This may lead to regulatory fines, disgorgement of profits, litigation, loss of operating licenses or reputational damage.

We may fail to maintain the support of our stakeholders for our business plans

Our stakeholders, which consist of shareholders, customers, employees, suppliers, global and Indigenous communities, and governments, among others, may place an increasing importance on the structure of our business, our ability to execute on our strategy, and our core sustainability and social responsibilities. Underperformance due to weak market fundamentals or business issues, inadequate communication, engagement and/or collaboration with our stakeholders, inadequate management of climate change or other environmental issues, or dissatisfaction with our practices or strategic direction including those directed to address ESG matters, may lead to a lack of support for our business plans. Loss of stakeholder confidence impairs our ability to execute on our business plans, negatively impacts our ability to produce or sell our products and may also lead to reputational and financial losses, or shareholder action.

We may fail to develop the right organizational culture, talent and resources

Our ability to attract and retain qualified top talent and provide the necessary organizational structure, programs and culture to engage and develop our employees is crucial to our growth and achieving our business results.

Although we strive to be an employer of choice, competition for skilled employees in certain geographical areas can be significant and we may not be successful in attracting, developing or retaining such skilled employees. In addition, we invest significant time and expense in training our employees, which increases their value to competitors who may seek to recruit them. Failure to develop the right organizational structure or culture could result in decreased productivity, reliability, efficiency and safety performance, higher costs, or reputational harm. It could also negatively impact our ability to take on new projects or acquisitions and sustain operations, or meet diversity and inclusion goals, which might negatively affect our operations or our ability to grow.

New digital technologies or innovations could adversely impact our Retail business model

Digital innovations, increased research and development activities and use of new technology in the agriculture market by new or existing competitors could alter the competitive environment, resulting in existing business models being disrupted, which may adversely impact our Retail operations and financial performance.

We may fail to effectively redeploy capital to achieve sustained growth

Challenges may arise in the capital allocation process due to changing market conditions, including the unavailability, due to geopolitical, market or other reasons, of appropriate capital deployment opportunities, and our ability to anticipate and incorporate such changes in our decision-making process. Inefficiencies in the capital allocation process or decisions that are not consistent with strategic priorities or that do not properly assess risk may also lead to inefficient deployment of capital. Failure to allocate capital in an effective manner may lead to reduced returns on capital invested, operational inefficiencies, damage to our reputation or limitations on our access to capital.

When we undertake any strategic initiatives, our ability to achieve the expected returns and other benefits will be affected by our degree of preparedness and ability to execute.

- We have undertaken and continue to undertake various projects including capital and business process improvement/ transformation projects. These projects involve risks, including (but not limited to) difficult environmental conditions, poor project prioritization and capital allocation, factors negatively impacting costs (such as escalating costs of labor and materials, unavailability and underperformance of skilled personnel, suppliers of materials or technology and other third parties we retain, design flaws or operational issues, or poor project management oversight) or poor transition through project stages. Any of the foregoing risks could impair our ability to realize the benefits we had anticipated from the projects and negatively impact our financial performance.

- With respect to any completed and future acquisitions, we are dependent upon our ability to successfully consolidate functions and integrate operations, technology, systems, procedures, and personnel in a timely and efficient manner. The integration of assets and operations requires the dedication of management effort, time and resources, which may divert management's focus and resources from other strategic opportunities or operational matters during the process. The integration process with respect to any completed or future acquisitions may result in the disruption of our existing business and customer relationships, which may adversely affect our ability to achieve the anticipated synergies and other benefits and may, in turn, negatively affect our financial performance.

- We also continue to evaluate the potential disposition of assets and operations that may no longer help us meet our objectives. When we decide to sell assets or operations, we may encounter difficulty in finding buyers or executing alternative exit strategies on acceptable terms or in a timely manner, which could delay the accomplishment of our strategic objectives.

We may fail to maintain high levels of safety and health or to protect the environment

Our operations are subject to hazardous safety and environmental risks inherent in mining, manufacturing, transportation, storage and distribution of chemical fertilizers, including ammonia, which is highly toxic and corrosive. These risks can include: underground water inflows at our potash mines; explosions; fires; severe weather and natural disasters; train derailments, collisions, vessel groundings and other transportation and maritime incidents; leaks and ruptures involving storage tanks, pipelines and railcars; spills, discharges and releases of toxic or hazardous substances or gases; uncontrolled tailings, gypsum stack or other containment breaches; significant subsidence from mining activities; and deliberate sabotage and terrorist incidents. We also have personnel who work or travel in higher risk countries and are subject to increased safety and security risks as a result.

The potash mining process is complex and subject to certain geological conditions and hazards, including the presence of certain gases, such as those containing hydrogen sulfide, and the presence of water-bearing strata above and below many underground mines, which pose the risk of water inflows. It is not uncommon for water inflows of varying degrees to occur in potash mines; however, it is difficult to predict if, when or to what degree such inflows could occur. At our Saskatchewan potash mines we have minor water inflows that we actively monitor and manage, as appropriate. Significant inflows at our potash mines could result in increased operational costs, increased risk of personal injury, production delays or stoppages, the abandonment and closure of a mine, and/or damage to our reputation. The risk of underground water inflows, as with most other underground risks, is currently not insured.

Failure to prevent or appropriately respond to a safety, health or security incident could result in injuries or fatalities among our employees, contractors or residents in communities near our operations. Such incidents may lead to liabilities arising out of personal injuries or death, operational interruptions and shutdown or abandonment of affected facilities. Preventing or responding to accidents could require us to expend significant managerial time and effort, and financial resources to remediate safety issues, compensate injured parties or repair damaged facilities. Any of the foregoing could have an adverse impact on our ability to produce or distribute product, our financial results, and our reputation. Failure to prevent a significant environmental incident could be harmful to our employees, contractors and communities in which we operate, and impact the biodiversity, water resources and related ecosystems near our operations. Such incidents could also adversely impact our operations, financial performance or reputation.

Greenhouse Gas Emissions and Climate Targets

Our ability to lower GHG emissions and achieve our climate targets is subject to numerous risks and uncertainties and our actions taken in implementing our objectives may also expose us to certain additional and/or heightened financial and operational risks.

Reducing our GHG emissions and achieving our climate targets rely on, among other things, our ability to implement and improve energy efficiency at all of our facilities, successful implementation of our pilot programs, partnerships with growers and third parties, future development and growth opportunities, and our ability to develop and deploy new technologies. In the event that we are unable to implement these strategies and technologies as planned, or in the event that such strategies or technologies do not perform as expected, we may be unable to lower our GHG emissions or meet our targets on the current timelines, or at all.

In addition, achieving our GHG emissions reductions and climate targets could require significant capital expenditures and resources, with the potential that the costs required to achieve our targets could differ from our original estimates and expectations, which differences may be material. The overall cost of investing in and implementing an emissions reduction strategy and technologies in furtherance of such strategies, and the resultant change in the deployment of our resources and focus, could have a material adverse effect on our business, financial condition, reserves and results of operations.

An inability to successfully manage the implementation of our new enterprise resource planning system

As part of our digital transformation, we have implemented a new enterprise resource planning ("ERP") system. This system will replace many of our existing operating and financial systems. Such an implementation is a major undertaking, both financially and from a management and personnel perspective. Any disruptions, delays or deficiencies in the design and implementation of our new ERP system could adversely affect our ability to process orders, ship products, provide services and support, send invoices and track payments, fulfill contractual obligations or otherwise operate our business and affect our internal controls over financial reporting.

Our business and operations are subject to other general and ongoing risks, most of which are outside our control

Epidemics, pandemics or other such crises or public health concerns in regions of the world where we have operations or source material or sell products could impact or disrupt our business.

The ongoing COVID-19 pandemic has resulted in travel bans and restrictions, quarantines, and extended shutdowns of certain businesses around the world, as well as a deterioration of general economic conditions. These factors or any governmental or other regulatory responses or developments or health concerns in countries in which we operate could result in operational restrictions, supply chain disruptions, social and economic instability, or labor shortages. More specifically, there remains uncertainty relating to the potential impact that the COVID-19 pandemic could ultimately have on our business. It is still possible that the COVID-19 pandemic could significantly impact our operations, create supply chain challenges and disruptions, and/or limit our ability to timely sell or distribute our products in the future, which would negatively impact our business, financial condition and operating results. It is also possible that the COVID-19 pandemic could negatively impact our customers, even though the agriculture sector is classified as an essential service. Any significant long-term downturn in the global economy or agricultural markets could impact the Company's access to capital or credit ratings, or our customers' access to liquidity, which could increase our counterparty credit exposure.

The ultimate magnitude of the effects of the COVID-19 pandemic, including the extent of its impact on the Company's financial performance, will be determined by the length of time that the pandemic continues, its effect on the demand for the Company's products and services and the supply chain, as well as the effect of governmental regulations imposed in response thereto. We cannot at this time predict the full extent or impact of the COVID-19 pandemic, but it could have an adverse effect on our business, financial condition, financial results and/or cash flows.

Canpotex may be dissolved or its ability to operate impaired

Canpotex is the offshore marketing, transportation and distribution company we rely on to deliver our potash to customers outside Canada and the US. Unexpected changes in laws or regulations, market or economic conditions, our (or our venture partner's) business, or otherwise could threaten the existence or effectiveness of Canpotex. A trusted potash brand could be lost and our access to key offshore markets negatively impacted resulting in a less efficient logistics system, decreased sales, higher costs or lower net earnings from offshore sales.

We are exposed to various market risks that may impact our operating results

We are exposed to various market factors that may impact our operating results including: changes in the price of, or ability to source, raw materials and energy, which could, among other things, impact our gross margins and profitability; commodity price volatility, including the possibility of asset impairment as a result thereof; currency volatility and risk, including as a result of the translation of foreign subsidiaries' financial statements to US dollars for consolidation at the Nutrien level; and fluctuations in

interest rates, which could negatively impact our financial results given our use of floating rate debt, floating rate credit facilities and commercial paper, as well as the refinancing of long-term debt and anticipated future financing needs. We seek to manage a portion of the risks relating to changes in commodity prices and foreign currency exchange rates by using derivative instruments; however, such instruments may be ineffective in fully mitigating such risks.

Changes in the price of raw materials and energy required to produce our products, including natural gas, which is the principal raw material used to manufacture our nitrogen products and a significant energy source in the potash milling and mining process, could have a material impact on our business. The price of raw materials and energy can fluctuate widely for a variety of reasons, including changes in availability because of additional capacity or limited availability due to curtailments, regulatory changes, including changes related to production of certain raw materials or energy sources, or other operating problems. Other external factors beyond our control can also cause volatility in raw materials prices, including, without limitation, general economic conditions, the level of business activity in the industries that use our products, weather conditions and forecasts, competitors' actions, international events, the ongoing COVID-19 pandemic and circumstances, and governmental regulation in the US and abroad. Because most of our products are commodities or derived from commodities, there can be no assurance that we will be able to recover increases in the price of such raw materials through an increase in the selling price of our related crop nutrient products. Conversely, when the market prices for these raw materials rapidly decrease, the selling prices for related crop nutrients can fall more rapidly than we are able to consume our raw material inventory that we purchased or committed to purchase at higher prices. As a result, our costs may not fall as rapidly as the selling prices of our products. Until we are able to consume the higher-priced raw materials, our gross margins and profitability may be adversely affected.

We have benefited from relatively low North American natural gas prices in recent years; however, the price for natural gas in North America can vary significantly compared to the price for natural gas in Europe and Asia. Significantly lower natural gas prices in Europe and/or Asia may give our competitors in Europe and Asia a competitive advantage, which could, in turn, decrease international and domestic product prices and reduce our margins. In addition, higher natural gas prices, particularly in North America, during a period of low crop input selling prices could adversely affect our results of operations.

There is also a risk to production at our various facilities due to concerns over the availability of natural gas supplies. Nitrogen facilities in Argentina and Trinidad have all experienced supply strains or curtailments. Continued or increased natural gas shortages may result in reduced production available for sale and higher production costs per tonne.

We may be unable to access sufficient, cost-effective and timely transportation, distribution and storage of our products

We rely on railroad, trucking, pipeline and other transportation service providers to transport raw materials to our manufacturing facilities, to coordinate and deliver finished products to our storage and distribution system and our Retail centers, and to ship finished products to our customers.

Our (or the third parties upon which we rely) ability to provide sufficient, cost-effective and timely transportation and storage of product may be challenged due to a number of factors, including labor disputes, system failures, accidents (such as spills or derailments), delays, adverse weather or other environmental events, adverse operating conditions (including aging transportation infrastructure, railroad capacity constraints, or changes to rail or ocean freight systems), swings in demand for our products, increased shipping demand for other products, adverse economic conditions, a change in our export, sales or marketing company relationships, or otherwise. This could result in delays and increased costs, lost revenue and reputational damage with our customers.

Adverse weather conditions may decrease demand for our products or delay grower purchases

Our business and our customers are impacted by weather patterns and conditions. Adverse conditions, including as a result of climate change, that can delay or intermittently disrupt fieldwork during the planting and growing seasons may cause agricultural customers to use different forms of crop nutrients and crop protection products, which may adversely affect demand for the forms of products that we sell or may impede farmers from applying our crop nutrients and crop protection products until the following growing season, or in some cases not at all, resulting in lower demand for our products and reduced revenues. In addition, we face the significant risk and cost of continuing to carry inventory should our customers' activities be curtailed during their normal application seasons. We must manufacture and distribute product throughout the year in order to meet peak season demand, as well as react quickly to unexpected changes in weather patterns that affect demand. Weather can also have an adverse effect on crop yields, which could lower the income of growers and impair their ability to purchase our crop nutrients, crop protection, and seed products and services. As a result, our quarterly financial results may vary significantly from one year to the next due to weather-related shifts in planting schedules and purchasing patterns, and losses due to adverse weather conditions in one quarter may not be recovered in the following season.

We may be unable to access capital on a cost-effective or timely basis

We rely on access to debt capital markets to finance our day-to-day and long-term operations. Access to and cost of capital may be affected by factors not specific to Nutrien, such as adverse conditions in the credit markets, general and industry-specific market and economic conditions, interest rate fluctuations, and continued uncertainty due to the ongoing COVID-19 pandemic. Our access to capital will also be dependent on our credit ratings, which are determined by, among other things, the level and quality of our earnings, our ability to generate cash flows, and restrictions on our ability to repatriate cash offshore. A credit rating downgrade could potentially limit our access to private and public credit markets and increase the costs of borrowing under our existing credit facilities. A downgrade could also limit our access to short-term debt markets and increase the cost of borrowing in the short-term and long-term debt markets. Inability to access capital on a cost-effective or timely basis may result in a loss of liquidity, an increase in the cost of capital or inability to execute on value-added transactions requiring significant capital. Our reputation and financial performance may be impacted by concerns regarding the contribution of our operations to climate change and could include a reduction in investor confidence and constraints on our ability to access capital markets.

Our operations are exposed to counterparty risk

We are exposed to the risks associated with counterparty performance, including credit risk and performance risk. We may experience material financial losses in the event of customer payment default for our products and/or financial derivative transactions.

We are subject to legal proceedings, the outcome of which may affect our business

We are, and may in the future be, involved in legal and regulatory proceedings, including matters arising from our activities or activities of predecessor companies. The outcome of these matters may be difficult to assess or quantify, and such matters may not be resolved in our favor. Such matters could result in unfavorable outcomes, including fines, sanctions, assessments of additional taxes (including interest and penalties) and other monetary damages against us or our directors, officers or employees. The defense of such matters may also be costly and time consuming, and could divert the attention of management and key personnel from our operations. We may also be subject to adverse publicity associated with such matters, regardless of whether such allegations are valid or whether we are ultimately found liable.

Our insurance coverage may not adequately cover our losses

We maintain property, business interruption, casualty and liability insurance policies, but we are not fully insured against all potential hazards and risks pertaining to our business. As a result, we may incur significant liability for which we are not fully insured. We are subject to various self-retentions, deductibles and limits under these insurance policies. The policies also contain exclusions and conditions that could have a material adverse impact on our ability to receive indemnification thereunder. Our policies are generally renewed annually. As a result of market conditions, our premiums, self-retentions and deductibles for certain insurance policies can increase substantially and, in some instances, certain insurance may become unavailable or available only for reduced amounts of coverage. In addition, significantly increased costs could lead us to decide to reduce, or possibly eliminate, coverage for certain hazards and risks.

We may be subject to labor disruptions or disputes

A significant portion of our workforce is unionized or otherwise governed by collective bargaining or similar agreements. In addition, two of our 14 collective bargaining agreements remain under renegotiation as of the date hereof. We are therefore subject to the possibility of organized labor disruptions. Adverse labor relations or contract negotiations that do not result in an agreement could result in strikes or slowdowns or impose additional costs to resolve these disputes. These disruptions may negatively impact our ability to produce or sell our products and/or cost of production. These disruptions may also impact our ability to recruit and retain personnel and could negatively affect our financial performance.

Our reported mineral reserves and mineral resources are only estimates

Our reported mineral reserves and mineral resources are only estimates. Our mineral reserves have been estimated in accordance with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects*, as required by Canadian securities regulatory authorities, and the Canadian Institute of Mining, Metallurgy and Petroleum Classification System and our mineral reserve disclosure is not required to adhere to US requirements. The estimated mineral reserves and mineral resources may not be recovered or may not be recovered at the rates estimated. Mineral reserves and mineral resources estimates are based on limited physical sampling and geophysical imaging, and, consequently, are uncertain because the samples and/or data may not be representative of the actual resources. Mineral reserves and mineral resources estimates may require revision (either up or down) based on actual production experience. Further, market fluctuations in the price of potash, as well as increased production costs or reduced recovery rates (including due to policy, legal, technological, market and societal responses to climate change), may render certain mineral reserves and mineral resources uneconomic and may ultimately result in a restatement of estimated resources and/or reserves.

5.12 Mineral Projects

See “Schedule B – Mineral Projects” for information regarding our Allan, Cory, Lanigan, Rocanville and Vanscoy Potash operations.

6 – Dividends

The declaration, amount and payment date of any dividend by Nutrien is at the discretion of the Board and will depend on numerous factors, including compliance with applicable laws and the financial performance, debt obligations, working capital requirements and future capital requirements of Nutrien and its subsidiaries. See “5 – Description of the Business – 5.11 Risk Factors.”

Dividends declared by Nutrien for the years ended December 31 were as follows:

2020		2019		2018	
Date Declared	**Per Common Share**	**Date Declared**	**Per Common Share**	**Date Declared**	**Per Common Share**
February 19, 2020	0.45	May 10, 2019	0.43	February 20, 2018	0.40
May 6, 2020	0.45	July 30, 2019	0.45	May 23, 2018	0.40
August 10, 2020	0.45	December 13, 2019	0.45	July 19, 2018	0.40
December 10, 2020	0.45			November 5, 2018	0.43
				December 14, 2018	0.43
Total	**1.80**	**Total**	**1.33**	**Total**	**2.06**

7 – Description of Capital Structure

7.1 General Description of Capital Structure

Authorized Capital

The authorized share capital of Nutrien consists of an unlimited number of Common Shares and an unlimited number of preferred shares issuable in series.

As of the date hereof, 569,790,353 Common Shares were issued and outstanding and no preferred shares were issued or outstanding. The following is a general description of the material rights, privileges, restrictions and conditions attached to the Common Shares and the preferred shares.

Common Shares

Each Common Share entitles the holder to: (i) vote at all meetings of holders of Common Shares (except meetings at which only holders of a specified class or series of shares of Nutrien are entitled to vote as provided in the CBCA) and to one vote for each Common Share held on all polls taken at such meetings; (ii) receive, subject to the rights of the holders of another class of shares of Nutrien, any dividend declared by the Board from time to time, in their absolute discretion, in accordance with applicable law; and (iii) receive, subject to the rights of holders of another class or series of shares of Nutrien, the remaining property of Nutrien on the liquidation, dissolution or winding up of Nutrien or any other distribution of the assets of Nutrien for the purposes of winding up its affairs, whether voluntary or involuntary. There are no pre-emptive or conversion rights attaching to the Common Shares and the Common Shares are not subject to redemption. All Common Shares currently outstanding and to be outstanding upon exercise of outstanding options and other securities, as applicable, are, or will be, fully paid and non-assessable.

Our by-laws provide for certain rights of holders of our Common Shares in accordance with the provisions of the CBCA. Such by-laws may be amended either by a majority vote of the holders of Common Shares or by a majority vote of the Board. Any amendment of the by-laws by action of the Board must be submitted to the next meeting of our shareholders whereupon the by-law amendment must be confirmed, confirmed as amended or rejected by a majority vote of the shareholders voting on such matter.

Preferred Shares

The preferred shares may at any time and from time to time be issued in one or more series with the designation, rights, privileges, restrictions and conditions attaching to each series of the preferred shares to be determined by the Board.

The preferred shares of each series rank on a parity with the preferred shares of every other series, and are entitled to preference over the Common Shares and any other shares of the Company ranking junior to the preferred shares, with respect to (i) the payment of dividends; (ii) the distribution of property in the event of the liquidation, dissolution or winding up of Nutrien; and (iii) such other preferences as may be determined by the Board.

Except as specifically provided in the rights, privileges, restrictions and conditions attaching to any series of preferred shares and except as provided by the CBCA, the holders of preferred shares are not entitled to receive notice of or attend any meeting of the shareholders of the Company or to vote at any such meeting for any purpose.

The provisions attaching to the preferred shares as a class may be added to, changed or removed, and the Board may create shares ranking prior to the preferred shares, only with the approval of the holders of the preferred shares as a class, any such approval to be given by the holders of not less than 66 $^{2}/_{3}$ percent of the preferred shares in writing by the registered holders of the preferred shares or by resolution at a meeting of such holders.

7.2 Constraints

There are no constraints imposed on the ownership of Nutrien's securities to ensure that the Company has a required level of Canadian ownership.

7.3 Debt Ratings

The following information relating to Nutrien's credit ratings is provided as it relates to Nutrien's financing costs, liquidity and operations and to satisfy disclosure requirements under applicable Canadian securities rules. Our ability to access reasonably priced debt in the capital markets is dependent, in part, on the quality of our credit ratings. We continue to maintain investment-grade credit ratings for our long-term debt. A downgrade of the credit rating of our long-term debt could increase the interest rates applicable to future borrowings.

Commercial paper markets are normally a source of same-day cash for the Company. Our access to the US commercial paper market primarily depends on maintaining our current short-term credit ratings as well as general conditions in the money markets.

A credit rating is not a recommendation to buy, sell or hold securities. Such ratings may be subject to revision or withdrawal at any time by the respective credit rating agency and each rating should be evaluated independently of any other rating.

The following table sets out ratings the Company has received in respect of its outstanding debt securities from the ratings agencies as at the date of this AIF. The Company has paid each of Standard & Poor's Rating Services ("S&P") and Moody's Investors Service ("Moody's") their customary fees in connection with the provision of the following ratings. The Company has not made any payments to S&P or Moody's in the past two years for services unrelated to the provision of such ratings.

	S&P Rating	**Moody's Rating**
Nutrien Notes	BBB	Baa2
US$ Commercial Paper	A-2	P-2
Ratings Outlook	Stable	Stable

S&P

The BBB rating assigned by S&P is the fourth highest rating of S&P's 10 rating categories for long-term debt, which range from AAA to D. Issues of debt securities rated BBB are judged by S&P to exhibit adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation. The ratings from AA to CCC may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

The A-2 rating assigned by S&P is the second highest rating of S&P's six rating categories for short-term debt, which range from A-1 to D. A short-term obligation rated A-2 is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rating categories. However, the obligor's capacity to meet its financial commitments on the obligation is satisfactory.

S&P's stable outlook on Nutrien's credit ratings means that the ratings are not likely to change.

Moody's

The Baa2 rating assigned by Moody's is the fourth highest rating of Moody's nine rating categories for long-term debt, which range from Aaa to C. Moody's appends numerical modifiers from one to three on its long-term debt ratings from Aa to Caa to indicate where the obligation ranks within a particular ranking category, with the two modifier indicating a mid-range ranking. Obligations rated Baa are defined by Moody's as being subject to moderate credit risk. They are considered medium-grade and as such may possess certain speculative characteristics. Nutrien's issuer rating assigned by Moody's is Baa2.

The P-2 rating assigned by Moody's is the second highest rating of Moody's four rating categories for short-term debt, which range from P-1 to NP. Issuers rated P-2 are defined by Moody's as having a strong ability to repay short-term debt obligations.

Moody's stable outlook on Nutrien's credit ratings indicates a low likelihood of a rating change over the medium term.

8 – Market for Securities

8.1 Trading Price and Volume

During 2020, Nutrien's Common Shares traded on the TSX and the New York Stock Exchange ("NYSE") under the symbol "NTR."

The following table sets out the trading price range and volume of our Common Shares traded on the TSX and the NYSE for 2020 on a monthly basis:

	TSX			NYSE		
Month (2020)	**High Price (CAD$)**	**Low Price (CAD$)**	**Volume**	**High Price (US$)**	**Low Price (US$)**	**Volume**
January	63.36	56.06	27,867,437	48.59	42.37	33,780,337
February	59.36	51.90	26,509,917	44.68	38.65	40,877,203
March	56.00	34.80	63,893,236	42.00	23.85	65,084,918
April	51.86	44.79	35,732,156	37.22	31.51	34,156,792
May	51.91	41.98	20,741,196	36.98	29.70	29,640,330
June	52.47	43.42	51,452,081	39.20	31.88	34,350,898
July	46.24	41.50	37,151,790	34.07	30.56	33,889,460
August	52.64	44.38	19,890,556	39.98	32.49	38,150,445
September	55.40	47.72	38,917,345	42.06	36.56	30,766,899
October	55.42	50.00	34,410,673	42.19	37.51	25,475,815
November	64.60	49.88	27,780,378	49.77	37.79	35,414,634
December	64.98	59.45	28,979,142	50.81	46.25	28,108,769

8.2 Prior Sales

During the year ended December 31, 2020, Nutrien issued 150,177 Common Shares pursuant to the exercise and settlement of outstanding share-based compensation award plans. During 2020, Nutrien also granted 2,293,802 stock options under its stock option plan. See Note 5 and Note 23 of the 2020 Consolidated Financial Statements for additional information.

See the "Three-Year History" section in this AIF for information regarding notes that we issued in May 2020.

9 – Escrowed Securities and Securities Subject to Contractual Restriction on Transfer

To the knowledge of the Company, none of the securities of the Company are subject to escrow or contractual restriction on transfer.

10 – Directors and Officers

10.1 Name, Occupation and Security Holding

Information is given below with respect to each of the current directors and executive officers, including names, municipality and country of residence, all current positions held with the Company, present principal occupation and principal occupations held during the last five years. The current directors will hold office until the earlier of their resignation and our next annual meeting of shareholders at which directors are elected or until such directors cease to hold office pursuant to the provisions of the CBCA.

Directors [7] (Name and Municipality of Residence)	**Director Since**	**Present Principal Occupation or Employment**	**Prior Principal Occupation or Employment Within the Preceding Five Years**
Mayo M. Schmidt Las Vegas, Nevada, US	2018 (Agrium from 2013 – 2017)	Corporate Director Board Chair of Nutrien	President & Chief Executive Officer and Director of Hydro One Inc., an electricity transmission and distribution company
Charles (Chuck) V. Magro Heritage Pointe, Alberta, Canada	2018 (Agrium from 2013 – 2017)	President & Chief Executive Officer of Nutrien	President & Chief Executive Officer of Agrium
Christopher M. Burley [1, 3] Calgary, Alberta, Canada	2018 (PotashCorp from 2009 – 2017)	Corporate Director	Corporate Director
Maura J. Clark [1, 2] New York, New York, US	2018 (Agrium from 2016 – 2017)	Corporate Director	Corporate Director
Russell K. Girling [2, 4, 6] Calgary, Alberta, Canada	2018 (Agrium from 2006 – 2017)	Corporate Director	President & Chief Executive Officer and Director of TC Energy Corporation, a diversified energy and pipeline company
Miranda C. Hubbs [3, 4] Toronto, Ontario, Canada	2018 (Agrium from 2016 – 2017)	Corporate Director	Corporate Director
Alice D. Laberge [1, 3] Vancouver, British Columbia, Canada	2018 (PotashCorp from 2003 – 2017)	Corporate Director	Corporate Director
Consuelo E. Madere [3, 4] Destin, Florida, US	2018 (PotashCorp from 2014 – 2017)	President and Founder of Proven Leader Advisory, LLC, a management consulting and executive coaching firm	Same as present
Keith G. Martell [1, 2] Eagle Ridge, Saskatchewan, Canada	2018 (PotashCorp from 2007 – 2017)	President & Chief Executive Officer and Director of First Nations Bank of Canada, a Canadian chartered bank providing financial services with a focus on the Indigenous marketplace	Same as present
Aaron W. Regent [1, 2] Toronto, Ontario, Canada	2018 (PotashCorp from 2015 – 2017)	Founding Partner and Managing Partner of Magris Resources Inc., a private equity investment firm specializing in the mining sector. Chairman and Chief Executive Officer of Niobec Inc., a company that owns and operates the Niobec mine, which comprises niobium deposit	Same as present

Directors [7] (Name and Municipality of Residence)	Director Since	Present Principal Occupation or Employment	Prior Principal Occupation or Employment Within the Preceding Five Years
Nelson L.C. Silva [2, 4, 5] Rio de Janeiro, Brazil	2020	Corporate Director; Advisor to Appian Capital Advisory LLP, investment advisor in the mining sector and HSB Solomon Associates LLC, strategic advisor in the energy sector	Executive Director of Petróleo Brasileiro S.A; an oil and gas exploration and production company; Chief Executive Officer of BG Group, a multinational oil and gas company in South America

1 Member of the Audit Committee of the Board.
2 Member of the Human Resources & Compensation Committee of the Board.
3 Member of the Corporate Governance & Nominating Committee of the Board.
4 Member of the Safety & Sustainability Committee of the Board.
5 Mr. Silva was appointed to the Board on August 10, 2020.
6 Mr. Girling retired as President and Chief Executive Officer of TC Energy Corporation and from its Board of Directors effective December 31, 2020.
7 In 2020, John W. Estey (May 6, 2020) and David C. Everitt (August 10, 2020) retired from the Board.

Executive Officers (Name and Municipality of Residence)	Present Position With the Company and Principal Occupation	Prior Principal Occupation or Employment Within the Preceding Five Years
Charles (Chuck) V. Magro Heritage Pointe, Alberta, Canada	President and Chief Executive Officer of Nutrien	President & Chief Executive Officer, Agrium
Noralee Bradley [1] Calgary, Alberta, Canada	Executive Vice President and Chief Legal Officer of Nutrien	Partner at Blake, Cassels & Graydon LLP; Partner at Osler, Hoskin & Harcourt LLP
Pedro Farah Calgary, Alberta, Canada	Executive Vice President and Chief Financial Officer of Nutrien	Executive Vice President and Treasurer, Walmart; Executive Vice President and Chief Financial Officer, Walmex (Walmart Mexico)
Michael J. Frank [2] Timnath, Colorado, US	Executive Vice President and Chief Executive Officer of Retail of Nutrien	Executive Vice President and President, Retail, Agrium; Senior Vice President & Chief Commercial Officer, Monsanto Company, an agrochemical and agricultural biotechnology company
Brent Poohkay Canmore, Alberta, Canada	Executive Vice President and Chief Information Officer of Nutrien	Senior Vice President, Information Technology, PotashCorp; Vice President, Chief Information Officer and Chief Privacy Officer, Enbridge Inc., a multinational energy transportation company
Ken Seitz Saskatoon, Saskatchewan, Canada	Executive Vice President and Chief Executive Officer of Potash of Nutrien	President and Chief Executive Officer, Canpotex Limited, a potash exporter; Senior Vice President and Chief Commercial Officer, Cameco Corporation, a uranium producer
Raef Sully Loveland, Colorado, US	Executive Vice President and Chief Executive Officer of Nitrogen and Phosphate of Nutrien	President, Nitrogen and Phosphate, PotashCorp; President, Nitrogen, PotashCorp
Mark Thompson Saskatoon, Saskatchewan, Canada	Executive Vice President, Chief Corporate Development and Strategy Officer of Nutrien	Vice President of Business Development, Vice President of Strategy, Special Assistant to CEO, Nutrien and Agrium
Michael R. Webb Calgary, Alberta, Canada	Executive Vice President and Chief Human Resources and Administrative Officer of Nutrien	Senior Vice President, Human Resources, Agrium

1 Ms. Bradley is in the process of relocating her residence to Saskatoon, Saskatchewan.
2 Mr. Frank's employment with Nutrien as the Executive Vice President and Chief Executive Officer of Retail of Nutrien will end effective February 26, 2021.

As at December 31, 2020, the directors and executive officers of the Company as a group beneficially own, or control or direct, directly or indirectly, 303,634 Common Shares, representing less than 1 percent of the outstanding Common Shares.

10.2 Cease Trade Orders, Bankruptcies, Penalties or Sanctions

Except as set out below, no director or executive officer of the Company was, as at the date hereof, or has been within the 10 years prior to the date hereof, a director, chief executive officer or chief financial officer of any company (including the Company), that:

- was subject to an order that was issued while the director or executive officer was acting in the capacity as director, chief executive officer or chief financial officer; or
- was subject to an order that was issued after the director or executive officer ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer.

For the purposes of the above, "order" means any of the following that was in effect for a period of more than 30 consecutive days:

- a cease trade order;
- an order similar to a cease trade order; or
- an order that denied the relevant company access to an exemption under securities legislation.

Except as set out below, no director or executive officer of the Company, or, to the knowledge of the Company, a shareholder holding a sufficient number of securities of the Company to affect materially the control of the Company:

- was, as at the date hereof, or has been within the 10 years prior to the date hereof, a director or executive officer of any company (including the Company) that, while that person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver manager or trustee appointed to hold its assets; or

- has, within the 10 years before the date hereof, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the director, executive officer or shareholder.

Mr. Burley was a director of Parallel Energy Inc., administrator of Parallel Energy Trust ("Parallel Energy"). On or about November 9, 2015, Parallel Energy and its affiliates filed applications for protection under the *Companies' Creditors Arrangement Act* (Canada) and voluntary petitions for relief under Chapter 11 of the *United States Bankruptcy Code*. Mr. Burley resigned from the board of directors of Parallel Energy Inc. on March 1, 2016. The Canadian entities of Parallel Energy each filed an assignment in bankruptcy under the *Bankruptcy and Insolvency Act* (Canada) on March 3, 2016. In 2015, securities regulators for the Provinces of Alberta, British Columbia, Manitoba, Ontario, Quebec, Saskatchewan and New Brunswick issued cease trade orders in relation to the securities of Parallel Energy for the failure by Parallel Energy to timely file financial statements as well as related continuous disclosure documents. Such cease trade orders continue to be in effect. The TSX delisted the trust units and debentures of Parallel Energy at the close of business on December 11, 2015.

Ms. Clark has served as a director of Garrett Motion Inc. ("Garrett Motion") since October 2018. In September 2020, Garrett Motion and certain affiliated companies filed voluntary petitions under Chapter 11 of Title 11 of the *United States Bankruptcy Code*. As of the date of this AIF, proceedings related to Garrett Motion's petition are still ongoing and the sale of certain assets of Garrett Motion pursuant to a definitive transaction agreement remains subject to court approval as well as other customary conditions.

10.3 Conflicts of Interest

To the knowledge of the Company, no director or officer of the Company has an existing or potential material conflict of interest with the Company or any of its subsidiaries, joint ventures or partnerships.

11 – Promoters

During the two most recently completed financial years, no person or company has been a promoter of the Company.

12 – Legal Proceedings and Regulatory Actions

The information under "Environmental Remediation, Legal and Other Matters" of Note 29 of the 2020 Consolidated Financial Statements is incorporated by reference herein. For further discussion of certain environmental proceedings in which we are involved, see "Environmental Matters" above.

In the normal course of business, we are also, and expect to continue to be, subject to various other legal proceedings being brought against us. While it is not possible to determine the ultimate outcome of such actions at this time, and inherent uncertainties exist in predicting such outcomes, it is the Company's belief that the ultimate resolution of any such known actions is not reasonably likely to have a material adverse effect on its consolidated financial statements.

13 – Interest of Management and Others in Material Transactions

To the knowledge of the Company, as of the date hereof, there were no directors or executive officers of the Company or any associate or affiliate of a director or executive officer of the Company with any material interest, direct or indirect, in any transaction within the three most recently completed financial years or during the current financial year that has materially affected or is reasonably expected to materially affect the Company.

14 – Transfer Agent, Registrar and Trustees

During the year ended December 31, 2020, the registrar and transfer agent for the Common Shares was AST Trust Company (Canada), at its principal offices in Calgary, Alberta and Toronto, Ontario. Effective February 5, 2021, Computershare became the registrar and transfer agent for the Common Shares. Its principal offices are located in Calgary, Alberta and Toronto, Ontario.

The trustee for the Nutrien notes is the Bank of New York Mellon at its principal offices in New York, New York.

15 – Material Contracts

To the knowledge of the Company, no material contracts require disclosure under this section.

16 – Interests of Experts

KPMG LLP are the auditors of the Company and have confirmed with respect to the Company that they are independent within the meaning of the relevant rules and related interpretations prescribed by the relevant professional bodies in Canada and any applicable legislation or regulations and also that they are independent accountants with respect to the Company under all relevant US professional and regulatory standards.

Craig Funk, B.Sc., M.Sc., P.Eng., P.Geo., an employee of the Company, supervised the preparation of and approved the Allan Technical Report, the Cory Technical Report, the Lanigan Technical Report, the Rocanville Technical Report and the Vanscoy Technical Report (each, as defined in Schedule B hereto). Mr. Funk is a qualified person under National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* ("NI 43-101") and has reviewed and approved the scientific and technical information in this AIF relating to the Company's Allan, Cory, Lanigan, Rocanville and Vanscoy Potash operations. Mr. Funk holds beneficially, directly or indirectly, less than 1 percent of any class of the securities of the Company or of any of the Company's associates or affiliates.

The technical report titled "National Instrument 43-101 Technical Report on Vanscoy Potash Operations" dated effective October 31, 2014 (the "2014 Vanscoy Technical Report"), and which was replaced by the Vanscoy Technical Report, was prepared under the supervision of and approved by A. Dave Mackintosh, P.Geo., of ADM Consulting Limited, and Michael Ryan Bartsch, P.Eng. and Dennis William Aldo Grimm, P.Eng., both employees of the Company as of the date of the 2014 Vanscoy Technical Report, who prepared certain sections of the 2014 Vanscoy Technical Report in accordance with NI 43-101 on behalf of the Company. Mr. Mackintosh, ADM Consulting Limited and the partners, employees and consultants of ADM Consulting Limited did not hold any registered or beneficial interests, directly or indirectly, in the securities of the Company or its associates or affiliates. Mr. Bartsch holds beneficially, directly or indirectly, less than 1 percent of any class of the Company's securities. Mr. Grimm is a retired employee of the Company and holds beneficially, directly or indirectly, less than 1 percent of any class of the Company's securities.

17 – Audit Committee

17.1 Audit Committee Charter

Attached, as Schedule A, is the charter for the Company's Audit Committee.

17.2 Composition of the Audit Committee

Members of the Audit Committee are Maura J. Clark, Christopher M. Burley, Alice D. Laberge, Keith G. Martell and Aaron W. Regent. Russell K. Girling was a member of the Audit Committee until June 25, 2020. Each member of the Audit Committee is (and, in the case of Mr. Girling, was, during his time of service on the Audit Committee) independent and financially literate (as such terms are defined in National Instrument 52-110 – *Audit Committees*).

17.3 Relevant Education and Experience of Members of the Audit Committee

Name **(Director Since)**	**Principal Occupation and Full Biography**
Ms. Maura J. Clark (2018) (Audit Committee Chair) B.A. (Economics), CPA, CA New York, New York, US Other Public Directorships Newmont Corporation, a gold mining company (TSX, NYSE) Fortis Inc., a North American electric and gas utility holding company (TSX) Garrett Motion Inc., a turbocharger and electric-boosting technology manufacturer (NYSE)	Ms. Clark is a Corporate Director and the former President of Direct Energy Business, a subsidiary of Centrica plc, a North American energy and energy-related services provider from 2007 to 2014. Previously, Ms. Clark was Executive Vice President of North American Strategy and Mergers and Acquisitions for Direct Energy. She also served as a managing director at Goldman Sachs & Co., an investment banking firm, and as Executive Vice President, Corporate Development and Chief Financial Officer of Premcor, Inc. (formerly known as Clark Refining & Marketing, Inc.), a petroleum refiner and marketer. Ms. Clark holds a Bachelor of Arts degree from Queen's University and a Chartered Professional Accountant designation.
Mr. Christopher Burley (2018) B.Sc., M.B.A. Calgary, Alberta, Canada Other Public Directorships None	Mr. Burley is a Corporate Director and former Managing Director and Vice Chairman of Energy for Merrill Lynch Canada Inc., an investment banking firm. He has over two decades of experience in the investment banking industry. He is the Chairman and a director of WestJet Airlines Ltd. Mr. Burley is a graduate of the Institute of Corporate Directors' Education Program and holds the ICD.D designation.
Mr. Russell K. Girling [1] (2018) B. Comm., M.B.A. (Finance) Calgary, Alberta, Canada Other Public Directorships None	Mr. Girling was a Corporate Director and President and Chief Executive Officer of TC Energy Corporation and TransCanada PipeLines Limited from 2010 to 2020. Previously, he served as Chief Operating Officer from July 17, 2009 to June 30, 2010 and President, Pipelines from June 1, 2006 until June 30, 2010. Previously, Mr. Girling served as Chief Financial Officer and Executive Vice President, Corporate Development of TC Energy Corporation until May 31, 2006, and as Executive Vice President, Power from 1995 until his appointment as Chief Financial Officer in 1999. Mr. Girling has held various other leadership positions since joining TC Energy Corporation in 1994. Prior to his employment with TC Energy Corporation, he held several marketing and management positions at Suncor Inc., Northridge Petroleum Marketing and Dome Petroleum. Mr. Girling is a member of the Canadian Council of Chief Executives, US National Petroleum Council, the US Business Roundtable, and a member of the board of directors of the American Petroleum Institute and the Business Council of Canada. Mr. Girling also holds the ICD.D designation.

Name (Director Since)	Principal Occupation and Full Biography
Ms. Alice D. Laberge (2018) B.Sc., M.B.A. Vancouver, British Columbia Other Public Directorships Mercer International Inc., operator of pulp mills and producer of bioelectricity (NASDAQ) Russel Metals Inc., a North American metal distribution company (TSX)	Ms. Laberge is a Corporate Director and the former President and Chief Executive Officer of Fincentric Corporation, a global provider of software solutions to financial institutions. She was previously Senior Vice President and Chief Financial Officer of MacMillan Bloedel Ltd. She is a director of Mercer International Inc., Russel Metals Inc., the Canadian Public Accountability Board and the B.C. Cancer Foundation and has served as a director of the Royal Bank of Canada, SilverBirch Holdings Inc., Delta Hotels Ltd. and Catalyst Paper Corporation. She was recognized as a Fellow of the Institute of Corporate Directors in 2015.
Mr. Keith G. Martell (2018) B. Comm., CPA, CA Eagle Ridge, Saskatchewan, Canada Other Public Directorships None	Mr. Martell is President & Chief Executive Officer and Director of First Nations Bank of Canada, a Canadian chartered bank providing financial services with a focus on the Indigenous marketplace. He serves as a director of River Cree Enterprises Ltd., as a trustee of the National Indian Brotherhood Trust and a governor of the University of Saskatchewan. He previously served as a director of the Canadian Chamber of Commerce, Public Sector Pension Investment Board of Canada and The North West Company Inc. Mr. Martell is a designated Chartered Professional Accountant and holds a Bachelor of Commerce and an Honorary Doctorate of Laws from the University of Saskatchewan.
Mr. Aaron W. Regent (2018) B.A., FCPA, FCA Toronto, Ontario, Canada Other Public Directorships The Bank of Nova Scotia, a global financial services provider (TSX, NYSE)	Mr. Regent serves as the Chair of the Board of The Bank of Nova Scotia. He is also the Founding and Managing Partner of Magris Resources Inc. and Chairman and Chief Executive Officer of Niobec Inc. Mr. Regent has acquired significant financial experience during his time as President and Chief Executive Officer of Barrick Gold Corporation, Senior Managing Partner of Brookfield Asset Management and Co-Chief Executive Officer of the Brookfield Infrastructure Group, and as President and Chief Executive Officer of Falconbridge Limited. Mr. Regent is a member of the Chartered Professional Accountants of Ontario.

1 Member of the Audit Committee of the Board until June 25, 2020.

17.4 Pre-Approval Policies and Procedures

Subject to applicable law, the Audit Committee is directly responsible for the compensation and oversight of the work of the independent auditors. The Audit Committee has implemented a Pre-Approval Policy for Audit and Non-Audit Services for the pre-approval of services performed by our auditors. The objective of this policy is to specify the scope of services permitted to be performed by our auditors and to ensure that the independence of our auditors is not compromised through engaging them for other services. Our Audit Committee pre-approves all audit services and all permitted non-audit services provided by our external auditors and reviews on a quarterly basis whether these services affect our external auditors' independence. All services provided by our auditors in 2020 complied with the Pre-Approval Policy for Audit and Non-Audit Services, and professional standards and securities regulations governing auditor independence.

17.5 External Auditor Service Fees (by Category)

The following table sets out the fees billed to us by KPMG LLP and its affiliates for professional services rendered during the years ended December 31, 2020 and 2019. During these years, KPMG LLP was the Company's only external auditor.

Category	Years Ended December 31 (US$)	
	2020	2019
		(Restated) [1]
Audit Fees [2]	6,477,700	5,465,600
Audit-Related Fees [3]	133,600	114,700
Tax Fees [4]	132,700	368,800
All Other Fees [5]	239,200	344,300
Total	**6,983,200**	**6,293,400**

1 2019 fee disclosure – the comparative amounts have been restated to reflect fees billed in the 2019 fiscal year.

2 For professional services rendered by KPMG LLP for the integrated audit of the Company's annual financial statements, interim review of the Company's interim financial statements, and audits of statutory financial statements of international subsidiaries.

3 For professional services rendered by KPMG LLP for specified audit procedures regarding financial assurances issued to certain government agencies, and services which are reasonably related to the performance of the audit of the Company's financial statements and are not included in Audit Fees.

4 For professional services rendered by KPMG LLP for tax compliance, tax advice and tax planning; review of tax filings; assistance with the preparation of tax filings; tax advice relating to asset dispositions; and other tax planning, compliance, and transaction services. These amounts include fees paid to KPMG LLP specifically for tax compliance and preparation services rendered in 2020 and 2019 in the amount of $122,300 and $317,100, respectively.

5 For professional services rendered by KPMG LLP for a cybersecurity maturity assessment, real-time assessment of a system implementation, and assurance advisory services over greenhouse gas emission and sustainability reporting.

18 – Additional Information

Additional financial information is provided in the 2020 Consolidated Financial Statements and the 2020 MD&A. Further, additional information, including historical information concerning directors' and officers' remuneration and indebtedness, principal holders of the Company's securities, and securities authorized for issuance under equity compensation plans is contained in the Company's management proxy circular dated March 20, 2020 for the annual meeting of the Company's shareholders that took place on May 6, 2020.

Additional information related to Nutrien may be found on the Company's website at www.nutrien.com, on the Canadian Securities Administrators' website at www.sedar.com and on the EDGAR section of the US SEC's website at www.sec.gov.

Schedule A

Audit Committee Charter

Introduction

The Audit Committee (the "**Committee**") is established to assist the Board of Directors (the "**Board**") of Nutrien Ltd. (the "**Corporation**") in fulfilling its oversight responsibilities with respect to the accounting and financial reporting processes and the reviews and audits of the financial statements of the Corporation by monitoring: (i) the quality and integrity of the Corporation's financial statements and related disclosures; (ii) the Corporation's internal control systems, including internal control over financial reporting; (iii) specific elements of risk management (including all financial risk management) delegated to the Committee by the Board; (iv) the qualifications and independence of the external auditors of the Corporation and the recommendation of the Board to shareholders for the appointment thereof; (v) the performance of the Corporation's Internal Audit function and external auditors; and (vi) the Corporation's compliance with legal and regulatory requirements with respect to matters within the Committee's mandate and the Code of Ethics.

Management is responsible for preparing the consolidated financial statements of the Corporation and the external auditors are responsible for auditing those financial statements. Nothing in this Charter is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all directors are subject under applicable laws or regulatory requirements.

In this Charter, "**Committee Chair**" means the Chair of the Committee; "**Chair**" means the Board Chair; and "**CEO**" means the Chief Executive Officer of the Corporation.

Composition

The members of the Committee shall be appointed by the Board, on the recommendation of the Corporate Governance & Nominating Committee. Any member of the Committee may be removed or replaced at any time by the Board and shall cease to be a member of the Committee on ceasing to be a director. Subject to the above, each member of the Committee shall serve as a member of the Committee until the next annual meeting of shareholders after his or her appointment.

The Committee shall consist of not less than three and not more than eight members. Each Committee member shall be independent according to the independence standards set out in the Corporate Governance Framework, including applicable independence requirements of stock exchanges on which the Corporation is listed and securities laws, rules and regulations.

Each member of the Committee shall be "financially literate", and at least one member of the Committee shall be designated as the "audit committee financial expert" and shall have "accounting or related financial management expertise", in each case, as such qualification is interpreted by the Board in its business judgment and as defined by applicable requirements of stock exchanges on which the Corporation is listed and securities laws, rules and regulations.

No member of the Committee shall serve on the audit committees of more than two other publicly listed companies, unless the Board determines that such simultaneous service would not impair the ability of such member to effectively serve on the Committee and discloses such determination in the Corporation's annual management proxy circular.

The Board may fill vacancies on the Committee from among its members, on the recommendation of the Corporate Governance & Nominating Committee. If and whenever a vacancy shall exist on the Committee, the remaining members may exercise all its powers so long as a quorum remains in place.

The members of the Committee shall be entitled to receive such remuneration for acting as members of the Committee as the Board may from time to time determine.

The Corporate Secretary or such other person acceptable to the members shall act as Secretary to the Committee.

Committee Chair

The Board, upon recommendation of the Corporate Governance & Nominating Committee, shall appoint a Committee Chair. The Committee Chair may be removed and replaced by the Board.

If the Committee Chair is not present at any meeting of the Committee, one of the other members of the Committee present at the meeting shall be chosen by the Committee to chair the meeting.

The Committee Chair shall have the duties and responsibilities set forth in **Annex 1** which is incorporated by reference herein.

Quorum

Fifty percent of the members of the Committee shall constitute a quorum. All determinations of the Committee shall be made by a majority of its members present at a meeting duly called and held.

Meetings

All Committee members are expected to attend, in person or via teleconference, video conference, or other electronic communications facilities that permits all participants to communicate adequately, all meetings of the Committee, to come prepared for the meeting, and to remain in attendance for the duration of the meeting. The powers of the Committee may be exercised by resolution in writing signed by all members of the Committee who would have been entitled to vote on that resolution at a meeting of the Committee.

The Committee may invite such directors, officers, employees and external advisors of the Corporation as it may see fit from time to time to attend meetings of the Committee and assist in the discussion and consideration of the duties of the Committee.

The time at which and place where the meetings of the Committee shall be held, and the calling of meetings and the procedure at such meetings, shall be determined by the Committee in accordance with the Corporation's articles, by-laws, and applicable laws.

The Committee shall meet at each Committee meeting alone without Management present, and shall meet separately with applicable senior Management, the external auditors, and the Chief Audit Executive.

Responsibilities

The Committee, to the extent required by applicable laws or rules, or otherwise considered by the Committee to be necessary or appropriate, is responsible for the oversight in respect of the Corporation's financial disclosure and accounting practices, internal control systems (including internal control over financial reporting), specific elements of risk management (including all financial risk management) delegated to the Committee by the Board, the external auditors, the Internal Audit function, and legal and regulatory compliance with respect to matters within the Committee's mandate and the Code of Ethics.

To fulfill its duties and responsibilities, the Committee shall:

Financial Disclosure and Accounting

- meet with Management and the external auditors to review and discuss, and to recommend to the Board for approval prior to public disclosure, the annual audited financial statements and the specific disclosures in "Management's Discussion and Analysis of Financial Condition and Results of Operations" ("**MD&A**");

- meet with Management and the external auditors to review and discuss, and to approve prior to public disclosure, the unaudited quarterly financial statements, including the specific disclosures in the MD&A and quarterly interim reports (including annual guidance);

- review and discuss with Management and the external auditors prior to public disclosure each press release that contains significant financial information respecting the Corporation or contains estimates or information regarding the Corporation's future financial performance or prospects; and the type and presentation of information to be included in such press releases (in particular, the use of "pro forma" or "adjusted" information that is not in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board ("**IFRS**"));

- review and discuss with Management and the external auditors, and recommend to the Board for approval prior to public disclosure:

    - the portions of the Annual Information Form containing significant information within the Committee's mandate;

- the portions of the Corporation's annual management proxy circular containing significant information within the Committee's mandate;
- all financial statements included in prospectuses or other offering documents;
- all prospectuses and all documents which may be incorporated by reference in a prospectus, other than any pricing supplement issued pursuant to a shelf prospectus; and
- significant financial information, including "pro forma" or "adjusted" non-IFRS information respecting the Corporation contained in a publicly disclosed document (other than routine investor relations or similar communications);

- review and discuss with Management and the external auditors (including those of the following that are contained in any report of the external auditors): (1) any analyses prepared by Management and/or the external auditors setting forth significant financial reporting issues and judgments made in connection with the preparation of the financial statements, including analyses of the effects of alternative accounting principles in accordance with IFRS; (2) all critical accounting policies and practices to be used by the Corporation in preparing its financial statements; (3) all material alternative treatments of financial information within IFRS that have been discussed with Management, ramifications of the use of these alternative treatments, and the treatment preferred by the external auditors; and (4) other material communications between the external auditors and Management, such as any Management Representation Letter or Schedule of Unadjusted Differences;

- review and discuss with Management and the external auditors significant accounting and reporting issues and understand their impact on the financial statements, including complex or unusual transactions and areas involving significant assumptions; major issues regarding accounting principles and financial statement presentation, including any significant changes in the Corporation's selection or application of accounting principles, and the effect of regulatory and accounting initiatives, as well as off balance sheet structures, on the financial statements of the Corporation, any significant issues as to the adequacy of the Corporation's internal controls and any special audit steps adopted in light of significant control deficiencies;

- review and discuss with Management and the external auditors non-IFRS financial measures, as well as financial information and earnings guidance provided externally, including to analysts and rating agencies;

- review with Management and the external auditors the results of the annual audit, including any restrictions on the scope of the external auditors' activities or on access to requested information, and the resolution of any significant disagreements with Management;

- review Management's Internal Control Report and the related attestation by the external auditors of the Corporation's internal controls over financial reporting; and

- review with Management and the external auditors and, if necessary, legal counsel, any litigation, claim or contingency, including tax assessments, or material reports or inquiries from regulators or governmental agencies, that could have a material effect upon the financial position of the Corporation, and the manner in which these matters have been disclosed in the financial statements.

Internal Controls

- assess the effectiveness of the Corporation's internal control systems, including internal control over financial reporting and information technology strategy, risks and, in consultation with the Safety, Health, Environment + Security Committee, cyber security controls and related matters;

- understand the scope of Internal Audit's and the external auditors' review of internal controls over financial reporting, and obtain reports on significant findings and recommendations, together with Management's responses;

- annually review the Corporation's disclosure controls and procedures, including any significant deficiencies in or material non-compliance with such controls and procedures;

- receive and review reports from the Corporation's Disclosure Committee and periodically review the Corporation's Disclosure Policy;

- review and discuss with the CEO and Chief Financial Officer their disclosures made during their annual and quarterly certification processes about significant deficiencies or material weaknesses in the design or operation of internal controls or any fraud that involves Management or other employees who have a significant role in the Corporation's internal controls;

- discuss with Management the Corporation's material financial risk exposures and the steps Management has taken to monitor and control such exposures; and

- review executive officers' expenses and aircraft usage reports and periodically report to the Corporate Governance & Nominating Committee thereon, as appropriate.

Risk Management

- regularly review with Management the Corporation's material risks within the Committee's scope (i.e. the principal financial risks facing the Corporation and any other risks specifically delegated to the Committee by the Board), the assessment of those risks, and how they are being managed or mitigated; and

- monitor and review at least annually Management processes and controls designed to identify, assess, monitor and manage the risks referred to above.

Internal Audit

- review with Management, the external auditors, and Internal Audit (and if appropriate, approve) the Charter, plans, activities, and organizational structure of the Internal Audit function;

- review the significant findings prepared by Internal Audit and recommendations issued by any external party relating to Internal Audit issues, together with Management's response thereto;

- take reasonable steps to ensure there are no unjustified or inappropriate restrictions or limitations on the functioning of the Internal Audit function, or on access to requested information;

- review the adequacy of the resources of Internal Audit to satisfy itself as to the effectiveness, objectivity and independence of the Internal Audit function;

- review and concur on the appointment, replacement, or dismissal of the Chief Audit Executive (or such individual in a similar capacity or position who performs a substantially similar function); and

- review the performance and effectiveness of the Internal Audit function.

External Audit

- meet with the external auditors prior to the annual audit to review (and if appropriate, approve) the proposed audit scope, approach and staffing (including coordination of audit efforts with Internal Audit) and budget;

- monitor the progress of the annual audit;

- obtain feedback about the conduct of the external audit from key employees engaged in the process;

- when applicable, review the annual post-audit letter from the external auditors and Management's response thereto and follow-up in respect of any identified weakness;

- at least annually, obtain and review a report by the external auditors describing: (i) the external auditors' internal quality control procedures, and (ii) any material issues raised by the most recent internal quality control review, or peer review, of the external auditors, or by any inquiry or investigation by governmental or professional authorities, within the preceding five years, respecting one or more independent audits carried out by the external auditors, and any steps taken to deal with any such issues;

- annually receive from the external auditors, and review, a report on items required to be communicated to the Committee by applicable rules and regulations;

- annually review the independence of the external auditors, including their formal written statement of independence delineating all relationships between the external auditors and the Corporation, review all such relationships, and consider applicable auditor independence standards and take any decisions and actions that are necessary and appropriate where the Committee becomes aware of the potential for a conflict (or the reasonable perception of a conflict) between the interests of the external auditors and the interests of the Corporation;

- annually evaluate the performance of the external auditors, including the lead audit partner, and report to the Board on its conclusions regarding the external auditors and recommendation to shareholders for appointment of the external auditors;

- investigate and consider whether any action is required if the external auditors resign;

- ensure the rotation of the lead audit partner having primary responsibility for the audit as required by applicable law; and

- set clear hiring policies for partners, employees and former partners and employees of the present and former external auditors.

Oversight in Respect of Audit and Non-Audit Services

- subject to confirmation by the external auditors of their compliance with Canadian and US regulatory requirements, be directly responsible (subject to Board confirmation) for the appointment of the external auditors for the purpose of preparing or issuing any audit report or performing other audit, review or attest services for the Corporation, such appointment to be confirmed by the Corporation's shareholders at each annual meeting;

- be directly responsible (subject to Board confirmation) for the approval of fees to be paid to the external auditors for audit services, and shall pre-approve the retention of the external auditors for any permitted non-audit service to the Corporation;

- be directly responsible for the retention and oversight of the services of the external auditors (including resolution of disagreements between Management and the external auditors regarding financial reporting) for the purpose of preparing or issuing an audit report or performing other audit, review or attest services for the Corporation (with the external auditors reporting directly to, and being accountable to, the Committee);

- have the sole authority to pre-approve all audit services and all permitted non-audit services to the Corporation, provided that the Committee need not approve in advance non-audit services where:

    - the aggregate amount of all such non-audit services provided to the Corporation constitutes not more than 5% of the total amount of fees paid by the Corporation to the external auditors during the fiscal year in which the non-audit services are provided; and

    - such services were not recognized by the Corporation at the time of the engagement to be non-audit services; and

    - such services are promptly brought to the attention of the Committee and approved prior to the completion of the audit by the Committee or by one or more members of the Committee to whom authority to grant such approvals has been delegated by the Committee.

- have the sole authority to delegate to one or more designated members of the Committee the authority to grant pre-approvals required by this section, provided that the decision of any member to whom authority is delegated to pre-approve a service shall be presented to the Committee at its next scheduled meeting. If the Committee approves an audit service within the scope of the engagement of the external auditors, such audit service shall be deemed to have been pre-approved for purposes of this section.

Compliance

- establish procedures for: (i) the receipt, retention and treatment of complaints received by the Corporation regarding accounting, internal accounting controls or auditing matters; and (ii) the confidential, anonymous submission by employees of the Corporation of concerns regarding questionable accounting or auditing matters, and institute and oversee any special investigations as needed;

- review with the Chief Legal Officer (or such individual in a similar capacity or position who performs a substantially similar function) the Corporation's significant compliance policies and any legal matters or reports or inquiries received from regulators or governmental agencies that could have a material effect upon the financial position of the Corporation and that are not subject to the oversight of another committee of the Board;

- review the effectiveness of the system for monitoring compliance with laws and regulations (including those with respect to anti-fraud and anti-bribery) and the results of Management's investigations and follow-up of any instances of non-compliance that could have a material effect upon the financial position of the Corporation and that are not subject to the oversight of another committee of the Board;

- review the process for communicating the Corporation's Code of Ethics to the Corporation's personnel and monitoring compliance therewith; and

- report annually to shareholders describing the Committee's composition, responsibilities and how they were discharged, and any other information required by applicable legislation or regulation, including approval of non-audit services.

The Committee may perform such other functions as the Committee deems necessary or appropriate for the performance of its responsibilities and duties.

Delegation

The Committee may from time to time delegate any of its responsibilities to a subcommittee comprised of one or more members of the Committee and shall also carry out such other duties that may be delegated to it by the Board from time to time.

Other Matters

At the Corporation's expense, the Committee may retain, when it considers it necessary or desirable, outside consultants and advisors to advise the Committee independently on any matter. The Committee shall have the sole authority to retain and terminate any such consultants or advisors, including sole authority to establish or review a consultant's or advisor's fees and other retention terms, and to direct the payment thereof.

The Corporation will provide appropriate funding, as determined by the Committee, for payment of ordinary administrative expenses of the Committee that are necessary or appropriate in carrying out its duties.

Authority to make minor technical amendments to this Charter is hereby delegated to the Corporate Secretary, who will report any amendments to the Committee at its next meeting.

The Committee's performance and effectiveness shall be evaluated annually, in accordance with a process developed by the Corporate Governance & Nominating Committee and approved by the Board. The results of that evaluation, including progress on adopted recommendations, shall be reported to the Corporate Governance & Nominating Committee and to the Board.

On an annual basis, this Committee Charter shall be reviewed and assessed, and any proposed changes shall be submitted to the Corporate Governance & Nominating Committee for review and recommendation, and then to the Board for approval.

Date of Last Revision: February 19, 2020

ANNEX 1

AUDIT COMMITTEE CHAIR
POSITION DESCRIPTION

The Committee Chair shall provide overall leadership to enhance the effectiveness of the Committee and be responsible to:

- set the "tone" for the Committee and its members to foster ethical and responsible decision making, appropriate oversight of Management and appropriate corporate governance practices;
- encourage free and open discussion at meetings of the Committee;
- schedule and set the agenda for Committee meetings with input from other Committee members, the Chair and Management as appropriate;
- facilitate the timely, accurate and proper flow of information to and from the Committee, and arrange sufficient time during Committee meetings to fully discuss agenda items;
- report to the Board following each meeting of the Committee on the activities, findings and any recommendations of the Committee;
- provide advice and counsel to the senior members of Management in the areas covered by the Committee's mandate;
- proactively encourage training and education of the Committee and its members in areas falling within the Committee's mandate;
- take reasonable steps to ensure that Committee members understand the boundaries between the Committee and Management responsibilities;
- organize the Committee to function independently of Management and take reasonable steps to ensure that the Committee has an opportunity at each of its meetings to meet in separate closed sessions without Management present, and with or without internal personnel or external advisors as needed or appropriate;
- lead the Committee in monitoring and evaluating, in consultation with the Corporate Governance & Nominating Committee, the performance and effectiveness of the Committee as a whole and the contributions to the Committee of individual directors; and
- take all other reasonable steps to ensure that the responsibilities and duties of the Committee, as outlined in its Charter, are well understood by the Committee members and executed as effectively as possible.

SCHEDULE B
MINERAL PROJECTS

For the purposes of NI 43-101, our Allan, Cory, Lanigan, Rocanville and Vanscoy potash operations are the properties material to Nutrien.

a) Allan Potash Operations

Certain scientific and technical information regarding our Allan potash operations is based on the technical report titled "National Instrument 43-101 Technical Report on Allan Potash Deposit (KL 112R A), Saskatchewan, Canada" dated effective December 31, 2018 ("Allan Technical Report") prepared under the supervision of Craig Funk, B.Sc., M.Sc., P.Eng., P.Geo., who is a "qualified person" as defined in NI 43-101. The Allan Technical Report has been filed with the securities regulatory authorities in each of the provinces of Canada and furnished to the SEC. Portions of the following information are based on assumptions, qualifications and procedures that are not fully described herein. References should be made to the full text of the Allan Technical Report.

i) Project Description, Location and Access

General

The Allan mine is located in central Saskatchewan, approximately 45 kilometers east of the city of Saskatoon, Saskatchewan. The Legal Land Description (Saskatchewan Township/Range) of the Allan surface plant is Section 22 Township 34 Range 01 West of 3rd Meridian. More precisely, the Allan Shaft #2 collar is located at:

- Latitude: 51 degrees 55 minutes 55.56 seconds North
- Longitude: 106 degrees 04 minutes 18.84 seconds West
- Elevation: 524.26 meters above mean sea level (SL)
- Northing: 5,754,028.978 m
- Easting: 426,303.225 m
- Projection: UTM
- Datum: NAD83
- Zone: 13

The Company owns approximately 3,212 hectares (7,938 acres) of surface rights required for current Allan mine operations, including all areas covered by the existing surface plant and Tailings Management Area ("TMA"), and all surface lands required for anticipated future Allan mine and expanded milling operations.

The Allan mine surface facilities are accessed by an existing paved road that is part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

The Allan mine is served by a number of villages within 50 kilometers of the mine site. The nearest city is Saskatoon (45 km distant) Allan is situated near the northern extent of the Great Plains of North America. Topography is relatively flat, with gently rolling hills and occasional valleys. There are no rivers or other major watercourse channels near the Allan mine site.

Mineral Rights

Mineral rights at Allan are mined pursuant to mining leases with the Province of Saskatchewan, Canada ("Crown"), and with non-Crown ("Freehold") mineral rights owners. Crown mineral rights are governed by *The Subsurface Mineral Tenure Regulations, 2015* (Saskatchewan), and Crown leases are approved and issued by the Saskatchewan Ministry of Energy and Resources ("SMER"). The original Allan Crown Subsurface Mineral Lease, numbered KL 112, was signed and executed in September 1962. In the following years, minor amendments were made to the lease, resulting in Crown Subsurface Mineral Lease KL 112R. In October 2017, a large area of land totaling 20,784 hectares (51,359 acres) was added to the lease resulting in Crown Subsurface Mineral Lease KL 112R A ("Allan Crown Lease").

The Allan Crown Lease covers an area of approximately 75,112 hectares (185,605 acres). At Allan, the Company has leased potash mineral rights for 45,484 hectares (112,393 acres) of Crown land and owns or has leased approximately 17,932 hectares (44,311 acres) of Freehold land within the lease boundary. The Allan Crown Lease term is for a period of 21 years from September 2004, with renewals (at the Company's option) for 21-year periods. Freehold lands also remain under lease providing, generally, that production is continuing and that there is a continuation of the Allan Crown Lease.

Within the Allan Crown Lease area, 19,183 hectares (47,403 acres) are mined pursuant to unitization agreements with mineral rights holders (Crown and Freehold) within two unitized areas. Allan Unit Area #1 includes 9,888 hectares (24,343 acres), while Allan Unit Area #2 includes 9,295 hectares (22,969 acres).

When underground workings of a potash mine are designed, there are inevitably regions that are mined with higher mining extraction (e.g., production panels) and other regions where mining extraction is lower (e.g., conveyor-belt development rooms). To treat mineral rights holders in both low extraction and high extraction areas fairly, and to promote good mining practices, a unitization agreement is the preferred method for determining royalty payouts. Under a unitization agreement, each mineral rights holder is paid a royalty based on their proportional share of the entire unit area regardless of whether or not their lands are actually mined. For example, if one mineral rights holder owns rights to 4,000 hectares within a 40,000 hectare unit area, they would be paid 10% of the total monthly royalty payout from that unit area.

ii) History

Ten potash mines were brought into production in Saskatchewan between 1962 to 1970. With over 50 years of production history, most potash mines have contracted or expanded production in response to the demand for potash. No new mines had been commissioned until 2017. Most of the operating mines are conventional underground mines, while three operate using solution mining methods.

Exploration drilling for potash in the Allan area was carried out in the 1950s and 1960s. The Allan mine was built by a consortium of companies (U. S. Borax, Homestake Potash Company, and Swift Canadian Company) in the 1960s. Potash production began at Allan in April 1968 and the mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

PotashCorp acquired a 60% ownership of the Allan mine in 1978 (through purchase of the U. S. Borax and Swift Canadian interests) and became the operator of the mine in 1981. In 1990, PotashCorp purchased the remaining 40% interest.

A major refurbishment and expansion of the Allan mine was completed in 2013, increasing nameplate capacity to 4.0 million tonnes of finished potash products per year. At Allan, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968.

iii) Geological Setting, Mineralization and Deposit Types

Geological Setting and Mineralization

Much of southern Saskatchewan is underlain by the Prairie Evaporite Formation, a layered sequence of salts and anhydrite which contains the world's largest deposits of potash. The potash extracted from the predominantly sylvinite ore has its main use as a fertilizer.

The 100 m to 200 m thick Prairie Evaporite Formation is overlain by approximately 400 m of Devonian carbonates followed by 100 m of Cretaceous sandstone, 400 m of Cretaceous shales, and 100m of recent Pleistocene glacial tills to surface. The Prairie Evaporite Formation is underlain by Devonian carbonates. The Phanerozoic stratigraphy of Saskatchewan is remarkable in that units are flat-lying and relatively undisturbed over very large areas.

Potash mineralization in this region of Saskatchewan is predominantly sylvinite, which is comprised mainly of the minerals sylvite ("KCl") and halite or rock salt ("NaCl"), with trace carnallite ("$KMgCl_3$ $6H_2O$") and minor water insolubles. Potash fertilizer is concentrated, nearly pure KCl (i.e., greater than 95% pure KCl), but ore grade is traditionally reported on a % K_2O equivalent basis. The "% K_2O equivalent" gives a standard measurement of the nutrient value of different potassium-bearing rocks and minerals. To convert from % K_2O equivalent tonnes to actual KCl tonnes, multiply by 1.58.

Over the past three years (2018, 2019, 2020), the average, measured potash ore grade of the mill feed at Allan was 25.3% K_2O equivalent. The average ore grade reported from 18 historic surface drillhole intersections, all within the Allan Crown Lease, is 26.65% K_2O equivalent. Per the Allan Technical Report, the average ore grade observed from in-mine samples is 24.8% K_2O equivalent.

Deposit Type

There are three mineable potash members within the Prairie Evaporite Formation of Saskatchewan. Stratigraphically highest to lowest, these members are: Patience Lake, Belle Plaine and Esterhazy.

The Allan potash deposit lies within the Patience Lake Member of Prairie Evaporite Formation. There are two potash seams named A Zone and B Zone within this Member; at present, only the A Zone is being mined at Allan. Some test mining has been carried out in the B Zone, but no mining is done in this layer at present. Neither the Esterhazy nor the White Bear Potash Members are present in the Allan area. The Belle Plaine Potash Member is not well-developed, and therefore is not mined.

Allan potash mineralization occurs at about 1,000 meters depth below surface. The A Zone is approximately 3.35 meters thick and occurs near the top of the Prairie Evaporite Formation salts. Salt cover from the ore zone to overlying units is approximately 12 m. The Allan mine operates as a conventional, underground potash mine.

iv) Exploration

Before the Allan mine was established in 1968, all exploration consisted of drilling from surface and analysis of core from these drillholes. Since mining began in 1968, exploration drilling has been infrequent.

In most of southern Saskatchewan, potash mineralization is in place wherever Prairie Evaporite Formation salts exist, are flat-lying and are undisturbed. Since the surface seismic exploration method is an excellent tool for mapping the top and bottom of Prairie Evaporite salts, this has become the main potash exploration tool in any existing Saskatchewan subsurface (potash) mineral lease. Historically, 2D seismic, and now the more accurate 3D seismic methods are used to map continuity and extent of potash beds in flat-lying potash deposits. Seismic data are relied upon to identify collapse structures that must be avoided in the process of mine development since these structures can act as conduits for water. As a result, isolation pillars or mining buffer zones are left around these anomalous features. This practice reduces the overall mining extraction ratio, but the risk of inflow to mine workings is effectively mitigated.

Seismic coverage is outlined in the Allan Technical Report.

Experience has shown that the potash mining zone is continuous when seismic data are undisturbed and flat-lying. Surface seismic data are generally collected three to five years in advance of mining. Any area recognized as seismically unusual is identified early, and mine plans are adjusted to avoid these regions.

v) Drilling

For the original Allan potash test holes drilled in the 1950s and 1960s, the primary objective of this drilling was to sample the potash horizons to establish basic mining parameters. Seismic surveys (2D) were done sparingly in those days, so the drillhole information was relied upon heavily to evaluate potash deposits. Test holes would penetrate the evaporite section with a hydrocarbon-based drilling mud (oil-based or diesel fuel) to protect the potash mineralization from dissolution. Basic geophysical well-logs were acquired, and in many cases, drill stem tests were run on the Dawson Bay Formation to help assess mine inflow potential. Core samples from the targeted potash intersections were split or quartered (cut with a masonry saw) crushed and analysed to establish potash grades.

Relatively thin interbeds or seams, referred to as clay seams in the potash industry, are an ever-present component of the A Zone and B Zone at Allan. These seams, along with the clay or clay-like material disseminated throughout the rock, make up the water insoluble portion of the mineralized horizons. The same sequences of clay seams can be correlated for many kilometers across the central Saskatchewan potash mining district.

At Allan, a particular sequence of three clay seams marks the top of the A Zone. These seams are used to guide the vertical positioning of the mining machine. The uppermost portion of the sequence of three seams is maintained at the top of the mining cut to keep the cutting “on grade”. Cutting too high above this upper seam or top marker results in dilution, as halite (rather than sylvinite) immediately overlies the production zone. In practice though, the top marker seam is slightly overcut (between 10 cm to 20 cm) to prevent an unstable condition from being created. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to proceeding, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

The A Zone mining interval was historically fixed at 3.35 m (11 feet). Recently acquired mining machines cut at a fixed height of 3.65 m (12 feet). At present, seven older mining machines cut at a height of 3.35 m (11 feet) and four new mining machines cut at a height of 3.65 m (12 feet). These mining heights allow for comfortable working headroom and efficient extraction of potash ore. It is difficult to determine at which mining height certain Mineral Resources and Reserves will be cut in the future, so the more conservative mining height of 3.35 m (11 feet) was applied to Mineral Resource and Reserve calculations.

The original exploration area was explored with a number of test holes spaced at intervals of 1.6 km to 6.4 km (1–4 miles). Assays from most of these original test holes were studied by independent consultant David S. Robertson and Associates (1978) and are found in Table A. An additional six historical test holes were studied by Nutrien staff in 2018, which are also listed in Table A below. In each case, the best 3.35 m (11 feet) mining interval intersected in each drillhole was determined from the assay values, using clay marker seams as a guide. Note that one of the above-mentioned test holes was omitted from the assay calculation due to a section of missing core in the ore zone, one was omitted due to erroneous assay data which could not be resolved and another two were omitted due to an ore grade of less than 15% K_2O. With decades of mining experience at Allan, it is the opinion of the Allan Technical Report authors that areas of low grade (i.e., <15% K_2O) are localized with a relatively small lateral extent.

Drillhole assay data for the A Zone at Allan gives an estimated mean grade of 26.65% K_2O with 4.96% water insolubles.

B Zone mineralization is indicated by gamma ray geophysical log response in each of the exploration drillholes listed in Table A indicating a potash Mineral Resource. Some test mining of the B Zone has been done. However, sustained production from that zone has not been established. Assay results for the B Zone are not presented here.

Table A: Assay results for all potash test holes within Allan Crown Lease

Average in 3.35 m (11 feet) mining interval (undiluted)			
Drillhole	**Year Drilled**	**% K_2O**	**% Water Insolubles**
04-10-033-01 W3	1954	*	*
12-32-034-02 W3	1956	28.74	5.76
16-11-033-01W3	1956	*	*
04-29-034-01 W3	1957	25.79	4.74
01-25-034-01 W3	1957	28.05	4.74
16-11-034-02 W3	1957	29.05	3.40
13-11-034-01 W3	1957	28.75	4.54
13-11-034-03 W3	1957	21.97	1.74
16-09-035-01 W3	1957	25.04	5.11
05-26-035-01 W3	1957	16.78	*
09-29-033-02 W3	1957	*	*
09-28-034-01 W3	1961	29.53	5.26
09-27-034-01 W3	1961	30.63	4.52
09-26-034-01 W3	1961	27.71	6.33
09-33-034-01 W3	1961	23.95	5.89
08-34-034-01 W3	1961	26.31	5.76
09-35-034-01 W3	1961	25.89	8.64
05-22A-034-01 W3	1961	26.47	3.19
16-14-034-01 W3	1962	26.78	5.25
01-17-034-01 W3	1962	28.63	5.29
01-12-034-01 W3	1962	*	*
14-23-034-03 W3	1969	29.56	4.18
Average (from 18 usable values):		**26.65**	**4.96**

Due to the remarkably consistent mineralogy and continuity of the resource, as experienced through decades of mine production, no potash exploration drilling has been done at Allan since 1969. Instead of exploration drillholes, seismic surveying has been relied upon to explore ahead of mine development. Where normal Prairie Evaporite sequences are mapped in the seismic data, potash beds have unfailingly been present. Localized and relatively small mine anomalies, not mapped in seismic data do occur. When they do, they are dealt with in the normal course of mining and extraction through these anomalous areas and are typically minimized. Anomalies associated with possible water inflow problems, which are mapped in the seismic data, are avoided.

vi) Sampling Preparation, Analyses and Security

Basic Approach

Exploration in the Allan area was conducted in the 1950s and 1960s. Sampling and assaying of potash core samples was done using methods considered consistent with standard procedures for potash exploration at these times.

Drillhole sampling methods have remained essentially the same over the years. Short segments of core usually about 1 foot (0.3 m) in length are labeled based on visible changes in mineralization, and sometimes based on more or less fixed intervals. Each segment of core is then split using some type of rock or masonry saw. The split portion of core is then bagged and labeled and sent to a laboratory for chemical analysis. Historical potash samples remain stored at the Subsurface Geological Laboratory (Regina, Saskatchewan) of the SMER. Most of these have deteriorated substantially.

All in-mine samples were analysed in the Allan mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

Regarding quality assurance for analytical results of in-mine samples, the Company participates in the Canpotex Producer Sample Exchange Program using methods developed by the Saskatchewan Potash Producers Association ("SPPA"). The Sample Exchange Program monitors the accuracy of analytical procedures used in its labs. In the early 1970s, the SPPA initiated a round-robin Sample Exchange Program, the purpose of which was to assist the potash laboratories in developing a high level of confidence in analytical results. This program, now named the Canpotex Producer Sample Exchange Program using SPPA Methods ("CPSEP"), has continued up to the present. Current participants include all Canpotex member potash mine site labs, the Nutrien Pilot Plant Lab, and independent third-party surveyor labs. The CPSEP provides participants with three unknown potash samples for analysis quarterly. Results for the unknown sample analysis are correlated by an independent agency that distributes statistical analysis and a summary report to all participants. Completed exchange program samples can be used for control standards as required in QA/QC sections of standard analytical procedures.

The Nutrien Pilot Plant is secured in the same way as modern office buildings are secured. Authorized personnel have access and visitors are accompanied by staff. No special security measures are taken beyond that. Currently, no external laboratory certification is held by the Nutrien Pilot Plant. On occasion, product quality check samples are sent to the Saskatchewan Research Council ("SRC"), a fully certified analytical facility.

In the opinion of the authors, the sample preparation, security, and analytical procedures are acceptable, are consistent with industry-standard practices, and are adequate for Mineral Resource and Reserve estimation purposes.

Mean Potash Mineral Grade From In-Mine Samples

At Allan, in-mine grade samples are taken by collecting fine "muck" from the floor of the mine approximately once per week per active mining face. This is roughly equivalent to a sample taken every 68 m to 74 m in production panels, and a sample taken every 85 m to 128 m in development panels. Per the Allan Technical Report, in-mine potash mineral grade samples collected from the Allan A Zone were analysed in the Allan mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

The median ore grade for this family of in-mine samples is 25.5% K_2O equivalent and the mean ore grade is 24.8%.

Per the Allan Technical Report, the B Zone mineral grade at Allan is reported to be 20.3% K_2O equivalent, the grade observed from the in-mine samples at the Lanigan mine where the B Zone has been extensively mined. Even though Allan mine is some distance from Lanigan, this is considered to be the best estimate of expected mineral grade for this potash layer because the deposit is known to be regionally continuous from west of Vanscoy to east of Lanigan. Although it is possible that once mining proceeds into the B Zone the reported grade could change from what is reported, it is expected that any such change would be minimal.

Potash Ore Density From In-Mine Mineral Grade Measurements

An estimate of in-situ rock density is used to calculate potash mineralization volumes in Mineral Resource and Reserve assessments. A common approach, and the one used by Nutrien, is to determine in-place Mineral Resource and Reserve volumes (m^3), then multiply this number by in-situ bulk-rock density (kg / m^3) to give in-place Mineral Resource and Reserve tonnes. Well-log data from drillholes can be used to calculate bulk density if accurate and calibrated well-logs are acquired during exploration drilling. In practical terms, modern well-logs tend to meet these criteria, but historic well-logs (collected before the 1990s) do not. In Saskatchewan, almost all potash exploration drilling took place in the 1950s and 1960s, well before density logs were accurate and reliable.

Another approach, and the one used by Nutrien, is to look up density values for the minerals which constitute potash rock – values determined in a laboratory to a high degree of accuracy and published in reliable scientific journals / textbooks – then apply these

densities to the bulk rock. Given that the density of each pure mineral is quantified and known, the only variable is what proportion of each mineral makes up the bulk rock. An obvious benefit of this approach is that a mean value computed on in-mine samples has a much greater confidence interval than a mean value computed from just a few drillhole assays.

The four main mineralogical components of the ore zones of Saskatchewan's Prairie Evaporite Formation with their respective mineral densities are:

Mineral	Density (kg / m^3)	Components
Halite	2,170	NaCl
Sylvite	1,990	KCl
Carnallite	1,600	$KMgCl_3 \cdot 6(H_2O)$
Insolubles	2,510	Anhydrite, dolomite, quartz, muscovite, and other minor mineral components (*Nutrien Pilot Plant, 2018*)

All Nutrien potash mines measure and record the in-mine % K_2O grade and insoluble content of the mined rock. The magnesium content is not measured at Allan since carnallite is a negligible component of the ore here. From this set of measurements, density of the ore can be calculated.

The value for insoluble density is based on known densities of the constituent parts of the insoluble components of the mineralization and the average occurrence of these insoluble components, which is known from over 50 years of mining experience at Allan. Assuming the lowest plausible density of insolubles known for Saskatchewan potash deposits of this nature, the effect upon overall bulk-rock ore density and Mineral Resource and Reserve calculations would be negligible.

From life-of-mine in-mine samples taken at Allan, bulk density for the Allan A Zone has been determined to be:

= (halite density * % halite) + (sylvite density * % sylvite) + (insolubles density * % insolubles)
= (2,170 kg / m^3 * 58.1%) + (1,900 kg / m^3 * 39.3%) + (2,510 kg / m^3 * 2.7%)
= 2,116 kg / m^3

$RHO_{bulk\text{-}rock}$ (Allan A Zone) = 2,110 kg / m^3

This method is as accurate as the ore grade measurements and mineral density estimates.

To date, not enough B Zone mining has been carried out at Allan to permit a bulk density calculation based on Allan in-mine grade samples. The mining of 3.537 million tonnes of the B Zone represents a relatively small amount of material for a potash mine. The historic mining that was conducted in the B Zone at Allan was localized in only one geographic area, so data from this mining are not considered representative of what will be seen once mining proceeds in this layer. Although it is possible that once enough mining has occurred in the B Zone to give enough samples with all constituent minerals measured, the reported proportions of the various mineral constituents could change from what is reported. It is expected that any such change would have only a minimal effect on bulk-rock density used in tonnage calculations.

Instead, we use the potash bulk-rock density calculated using in-mine grade samples from Lanigan B Zone:

$RHO_{bulk\text{-}rock}$ (Allan B Zone) = $RHO_{bulk\text{-}rock}$ (Lanigan B Zone) = 2,120 kg / m^3

This estimate is considered acceptable since both Allan B Zone and Lanigan B Zone are the same potash seam.

Assay Data Verification

Most of the original drillhole assays were studied by independent consultant David S. Robertson and Associates (1978). In 2018, six historical drillhole assay results were studied by Nutrien technical staff, Jodi Derkach (P.Geo.) and Tanner Soroka (P.Geo.).

The original assay results for core samples from historical drillholes were taken as accurate in these studies, as there is no way to reliably reanalyze these samples. Most of the remaining samples in storage have long since deteriorated to the point where they are not usable.

Ore grades of in-mine samples are measured in-house at the Allan mine laboratory by Company staff using modern, standard chemical analysis tools and procedures; an independent agency does not verify these results. However, check sampling through the CPSEP does occur.

It should be noted that assay results from historical drillholes match in-mine sample results reasonably well – within 1% – even though drillhole sample spacing is much greater. This correlation is further validation of the in-mine sampling methodology. Mean mineral grade determined from in-mine samples taken from over 50 years of mining at Allan is thought to provide the most accurate measurement of potash grade for the Allan mine, also providing a good basis for estimating ore grade in areas of future mining at Allan.

Exploration Data Verification

The purpose of any mineral exploration program is to determine extent, continuity, and grade of mineralization to a certain level of confidence and accuracy. For potash exploration, it is important to minimize the amount of cross-formational drilling, since each drillhole is a potential conduit for subsurface groundwater from overlying (or underlying) water-bearing formations into future mine workings. Every potash test drillhole from surface sterilizes potash mineralization as a safety pillar is required around every surface drillhole once underground mining commences. This is the main reason that exploration drilling has not been carried out at Allan in recent years.

Initial sampling and assaying of cores were done during potash exploration at Allan in the 1950s and 1960s. Methods were consistent with standard procedures for that era. The mine began production in 1968 and, with the exception of a single potash test hole in 1969, no further core drilling has been conducted since then. This approach to potash sampling is in accordance with widely accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

Assay of physical samples (drillhole cores and/or in-mine samples) is the only way to gain information about mineral grade, but extent and continuity of mineralization are correctly determined using data collected from geophysical surveys correlated with historic drilling information. To date surface seismic data at Allan have been collected, analysed, and verified by Company staff, at times in cooperation with an independent consultant.

Data for the mineral resource and reserve estimates for Allan mine were verified by Company staff as follows:

- Review of potash assay sample information (drillholes and in-mine grade samples);
- Review of surface geophysical exploration results (3D and 2D seismic data);
- Crosscheck of mined tonnages reported by mine site technical staff with tonnages estimated from mine survey information; and
- Crosscheck of mineral resource and reserve calculations carried out by corporate technical staff.

In the opinion of the authors, this approach to data verification of potash mineral grade and surface seismic information is in accordance with generally accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

vii) Mineral Processing and Metallurgical Testing

At Allan, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968.

Over the 52-year mine life, 164.244 million tonnes of potash ore have been mined and hoisted at Allan to produce 57.919 million tonnes of finished potash product (from start-up in 1968 to December 31, 2020). Given this level of sustained production over 52 years, basic mineralogical processing and prospective metallurgical testing of Allan potash is not considered relevant.

viii) Mineral Resource and Mineral Reserve Estimates

Definitions of Mineral Resource

The Canadian Institute of Mining and Metallurgy and Petroleum (“CIM”) has defined mineral resource in *The CIM Definition Standards for Mineral Resources and Reserves* (2014) as:

Inferred Mineral Resource: That part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.

Indicated Mineral Resource: That part of a mineral resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade quality continuity between points of observation.

Measured Mineral Resource: That part of a mineral resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of modifying factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.

CIM defines Modifying Factors as “considerations used to convert mineral resources into mineral reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.”

In south-central Saskatchewan, where geological correlations are straightforward, and within a (potash) subsurface mineral lease with an operating potash mine, mineral resource categories are generally characterized by the Company as follows:

Inferred Mineral Resource: Areas of limited exploration, such as areas that have been investigated through regional geological studies, or areas with 2D regional surface seismic coverage, little or no drilling, at some distance from underground workings, and within the applicable Crown lease.

Indicated Mineral Resource: Areas of adequate exploration, such as areas with 3D surface seismic coverage, little or no drilling, at some distance from underground workings, and within the applicable Crown lease.

Measured Mineral Resource: Areas of detailed, physical exploration through actual drilling or mine sampling, near existing underground workings, and within the applicable Crown lease.

The Allan mine began production in 1968 and, except for a single test hole in 1969, no further core drilling has been carried out since then. Instead, exploration involved collecting surface seismic data, which became better in quality over the years. Exploration drilling has demonstrated the presence of the potash horizon, and seismic coverage shows the continuity of the Prairie Evaporite Formation within which the potash horizon occurs.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zone at Allan that is far superior to the level of understanding provided by any surface drilling-based exploration program. The authors believe that this approach provides a body of information that guides and constrains exploration inferences in a much better way than could be achieved from any conventional exploration investigation in areas immediately surrounding, and contiguous to, the Allan potash mine.

Mineral Resource Estimates

Exploration information used to calculate reported Mineral Resource tonnages at Allan consist of both physical sampling (drillhole and in-mine) and surface seismic (2D and 3D). Based on the definitions and guidelines above, all mineral rights leased or owned by the Company, and within Allan Crown Lease, are assigned to one of the three mineral resource categories.

Mineral resources are reported as mineralization in-place and are exclusive of Mineral reserves. In-place tonnes were calculated for each of the mineral resource categories using the following parameters:

Mining Height:	3.353 meters (11 feet)
Ore Density:	2.110 tonnes/cubic meter (A Zone)
Ore Density:	2.120 tonnes/cubic meter (B Zone)

The mineral resources per the Allan Technical Report are as follows:

Allan A Zone:		
Inferred Resource	2,678	millions of tonnes
Indicated Resource	366	millions of tonnes
Measured Resource	1,006	millions of tonnes
Total A Zone Resource	4,050	millions of tonnes
Allan B Zone:		
Inferred Resource	2,691	millions of tonnes
Indicated Resource	367	millions of tonnes
Measured Resource	1,506	millions of tonnes
Total B Zone Resource	4,564	millions of tonnes
Total for Allan (A Zone + B Zone):		
Inferred Resource	5,369	millions of tonnes
Indicated Resource	733	millions of tonnes
Measured Resource	2,512	millions of tonnes
Total A Zone + B Zone Resource	8,614	millions of tonnes

The December 31, 2020 Mineral Resource estimates remain the same as the estimates outlined in the Allan Technical Report.

The average mineral grade of the Allan A Zone Mineral Resource is 24.8% K_2O equivalent and was determined from in-mine samples at Allan collected over the life of the mine. The average mineral grade of the Allan B Zone Mineral Resource is 20.3% K_2O equivalent and was determined from in-mine samples at Lanigan mine where the B Zone has been extensively mined.

The tonnage reported in the Allan A Zone Measured Resource is comprised of the potash that is within 1.6 km (1 mile) of physically sampled location (i.e., drillholes or mine workings). Also included as Measured Resource is the potash in the pillars of mined-out areas of the Allan mine as there is the possibility of retrieving ore from the remnant mining pillars at some point in the future. An example of this is the Patience Lake mine which was successfully converted from a conventional mine to a solution mine after being lost to flooding in 1989. Since mining of remnant mining pillars is not anticipated in the near future at Allan, in-place pillar mineralization remains as a Mineral Resource rather than a Mineral Reserve at this time.

Definitions of Mineral Reserve

CIM defined mineral reserve in The CIM Definition Standards for Mineral Resources and Reserves (2014) as:

Probable Mineral Reserve: The economically mineable part of an indicated, and in some circumstance, a measured, mineral resource. The confidence in the modifying factors applying to a probable mineral reserve is lower than that applying to a proven mineral reserve.

Proven Mineral Reserve: The economically mineable part of a measured mineral resource. A proven mineral reserve implies a high degree of confidence in the modifying factors.

CIM defines Modifying Factors as “considerations used to convert Mineral Resources into Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.”

For Saskatchewan, in regions adjacent and contiguous to an operating potash mine, mineral reserve categories are characterized by the Company as follows:

Probable Mineral Reserve: Identified recoverable potash mineralization classified as a measured resource, within a 1.6 km (1 mile) radius of a sampled mine entry or exploration drillhole, and within the applicable Crown lease.

Proven Mineral Reserve: identified recoverable potash mineralization classified as a measured resource, delineated on at least two sides by sampled mined entries or exploration drillholes to a maximum of 3.2 km (2 miles) apart, and within the applicable Crown lease.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zone at Allan that is far superior to the level of understanding provided by any surface drilling-based exploration program. An understanding of the amount of ore that can be conventionally mined from the measured resource category using current mining practices comes from decades of potash mining experience at Allan.

Mineral Reserve Estimates

Using the definitions outlined above, a portion of the Allan A Zone Measured Resource has been converted to Mineral Reserve. The assigned Mineral Reserve category is dependent on proximity to sampled mined entries also described above. An overall extraction ratio for the Allan mine has been applied to the qualifying areas outlined as Measured Resource.

The overall extraction ratio at the Allan mine is 33%. It was derived by dividing the total tonnes mined to date by the tonnage equivalent of the total area of the mine workings (i.e., the perimeter around the mine workings) less future mining blocks. Since an extraction ratio has been applied, mineral reserves are considered recoverable ore, and are reported as such.

The mineral reserves per the Allan Technical Report are as follows:

Allan A Zone:		
Probable Reserve	250	millions of tonnes
Proven Reserve	99	millions of tonnes
Total A Zone Reserve =	349	millions of tonnes

Allan B Zone:		
Probable Reserve	nil	
Proven Reserve	nil	
Total B Zone Reserve =	nil	
Total for Allan (A Zone + B Zone):		
Probable Reserve	250	millions of tonnes
Proven Reserve	99	millions of tonnes
Total A Zone and B Zone Reserve =	349	millions of tonnes

The average mineral grade of the Allan A Zone mineral reserve is 24.8% K_2O equivalent and was determined from in-mine samples at Allan over the life of the mine.

The December 31, 2020 Mineral Reserve estimates essentially remain the same as the estimates outlined in the Allan Technical Report. Tonnes mined since the Allan Technical Report (i.e. 14.006 million tonnes) can be removed from the A Zone Proven Reserve resulting in a total A Zone Proven Reserve estimate of 85 million tonnes.

ix) Mining Operations

All conventional potash mines in Saskatchewan operate at 900 m to 1,200 m below surface within 9 m to 30 m of the top of the Prairie Evaporite Formation. Over the scale of any typical Saskatchewan potash mine, potash beds are tabular and regionally flat-lying, with only moderate local variations in dip. At Allan, potash ore is mined using conventional mining methods, whereby:

- Shafts are sunk to the potash ore body;
- Continuous mining machines cut out the ore, which is hoisted to surface through the production shaft;
- Raw potash is processed and concentrated in a mill on surface; and
- Concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Sinking of the two original shafts (Shaft #1 and Shaft #2) from surface to the potash zone was completed in early 1968, and the first potash ore was hoisted by Allan in April of that year. The Allan mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

In recent years, the Allan mine underwent a major expansion which brought the nameplate capacity up to 4.0 million tonnes of finished potash products per year. In 2020, operational capability at the Allan facility was 2.8 million tonnes per year. Operational capability may vary during the year and year-to-year including as between our potash operations.

Virtually all Allan underground mining rooms are in one potash mineralized zone, the upper layer (or A Zone) of the Patience Lake Member of the Prairie Evaporite Formation (the host evaporite salt). In contrast, some potash mines further east in Saskatchewan mine in a different potash layer, the Esterhazy Member of the Prairie Evaporite Formation. Per the Allan Technical Report, mine elevations range from approximately 980 m to 1,120 m, averaging approximately 1,010 m. These depths to A Zone potash mineralization are anticipated over most of the Allan lease area. Mine workings are protected from aquifers in overlying formations by approximately 12 m of overlying salt and potash beds, along with salt plugged porosity in the Dawson Bay Formation, a carbonate layer lying immediately above potash hosting salt beds.

The Allan mine is a conventional underground mining operation whereby continuous mining machines are used to excavate the potash ore by the stress-relief mining method. Continuous conveyor belts transport ore from the mining face to the bottom of the production shaft. The highest mineral grade section of the Allan potash seam is approximately 3.35 m (11 feet) thick, with gradations to lower grade salts immediately above and below the mining horizon. The actual mining thickness at Allan is dictated by the height of continuous boring machines used to cut the ore. Per the Allan Technical Report, seven older borers are designed to cut at a thickness of 3.35 m (11 feet) and four new borers are designed to cut 3.65 m (12 feet).

Allan cuts to a marker (clay) seam that is slightly above the high-grade mineralized zone to establish a safe and stable mine roof. The top marker seam is slightly overcut by 10 to 20 cm. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to proceeding, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

Conservative local extraction ratios (never exceeding 45% in any mining block) are employed at all Saskatchewan mines, including Allan, in order to minimize potential detrimental effects of mining on overlying strata; this is common practice in flat-lying, tabular ore bodies overlain by water-bearing layers.

From the shaft-bottom, potash ore is hoisted approximately 1,000 m from the potash level through the vertical shafts to a surface mill. In addition to hoisting potash ore to surface, the production shaft also provides fresh air ventilation to the mine and serves as a secondary egress. The service shaft is used for service access, and exhaust ventilation from the mine.

Over the 52-year mine life, 164.244 million tonnes of potash ore have been mined and hoisted at Allan to produce 57.919 million tonnes of finished potash products (from start-up in 1968 to December 31, 2020). The life-of-mine average concentration ratio (raw-ore/finished potash products) is 2.84 and the overall extraction ratio over this period is 33%.

x) Processing and Recovery Operations

At Allan, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968. Raw potash ore is processed on surface and concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Over the past three years, production of finished potash products at Allan was:

- 2018: 2.410 million tonnes finished potash products at 61.17% K_2O (average grade)
- 2019: 2.178 million tonnes finished potash products at 61.20% K_2O (average grade)
- 2020: 2.792 million tonnes finished potash products at 61.20% K_2O (average grade)

Over the past decade actual mill recovery rates have been between 82.9% and 87.0%, averaging 85.51%. Given the long-term experience with potash geology and actual mill recovery at Allan no fundamental potash milling problems are anticipated in the foreseeable future.

Quality control testing and monitoring geared towards fine-tuning and optimizing potash milling and concentrating processes are conducted on a continual basis at all Nutrien mine sites and at Nutrien research facilities. At Allan, this is no exception; test work to optimize circuit performance and ensure product quality is carried out on an ongoing basis.

xi) Infrastructure, Permitting and Compliance Activities

Project Infrastructure

Infrastructure is in place to meet current and projected requirements for transportation, energy (electricity and natural gas), water and process materials at Allan.

The Allan mine is served by a number of villages within 50 kilometers of the mine site. The nearest city is Saskatoon (approximately 45 km distant). Surface facilities are accessed by existing paved roads and highways that are part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

At present, high-voltage power capacity at Allan is 47 MVA. The ten-year projection of power utilization indicates that the utility can meet all foreseeable future demand.

The Allan operation requires a sustained fresh water supply for the milling process which is provided from a local reservoir called the Bradwell Reservoir operated by SaskWater (approximately 6 km distant). This water supply provides a sustainable source of process water for Allan milling operations without having any impact on other users of water in the area.

Environmental Studies, Permitting and Compliance Activities

The tailings management strategy at all Nutrien potash mines in Saskatchewan, including Allan, is one of sequestering solid mine tailings in an engineered and provincially licensed TMA near the surface plant site. The Allan TMA currently covers an area of approximately 600 hectares (1,483 acres) of land owned by the Company. Solid potash mine tailings typically consist of 85% to 95% rock salt (NaCl) and 5% to 15% insoluble (carbonate mud = $CaCO_3$, anhydrite mud = $CaSO_4$, and clays like chlorite, illite and so on). An engineered slurry-wall (in some portions, a compacted earth trench barrier) has been constructed where required around approximately half of the Allan TMA. In future years this wall can be expanded if required for operational needs. The slurry-wall provides secondary containment for any saline mine waters, minimizing brine impacts from the TMA to surrounding surface water bodies and near-surface aquifers. Areas surrounding the TMA are closely monitored: this includes everything from daily visual perimeter inspections to annual investigations and inspections of surrounding groundwater and aquifers.

Allan currently operates two brine disposal wells near the surface plant of the Allan mine where clear salt brine (i.e., no silt, clay slimes, or other waste) is borehole injected into the Winnipeg / Deadwood Formations, deep subsurface aquifers approximately 1,500 m to 1,700 m below the surface. The groundwater in these extensive deep aquifers is naturally saline.

Emissions to air (mostly salt dust and potash dust) are kept below regulatory limits through various modern air pollution abatement systems (e.g., dust collection systems built into mill processes) that are provincially licensed. This same procedure is followed at all Nutrien mines in Saskatchewan.

The Allan operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the Bradwell Reservoir (approximately 6 km distant). This water supply is provincially licensed and provides a sustainable source of process water for Allan milling operations without having any impact on other users of water in the area.

In Saskatchewan, all potash tailings management activities are carried out under an “Approval to Operate” granted by the Saskatchewan Ministry of Environment (“SMOE”), the provincial regulator. The Allan mine is in compliance in all material respects with all regulations stipulated by the Environmental Protection Branch of the SMOE. The current Allan Approval to Operate has been granted to July 1, 2028, the renewal date.

In terms of long-term decommissioning, environmental regulations of the Province of Saskatchewan require that all operating potash mines in Saskatchewan create a long-term decommissioning and reclamation plan that will ensure all surface facilities are removed, and the site is left in a chemically and physically stable condition once mine operations are complete. The Company has conducted numerous studies of this topic, and the most recent decommissioning and reclamation plan for Allan was approved by SMOE technical staff in October 2016. Because the current expected mine life for Allan is many decades into the future, it is not meaningful to come up with detailed engineering designs for decommissioning annually. Instead, decommissioning plans are reviewed every five years and updated to accommodate new concepts, technological change, incorporation of new data and adjustments of production forecasts and cost estimates. Any updated decommissioning and reclamation reports generated by this process are submitted to provincial regulatory agencies. For Allan, a revised decommissioning and reclamation plan is required in July 2021.

In addition to the long-term decommissioning plan, provincial regulations require that every potash producing company in Saskatchewan set up an Environmental Financial Assurance Fund, which is to be held in trust for the decommissioning, restoration and rehabilitation of the plant site after mining is complete. This fund is for all mines operated by Nutrien in the Province of Saskatchewan (i.e., Allan, Cory, Lanigan, Patience Lake, Rocanville and Vanscoy).

xii) Capital and Operating Costs

The Allan mine has been in operation since 1968; in the years immediately preceding this, major capital investment was made to bring this mine into production. Since then, capital expenditures were made on a regular and ongoing basis to sustain production and to expand production from time to time.

A major refurbishment and expansion of the Allan mine was completed in 2013, increasing nameplate capacity to 4.0 million tonnes of finished potash products per year. This work involved enhancement of hoists and shaft conveyances, major expansions of both mine and mill, improvements to loadout facilities and some infrastructure improvements. All construction was carried out without significant disruption to existing potash production from the site.

xiii) Exploration, Development and Production

Potash production in any given year at the Allan potash mine is a function of many variables, so actual production in any given year can vary dramatically from tonnages produced in previous years. The mineral reserve tonnage and historic average production are used to estimate remaining mine life. If the average mining rate seen over the past three years (6.851 million tonnes of potash ore mined and hoisted per year) is sustained, and if mineral reserves remain unchanged, then the Allan mine life is 49 years from December 31, 2020.

b) Cory Potash Operations

Certain scientific and technical information regarding our Cory potash operations is based on the technical report titled "National Instrument 43-101 Technical Report on Cory Potash Deposit (KL 103C), Saskatchewan, Canada" dated effective December 31, 2020 ("Cory Technical Report") prepared under the supervision of Craig Funk, B.Sc., M.Sc., P.Eng., P.Geo., who is a "qualified person" as defined in NI 43-101. The Cory Technical Report has been filed with the securities regulatory authorities in each of the provinces of Canada and furnished to the SEC. Portions of the following information are based on assumptions, qualifications and procedures that are not fully described herein. References should be made to the full text of the Cory Technical Report.

i) Project Description, Location and Access

General

The Cory mine is located in central Saskatchewan, approximately 7 kilometers west of the city of Saskatoon, Saskatchewan. The Legal Land Description (Saskatchewan Township/Range) of the Cory surface operation is Section 18 Township 36 Range 06 West of 3rd Meridian. More precisely, the Cory service shaft collar is located at:

- Latitude: 52 degrees 05 minutes 30.15 seconds North
- Longitude: 106 degrees 51 minutes 16.32 seconds West
- Elevation: 503 meters above mean SL
- Northing: 5,772,861 m
- Easting: 372,951 m
- Projection: UTM
- Datum: NAD83
- Zone: 13

The Company owns approximately 2,109 hectares (5,212 acres) of surface rights required for current Cory mine operations, including all areas covered by the existing surface plant and Tailings Management Area (TMA), and all surface lands required for anticipated future Cory mine and expanded milling operations. Surface facilities are accessed by an existing paved road that is part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

The Cory mine is served by a number of villages within 50 kilometers of the mine site. The nearest city is Saskatoon (7 km distant). Cory is situated near the northern extent of the Great Plains of North America. Topography is relatively flat, with gently rolling hills and occasional valleys. The Cory surface plant lies approximately 10 km northwest of the South Saskatchewan River, a major continental drainage channel.

Mineral Rights

Mineral rights at Cory are mined pursuant to mining leases with the Province of Saskatchewan, Canada (the Crown), and with non-Crown (Freehold) mineral rights owners. Crown mineral rights are governed by *The Subsurface Mineral Tenure Regulations, 2015*, and Crown Leases are approved and issued by the SMER. The original Cory Crown Subsurface Mineral Lease, numbered KL 103, was signed and executed in September 1962. In the following years, minor amendments were made to the Lease, resulting in Crown Subsurface Mineral Lease KL 103B.

Following the Merger, synergies were identified and realized whereby 3,503 hectares (8,656 acres) of inaccessible land in the northern part of Nutrien's adjacent Vanscoy Crown Lease were transferred into the Cory Crown Subsurface Mineral Lease KL 103C (the "Cory Crown Lease") where they could be developed, while 1,298 hectares (3,207 acres) of inaccessible land from the Cory Crown Lease were transferred into Vanscoy's Crown Lease where they could be developed. Vanscoy's Crown Subsurface Mineral Lease KL 114C was amended in 2020 at the same time as KL 103C.

KL 103C covers an area of approximately 51,438 hectares (127,107 acres). At Cory, the Company has leased potash mineral rights for 28,507 hectares (70,412 acres) of Crown Land and owns or has leased approximately 18,351 hectares (45,346 acres) of Freehold Land within the lease boundary. The Cory Crown Lease term is for a period of 21 years from September 15, 2004, with renewals (at the Company's option) for 21-year periods. Freehold Lands also remain under lease providing, generally, that production is continuing and that there is a continuation of the Crown Lease.

Within the Cory Crown Lease area 29,772 hectares (73,569 acres) are mined pursuant to a unitization agreement with mineral rights holders (Crown and Freehold).

ii) History

See “Mineral Projects – a) Allan Potash Operations – ii) History” above for a general overview of the history of potash mines in Saskatchewan.

Exploration drilling for potash in the Cory area was carried out in the 1950s and 1960s. The Cory mine was built by a company called Duval Sulphur and Potash Company in the 1960s. Potash production began at Cory in 1968 and the mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature. PotashCorp acquired the Cory mine in 1976.

A major refurbishment and expansion of the Cory mine was completed in 2013 increasing nameplate capacity to 3.0 million tonnes of finished potash products per year. At Cory potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968.

iii) Geological Setting, Mineralization and Deposit Types

Geological Setting and Mineralization

See “Mineral Projects – a) Allan Potash Operations – iii) Geological Setting, Mineralization and Deposit Types – Geological Setting and Mineralization” above for a general overview of geological setting and mineralization for potash mines in Saskatchewan.

Over the past three years (2018, 2019, 2020), the average measured potash ore grade of the mill feed at Cory was 23.8% K_20 equivalent. The average ore grade reported from 11 historic surface drillhole intersections, all within Cory Subsurface Mineral Lease KL 103C, is 25.5% K_20 equivalent. The average ore grade observed from thousands of in-mine samples collected to the end of December 2020 is 21.9% K_20 equivalent

Deposit Type

There are three mineable potash members within the Prairie Evaporite Formation of Saskatchewan. Stratigraphically highest to lowest these members are: Patience Lake, Belle Plaine and Esterhazy.

The Cory potash deposit lies within the Patience Lake Potash Member of Prairie Evaporite Formation. There are two potash seams named A Zone and B Zone within this Member; at present, only the A Zone is being mined at Cory. Some test mining has been carried out in the B Zone, but no mining is done in this layer at present. Neither the Esterhazy nor the White Bear Potash Members are present in the Cory area. The Belle Plaine Potash Member is not well-developed, and therefore is not mined.

Cory potash mineralization occurs at a depth averaging approximately 1,010 m below surface. The A Zone is approximately 3.35 m thick and occurs near the top of the Prairie Evaporite Formation salts. Salt cover from the ore zone to overlying units is approximately 12 m. The Cory mine operates as a conventional, underground potash mine.

iv) Exploration

Before the Cory mine was established, all exploration consisted of drilling from surface and analysis of core from these drillholes. Since mining began in 1968, there have been several exploration drillholes that intersect the ore zone of the Prairie Evaporite Formation.

In most of southern Saskatchewan, potash mineralization is in place wherever Prairie Evaporite Formation salts exist, are flat-lying, and are undisturbed. Since the surface seismic exploration method is an excellent tool for mapping the top and bottom of Prairie Evaporite salts, this has become the main potash exploration tool in any existing Saskatchewan Subsurface (potash) Mineral Lease. Historically, 2D seismic, and now full coverage 3D seismic methods are used to map continuity and extent of potash beds in flat-lying potash deposits. Seismic data are relied upon to identify collapse structures that must be avoided in the process of mine development since these structures can act as conduits for water ingress to the mine. As a result, isolation pillars or mining buffer zones are left around these anomalous features. This practice reduces the overall mining extraction ratio, but the risk of inflow to mine workings are effectively mitigated.

Seismic coverage is outlined in the Cory Technical Report.

Experience has shown that the potash mining zone is continuous when seismic data are undisturbed and flat-lying. It is now Nutrien’s policy to collect detailed 3D seismic data ahead of mining. Any areas recognized as seismically unusual are identified early, and mine plans are adjusted as needed.

v) Drilling

For the original Cory potash test holes drilled in the 1950s and 1960s, the primary objective of drilling was to sample potash horizons to establish basic mining parameters. Seismic surveys (2D) were done sparingly in those days, so the drillhole information was relied upon heavily to evaluate potash deposits. Test holes would penetrate the evaporite section with a hydrocarbon-based drilling mud (oil-based or diesel fuel) to protect the potash mineralization from dissolution. Basic geophysical well-logs were acquired, and in many cases, drill stem tests were run on the Dawson Bay Formation to help assess water-make potential of the caprock. Core samples from the targeted potash intersections were split or quartered (cut with a masonry saw), crushed, and analysed to establish potash grades.

Relatively thin interbeds or seams of insoluble material, referred to as clay seams in the potash industry, are an ever-present component of the A Zone and B Zone at Cory. These seams, along with the clay or clay-like material disseminated throughout the mining horizon, make up the water insoluble portion of the ore. The same sequences of clay seams can be correlated for many kilometers across the central Saskatchewan potash mining district.

At Cory, a particular sequence of three clay seams marks the top of the A Zone. These seams are used to guide the vertical positioning of the mining machine. The uppermost portion of the sequence of three seams is maintained at the top of the mining cut to keep the cutting “on grade”. Cutting too high above this upper seam or top marker results in dilution, as halite (rather than sylvinite) immediately overlies the production zone. In practice though, the top marker seam is slightly overcut (between 10 cm to 20 cm) to prevent an unstable condition from being created. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to advancing mining, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

The A Zone mining interval at Cory has been fixed at 3.35 m (11’). This mining height allows for comfortable working headroom and efficient extraction of potash ore.

The original exploration area was explored with 15 test holes laid out in an approximate 1.6 km by 6.4 km (1 mile by 4 mile) grid pattern. Of these drill holes, two did not have assays performed and two have anomalous hydrogeological indicators and the area around them is excluded from mine development. Original drill core assays were studied by independent consultant David S. Robertson and Associates (1976). Since mining commenced in 1968, no potash test holes have been completed where assays were acquired. All drilling and sampling were carried out following the regulations in place at the time.

Assays from all drillholes within Cory’s current Crown Lease (KL 103C) are provided in Table B. In each case, the best 3.35 m (11’) mining interval intersected in the drillhole was determined from the assay values, using clay marker seams as a guide. With over 50 years of mining experience at Cory, it is the opinion of the authors that areas of low grade (i.e. <15% K2O) are localized with a relatively small lateral extent. Drillhole assay data for the A Zone at Cory gives an estimated mean grade of 25.5% K_2O with 4.9% water insolubles.

B Zone mineralization is indicated by gamma ray geophysical log response in each of the exploration drillholes listed in Table B indicating a potash Mineral Resource. Although some test mining has been carried out in the B Zone, sustained production from that zone has not been established. Assay results for the B Zone are not presented here.

Table B: Assay results for all potash test holes within Cory Lease KL 103C.

Average in 3.35 m (11’) mining interval (undiluted)			
Drillhole	**Year Drilled**	**%K_2O**	**% Water Insolubles**
14-28-036-06 W3	1954	*	*
04-28-037-07 W3	1955	24.9	4.6
01-11-037-07 W3	1955	26.0	4.8
08-22-036-07 W3	1956	29.1	4.6
16-06-037-08 W3	1957	24.5	3.2
04-16-036-07 W3	1965	27.0	6.2
16-34-035-07 W3	1965	28.0	4.9
01-25-035-07 W3	1965	17.3	6.8
01-32-036-07 W3	1965	26.4	5.2
06-18-036-06 W3	1965	23.8	3.9
05-07-036-06 W3	1965	26.5	4.7
04-04-036-06 W3	1965	29.4 (anomalous)	4.6 (anomalous)
05-30-036-06 W3	1965	27.3	4.9
01-16-036-06 W3	1965	25.6 (anomalous)	5.7 (anomalous)
13-01-038-08 W3	1968	*	*
Average of 11 usable values:		**25.5**	**4.9**

Due to the remarkably consistent mineralogy and continuity of the resource, as experienced over 50 years of mine production, only a few exploration drilling programs were conducted after the 1960s. Instead of exploration drillholes, seismic surveying has been relied upon to explore ahead of mine development. Where normal Prairie Evaporite sequences are mapped in the seismic data, potash beds have unfailingly been present. Localized, relatively small mine anomalies not mapped in seismic data do occur. When they do, they are dealt with in the normal course of mining and extraction through these anomalous areas is typically minimized. Anomalies associated with possible water inflow problems, which are mapped in the seismic data, are avoided.

vi) Sampling Preparation, Analyses and Security

Basic Approach

Exploration in the Cory area was initially conducted in the 1950s and 1960s. Sampling and assaying of potash core samples was done using methods considered consistent with standard procedures for potash exploration at these times.

Drillhole sampling methods have remained essentially the same over the years. Short segments of core usually about 1 foot (0.3 m) in length are labeled based on visible changes in mineralization, and sometimes based on fixed intervals. Each segment of core is then split using some type of rock or masonry saw. The split portion of core is then bagged and labeled and sent to a laboratory for chemical analysis. Historical potash samples remain stored at the Subsurface Geological Laboratory (Regina, Saskatchewan) of the SMER. Most of these have deteriorated substantially.

All in-mine samples were analysed in the Cory mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

Regarding quality assurance for analytical results of in-mine samples, the Company participates in the Canpotex Producer Sample Exchange Program using methods developed by the Saskatchewan Potash Producers Association ("SPPA"). The Sample Exchange Program monitors the accuracy of analytical procedures used in its labs. In the early 1970s, the SPPA initiated a round-robin Sample Exchange Program, the purpose of which was to assist the potash laboratories in developing a high level of confidence in analytical results. This program, now named the Canpotex Producer Sample Exchange Program using SPPA Methods ("CPSEP"), has continued up to the present. Current participants include all Canpotex member potash mine site labs, the Nutrien Pilot Plant Lab, and independent third-party surveyor labs. The CPSEP provides participants with three unknown potash samples for analysis quarterly. Results for the unknown sample analysis are correlated by an independent agency that distributes statistical analysis and a summary report to all participants. Completed exchange program samples can be used for control standards as required in QA/QC sections of standard analytical procedures.

The Nutrien Pilot Plant is secured in the same way as modern office buildings are secured. Authorized personnel have access and visitors are accompanied by staff. No special security measures are taken beyond that. Currently, no external laboratory certification is held by the Nutrien Pilot Plant. On occasion, product quality check samples are sent to the SRC, a fully certified analytical facility.

In the opinion of the authors, the sample preparation, security, and analytical procedures are acceptable, are consistent with industry-standard practices, and are adequate for Mineral Resource and Reserve estimation purposes.

Mean Potash Mineral Grade From In-Mine Samples

It has been the practice at Cory for the past several years to acquire two in-mine grade samples at the start of every cutting sequence and is done by collecting fine "muck" from the floor of the mine. The sampling frequency is equivalent to two samples taken approximately every 25 m in production panels, and two samples taken approximately every 50 m in development panels. In-mine grade sampling practices at Cory have varied over the years resulting in an irregular sample set. It is the belief of the authors that the average grade reported from these in-mine samples will become increasingly representative of Cory A Zone potash mineralization as standardized sampling continues. It will also lead to a normalized data distribution. At Cory, mill feed grade data collected over the years suggests a higher average grade than is found in the in-mine sample set.

Per the Cory Technical Report, in-mine potash mineral grade samples collected from the Cory A Zone were analysed in the Cory mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

The median ore grade for this family of in-mine samples is 23.0% K_2O equivalent and the mean ore grade is 21.9%.

Per the Cory Technical Report, the B Zone mineral grade at Cory is reported to be 20.3% K_2O equivalent, which is the grade observed from in-mine samples at the Lanigan mine where the B Zone has been extensively mined. Even though Cory mine is some distance from Lanigan, this is considered to be the best estimate of expected mineral grade for this potash layer because the deposit is known to be regionally continuous from west of Vanscoy to east of Lanigan. Although it is possible that once mining proceeds into the B Zone the reported grade could change from what is reported, it is expected that any such change would be minimal.

Potash Ore Density From In-Mine Mineral Grade Measurements

An estimate of in-situ rock density is used to calculate potash mineralization volumes in Mineral Resource and Reserve assessments. A common approach, and the one used by Nutrien, is to determine in-place Mineral Resource and Reserve volumes (m^3), then multiply this number by in-situ bulk-rock density (kg / m^3) to give in-place Mineral Resource and Reserve tonnes. Well-log data from drillholes can be used to calculate bulk density if accurate and calibrated well-logs are acquired during exploration drilling. In practical terms, modern well-logs tend to meet these criteria, but historic well-logs (collected before the 1990s) do not. In Saskatchewan, almost all potash exploration drilling took place in the 1950s and 1960s, well before density logs were accurate and reliable.

Another approach, and the one used by Nutrien, is to look up density values for the minerals which constitute potash rock – values determined in a laboratory to a high degree of accuracy and published in reliable scientific journals / textbooks – then apply these densities to the bulk rock. Given that the density of each pure mineral is quantified and known, the only variable is what proportion of each mineral makes up the bulk rock. An obvious benefit of this approach is that a mean value computed on the in-mine samples has a much greater confidence interval than a mean value computed from just a few drillhole assays.

The four main mineralogical components of the ore zones of Saskatchewan's Prairie Evaporite Formation with their respective mineral densities are:

Mineral	Density (kg / m^3)	Components
Halite	2,170	NaCl
Sylvite	1,990	KCl
Carnallite	1,600	$KMgCl_3 \cdot 6(H_2O)$
Insolubles	2,510	Anhydrite, dolomite, quartz, muscovite, and other minor mineral components *(Nutrien Pilot Plant, 2018)*

Historical Cory in-mine mineral grade analyses did not include measurements of the insoluble content, so the approach described above cannot be used at Cory. Instead, potash bulk-rock density is calculated using thousands of in-mine samples from the adjacent Vanscoy A Zone. All Nutrien potash mines now measure and record the in-mine % K_2O grade and insoluble content of the mined rock. Magnesium content is not measured at Cory or Vanscoy since carnallite is a negligible component of the ore here.

The value for insoluble density is based on known densities of the constituent parts of the insoluble components of the mineralization and the average occurrence of these insoluble components, which is known from over 50 years of mining experience at Vanscoy. Assuming the lowest plausible density of insolubles known for Saskatchewan potash deposits of this nature, the effect upon overall bulk-rock ore density and Mineral Resource and Reserve calculations would be negligible.

From life-of-mine in-mine samples taken at Vanscoy, bulk density for the Cory A Zone has been determined to be:

$$\mathbf{RHO_{bulk\text{-}rock}\ (Cory\ A\ Zone) = RHO_{bulk\text{-}rock}\ (Vanscoy\ A\ Zone) = 2{,}116\ kg\ /\ m^3}$$

This method is as accurate as the ore grade measurements and mineral density estimates.

This estimate is considered acceptable since Cory and Vanscoy are mining the same potash seam, both mines use boring machines that are the same height, and both mines use the same basic mineral grade sampling methodology.

Not enough test mining of the B Zone has been conducted at Cory to permit a bulk density calculation based on Cory in-mine grade samples. If test mining of the B Zone at Cory is conducted in future, there may be enough samples with all constituent minerals measured to warrant a change from what is reported. It is expected that any such change would have only a minimal effect on bulk-rock density used in tonnage calculations.

Instead, the potash bulk-rock density is calculated using thousands of in-mine grade samples from Lanigan B Zone:

$$\mathbf{RHO_{bulk\text{-}rock}\ (Cory\ B\ Zone) = RHO_{bulk\text{-}rock}\ (Lanigan\ B\ Zone) = 2{,}120\ kg\ /\ m^3}$$

This estimate is considered acceptable since both Cory B Zone and Lanigan B Zone are the same potash seam. Should the Cory B Zone bulk density change from the predicted value of 2,120 kg / m^3, the later defined Cory B Zone Mineral Resources and Reserves will also change, albeit, insignificantly.

Assay Data Verification

The majority of original drill core assays were studied by independent consultant David S. Robertson and Associates (1976).

The original assay results for core samples from historical drillholes were taken as accurate in these studies, as there is no way to reliably reanalyse these samples. Most of the remaining samples in storage have long since deteriorated to the point where they are not usable.

Ore grades of in-mine samples are measured inhouse at the Cory mine laboratory by Company staff using modern, standard chemical analysis tools and procedures; an independent agency does not verify these results. However, check sampling through the CPSEP Methods does occur.

It should be noted that assay results from historical drillholes match in-mine sample results reasonably well – within 1% – even though drillhole sample spacing is much greater. This correlation is further validation of the in-mine sampling methodology. Mean mineral grade determined from in-mine samples taken from over 50 years of mining at Cory is thought to provide the most accurate measurement of potash grade for the Cory mine, also providing a good basis for estimating ore grade in areas of future mining at Cory.

Exploration Data Verification

The purpose of any mineral exploration program is to determine extent, continuity, and grade of mineralization to a certain level of confidence and accuracy. For potash exploration, it is important to minimize the amount of cross-formational drilling, since each drillhole is a potential conduit for subsurface groundwater from overlying (or underlying) water-bearing formations into future mine workings. Every potash test drillhole from surface sterilizes potash mineralization; a safety pillar is required around every surface drillhole once underground mining commences.

Initial sampling and assaying of cores were done during potash exploration at Cory in the 1950s and 1960s. Methods were consistent with standard procedures for that era. The mine began production in 1968 and test drilling conducted after that was largely for the purpose of better understanding the caprock rather than potash mineralization. This approach to potash sampling is in accordance with widely accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

Assay of physical samples (drillhole cores and/or in-mine samples) is the only way to gain information about mineral grade, but extent and continuity of mineralization are correctly determined using data collected from geophysical surveys correlated with historic drilling information. To date, surface seismic data at Cory have been collected, analysed, and verified by Company staff, at times, in cooperation with independent consultants.

Data for the Mineral Resource and Reserve estimates for Cory mine were verified by Company staff as follows:

- Review of potash assay sample information (drillholes and in-mine grade samples),
- Review of surface geophysical exploration results (3D and 2D seismic data),
- Crosscheck of mined tonnages reported by mine site technical staff with tonnages estimated from mine survey information, and
- Crosscheck of Mineral Resource and Mineral Reserve calculations carried out by corporate technical staff.

In the opinion of the authors, this approach to data verification of potash mineral grade and surface seismic information is in accordance with generally accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

vii) Mineral Processing and Metallurgical Testing

At Cory, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968.

Over the 52-year mine life, 123.510 million tonnes of potash ore have been mined and hoisted to produce 38.672 million tonnes of finished potash product (from startup in 1968 to December 31, 2020). Given this level of sustained production over several decades, basic mineralogical processing and prospective metallurgical testing of Cory potash is not considered relevant.

viii) Mineral Resource and Mineral Reserve Estimates

Definitions of Mineral Resource

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Resource” for an overview of CIM’s mineral resource categories and the Company’s general characterization of mineral resources categories for its potash mines.

The Cory mine began production in 1968 and test drilling conducted after that was largely for the purpose of better understanding the caprock rather than potash mineralization. Instead, exploration involved collecting surface seismic data, which became better in quality over the years. Exploration drilling has demonstrated the presence of the potash horizon, and seismic coverage shows the continuity of the Prairie Evaporite Formation within which the potash horizon occurs.

Along with this approach, analysis of in-mine samples for potash grade has provided an observation-based understanding of the potash mineralized zone at Cory that is far superior to the level of understanding provided by any surface drilling-based exploration program. The authors believe that this approach provides a body of information that guides and constrains exploration inferences in a much better way than could be achieved from any conventional exploration investigation in areas immediately surrounding, and contiguous to, the Cory potash mine.

Mineral Resource Estimates

Exploration information used to calculate reported Mineral Resource tonnages at Cory consist of both physical sampling (drillhole and in-mine) and surface seismic (2D and 3D). Based on the definitions and guidelines above, all mineral rights leased or owned by the Company, and within Cory Crown Lease, are assigned to one of the three mineral resource categories.

Mineral resources are reported as mineralization in-place and are exclusive of Mineral reserves. In-place tonnes were calculated for each of the mineral resource categories using the following parameters:

Mining Height:	3.35 meters (11 feet)
Ore Density:	2.116 tonnes / cubic metre (A Zone)
Ore Density:	2.120 tonnes / cubic metre (B Zone)

The mineral resources per the Cory Technical Report are as follows:

Cory A Zone:		
Inferred Resource	1,284	millions of tonnes
Indicated Resource	612	millions of tonnes
Measured Resource	1,056	millions of tonnes
Total A Zone Resource	2,952	millions of tonnes
Cory B Zone:		
Inferred Resource	1,286	millions of tonnes
Indicated Resource	613	millions of tonnes
Measured Resource	1,396	millions of tonnes
Total B Zone Resource	3,295	millions of tonnes
Total Cory Resource (A Zone + B Zone):		
Inferred Resource	2,570	millions of tonnes
Indicated Resource	1,225	millions of tonnes
Measured Resource	2,452	millions of tonnes
Total A Zone + B Zone Resource	6,247	millions of tonnes

Per the Cory Technical Report, the average mineral grade of the Cory A Zone mineral resource is 21.9% K_2O equivalent and was determined from in-mine samples at Cory. The average mineral grade of the Cory B Zone mineral resource is 20.3% K_2O equivalent and was determined from in-mine samples at Lanigan mine where the B Zone has been extensively mined.

The tonnage reported in the Cory A Zone Measured Resource is comprised of the potash that is within 1.6 km (1 mile) of physically sampled location (i.e. drillholes or mine workings). Also included as Measured Resource is the potash in the pillars of mined-out areas of the Cory mine as there is the possibility of retrieving ore from the remnant mining pillars at some point in the future. An example of this is the Patience Lake mine which was successfully converted from a conventional mine to a solution mine after being lost to flooding in 1989. Since mining of remnant mining pillars is not anticipated in the near future at Cory, in-place pillar mineralization remains as a Mineral Resource rather than a Mineral Reserve at this time.

Definitions of Mineral Reserve

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Reserve” for an overview of CIM’s mineral reserve categories and the Company’s general characterization of mineral reserve categories for its potash mines.

Along with this approach, analysis of in-mine samples for potash grade has provided an observation-based understanding of the potash mineralized zone at Cory that is far superior to the level of understanding provided by any surface drilling-based exploration program. An understanding of the amount of ore that can be conventionally mined from the Measured Resource category using current mining practices comes from over 50 years of potash mining experience at Cory.

Mineral Reserve Estimates

Using the definitions outlined above, a portion of the Cory A Zone Measured Resource has been converted to Mineral Reserve. The assigned Mineral Reserve category is dependent on proximity to sampled mined entries also described above. An overall extraction ratio for the Cory mine has been applied to the qualifying areas outlined as Measured Resource.

The overall extraction ratio at the Cory mine is 27%. It was derived by dividing the total tonnes mined to date by the tonnage equivalent of the total area of the mine workings (i.e. the perimeter around the mine workings) less future mining blocks. Since an extraction ratio has been applied, Mineral Reserves are considered recoverable ore, and are reported as such. Note that only drillholes whose 1.6 km radii are contiguous to mine workings or the 1.6 km radius placed around mine workings are used to compute probable mineral reserve. The remaining non-contiguous drillholes remain in the measured resource category
The mineral reserves per the Cory Technical Report are as follows:

Cory A Zone:		
Probable Reserve	141	millions of tonnes
Proven Reserve	73	millions of tonnes
Total A Zone Reserve =	214	millions of tonnes
Cory B Zone:		
Probable Reserve	nil	
Proven Reserve	nil	
Total B Zone Reserve =	nil	
Total for Cory (A Zone + B Zone):		
Probable Reserve	141	millions of tonnes
Proven Reserve	73	millions of tonnes
Total A Zone and B Zone Reserve =	214	millions of tonnes

The average mineral grade of the Cory A Zone Mineral Reserve is 21.9% K_2O equivalent and was determined from in-mine samples at Cory.

ix) Mining Operations

All conventional potash mines in Saskatchewan operate at 900 m to 1,200 m below surface within 9 m to 30 m of the top of the Prairie Evaporite Formation. Over the scale of any typical Saskatchewan potash mine, potash beds are tabular and regionally flat-lying, with only moderate local variations in dip. At Cory, potash ore is mined using conventional mining methods, whereby:

- Shafts are sunk to the potash ore body;
- Continuous mining machines cut out the ore, which is hoisted to surface through the production shaft;
- Raw potash is processed and concentrated in a mill on surface; and
- Concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Sinking of the two original shafts (Shaft #1 and Shaft #2) from surface to the potash zone was completed in 1968, and the first potash ore was hoisted in the fall of that year. The Cory mine has run on a continuous basis since the first ore was hoisted in 1968, other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

In recent years, the Cory mine underwent a major expansion which brought the nameplate capacity up to 3.0 million tonnes of finished potash products per year. In 2020, operational capability at the Cory facility was 1.0 million tonnes per year. Operational capability may vary during the year and year-to-year including as between our potash operations.

Virtually all Cory underground mining rooms are in one potash mineralized zone, the upper layer (or A Zone) of the Patience Lake Member of the Prairie Evaporite Formation (the host evaporite salt). In contrast, some potash mines further east in Saskatchewan mine in a different potash layer, the Esterhazy Member of the Prairie Evaporite Formation. At Cory, mine elevations average approximately 1,010 m depth below surface. Mine workings are protected from aquifers in overlying formations by approximately 12 m of overlying salt and potash beds, along with salt plugged porosity in the Dawson Bay Formation, a carbonate layer lying immediately above potash hosting salt beds.

The Cory mine is a conventional underground mining operation whereby continuous mining machines are used to excavate the potash ore by the stress-relief mining method. Continuous conveyor belts transport ore from the mining face to the bottom of the production shaft. Mining methods employed in Saskatchewan are discussed in Jones and Prugger (1982) and in Gebhardt (1993). The highest mineral grade section of the Cory potash seam is approximately 3.35 m (11') thick, with gradations to lower grade salts immediately above and below the mining horizon. The actual mining thickness at Cory is dictated by the height of continuous boring machines used to cut the ore which has been fixed at 3.35 m (11'). This mining height allows for comfortable working headroom and efficient extraction of potash ore.

Cory cuts to a marker (clay) seam that is slightly above the high-grade mineralized zone to establish a safe and stable mine roof. The top marker seam is slightly overcut by 10 cm to 20 cm. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to proceeding, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

Conservative local extraction ratios (never exceeding 45% in any mining block) are employed at all Saskatchewan mines, including Cory, in order to minimize potential detrimental effects of mining on overlying strata; this is common practice in flat-lying, tabular ore bodies overlain by water-bearing layers.

From the shaft-bottom, potash ore is hoisted approximately 1,000 m from the potash level through the vertical shafts to a surface mill. In addition to hoisting potash ore to surface, the production shaft provides fresh air ventilation to the mine and serves as a secondary egress. The Service Shaft is used for service access, primary egress, and exhausting ventilation from the mine.

Over the 52-year mine life, 123.510 million tonnes of potash ore have been mined and hoisted to produce 38.672 million tonnes of finished potash product (from startup in 1968 to December 31, 2020). The life-of-mine average concentration ratio (raw ore / finished potash products) is 3.19 and the overall extraction ratio over this period is 27%.

x) Processing and Recovery Operations

At Cory, potash ore has been mined and concentrated to produce saleable quantities of high grade finished potash products since 1968. Raw potash ore is processed on surface and concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Over the past three years, production of finished potash products at Cory was:

2018: 0.810 million tonnes finished potash products at 62.63% K_2O (average grade)
2019: 0.973 million tonnes finished potash products at 61.79% K_2O (average grade)
2020: 1.403 million tonnes finished potash products at 61.58% K_2O (average grade)

Over the past decade, actual mill recovery rates have been between 69.0% and 80.6%, averaging 73.7%. Historically, mill recoveries at Cory were lower than at other Nutrien plants because a larger portion, and at one point all, of Cory's total production was made through the crystallization process. Given the long-term experience with potash geology and actual mill recovery at Cory, no fundamental potash milling problems are anticipated in the foreseeable future.

Quality control testing and monitoring geared towards fine-tuning and optimizing potash milling and concentrating processes are conducted on a continual basis at all Nutrien mine sites and at Nutrien research facilities. At Cory, this is no exception; test work to optimize circuit performance and ensure product quality is carried out on an ongoing basis.

xi) Infrastructure, Permitting and Compliance Activities

Project Infrastructure

Infrastructure is in place to meet current and projected requirements for transportation, energy (electricity and natural gas), water and process materials at Cory.

The Cory mine is served by a number of villages within 50 kilometers of the mine site. The nearest city is Saskatoon (approximately 7 km distant). Surface facilities are accessed by existing paved roads and highways that are part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

At present, high-voltage power capacity at Cory is 52 MVA. The ten-year projection of power utilization indicates that the utility can meet all foreseeable future demand.

The Cory operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the South Saskatchewan River (approximately 10 km distant). This water supply is provincially licensed and provides a sustainable source of process water for Cory milling operations without having any impact on other users of water in the area.

Environmental Studies, Permitting and Compliance Activities

The tailings management strategy at all Nutrien potash mines in Saskatchewan, including Cory, is one of sequestering solid mine tailings in an engineered and provincially licenced TMA near the surface plant site. The Cory TMA currently covers an area of approximately 416 hectares (1,027 acres) of land owned by the Company. Solid potash mine tailings typically consist of 85% to 95% rock salt (NaCl) and 5% to 15% insolubles (carbonate mud = $CaCO_3$, anhydrite mud = $CaSO_4$, and clays like chlorite, illite, and so on). An engineered slurry-wall has been constructed on the north, west, and south sides of the Cory TMA in the areas where near-surface aquifers could be impacted by mine waters. Near-surface geology to the east of the TMA limits the possibility of brine migration into these areas. The slurry-wall provides secondary containment of any saline mine waters, stopping these brines from reaching surrounding near-surface aquifers. Areas surrounding the TMA are closely monitored: this includes everything from daily visual perimeter inspections to annual investigations and inspections of surrounding groundwater and aquifers.

Cory currently operates four brine disposal wells near the surface plant of the Cory mine where clear salt brine (i.e. no silt, clay slimes, or other waste) is borehole-injected into the Winnipeg / Deadwood Formations, deep subsurface aquifers approximately 1,500 m to 1,700 m below the surface. The disposal wells are provincially licensed, and groundwater in these extensive deep aquifers is naturally saline.

Emissions to air (mostly salt dust and potash dust) are kept below regulatory limits through various modern air pollution abatement systems (e.g. dust collection systems built into mill processes) that are provincially licensed. This same procedure is followed at all Nutrien mines in Saskatchewan.

The Cory operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the South Saskatchewan River (approximately 10 km distant). This water supply is provincially licensed and provides a sustainable source of process water for Cory milling operations without having any impact on other users of water in the area.

In Saskatchewan, all potash tailings management activities are carried out under an “Approval to Operate” granted by the SMOE, the provincial regulator. The Cory mine is in compliance with all regulations stipulated by the Environmental Protection Branch of SMOE. The current Cory Approval to Operate has been granted to July 1, 2028, the renewal date.

In terms of long-term decommissioning, environmental regulations of the Province of Saskatchewan require that all operating potash mines in Saskatchewan create a long-term decommissioning and reclamation plan that will ensure all surface facilities are removed, and the site is left in a chemically and physically stable condition once mine operations are complete. The Company has conducted numerous studies of this topic, and the most recent decommissioning and reclamation plan for Cory was approved by SMOE technical staff in October 2016. Because the current expected mine life for Cory is many decades into the future, it is not meaningful to come up with detailed engineering designs for decommissioning annually. Instead, decommissioning plans are reviewed every five years, and updated to accommodate new concepts, technological change, incorporation of new data, and adjustments of production forecasts and cost estimates. Any updated decommissioning and reclamation reports generated by this process are submitted to provincial regulatory agencies. For Cory, a revised decommissioning and reclamation plan is required in July 2021.

In addition to the long-term decommissioning plan, provincial regulations require that every potash producing company in Saskatchewan set up an Environmental Financial Assurance Fund, which is to be held in trust for the decommissioning, restoration and rehabilitation of the plant site after mining is complete. This fund is for all mines operated by Nutrien in the Province of Saskatchewan (i.e. Allan, Cory, Lanigan, Patience Lake, Rocanville, and Vanscoy).

xii) Capital and Operating Costs

The Cory mine has been in operation since 1968; in the years immediately preceding this, major capital investment was made to bring this mine into production. Since then, capital expenditures were made on a regular and ongoing basis to sustain production, and to expand production from time to time.

A major refurbishment and expansion of the Cory mine was completed in 2013 increasing nameplate capacity to 3.0 million tonnes of finished potash products per year. This work involved increased hoist capacity, infrastructure improvements, major expansions of mine and mill, and improvements to loadout facilities. All construction was carried out without significant disruption to existing potash production from the site.

xiii) Exploration, Development and Production

Potash production in any given year at the Cory mine is a function of many variables, so actual production in any given year can vary dramatically from tonnages produced in previous years. The Mineral Reserve tonnage and historic average production are used to estimate remaining mine life. If the average mining rate seen over the past three years (3.626 million tonnes of potash ore mined and hoisted per year is sustained), and if Mineral Reserves remain unchanged, then the Cory mine life is 59 years from December 31, 2020.

c) Lanigan Potash Operations

Certain scientific and technical information regarding our Lanigan potash operations is based on the technical report titled "National Instrument 43-101 Technical Report on Lanigan Potash Deposit (KLSA 001 C), Saskatchewan, Canada" dated effective December 31, 2018 ("Lanigan Technical Report") prepared under the supervision of Craig Funk, B.Sc., M.Sc., P.Eng., P.Geo., who is a "qualified person" as defined in NI 43-101. The Lanigan Technical Report has been filed with the securities regulatory authorities in each of the provinces of Canada and furnished to the SEC. Portions of the following information are based on assumptions, qualifications and procedures that are not fully described herein. References should be made to the full text of the Lanigan Technical Report.

i) Project Description, Location and Access

The Lanigan mine is located in central Saskatchewan, approximately 100 kilometers east of the city of Saskatoon, Saskatchewan. The Legal Land Description (Saskatchewan Township/Range) of the Lanigan surface operation is Section 28 Township 33 Range 23 West of 2nd Meridian. More precisely, the Lanigan Shaft #2 collar is located at:

- Latitude: 51 degrees 51 minutes 20.48 seconds North
- Longitude: 105 degrees 12 minutes 34.79 seconds West
- Elevation: 535.34 meters above mean SL
- Easting: 485,560.306 m
- Northing: 5,745,008.726 m
- Projection: UTM
- Datum: NAD83
- Zone: 13

The Company owns approximately 3,700 hectares (9,140 acres) of surface rights required for current Lanigan mine operations, including all areas covered by the existing surface plant and Tailings Management Area (TMA), and all surface lands required for anticipated future Lanigan mine and expanded milling operations. Surface facilities are accessed by an existing paved road that is part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

Lanigan is situated near the northern extent of the Great Plains of North America. Topography is relatively flat, with gently rolling hills and occasional valleys. There are no rivers or other major watercourse channels near the Lanigan minesite.

Mineral Rights

Mineral rights at Lanigan are mined pursuant to mining leases with the Province of Saskatchewan, Canada (the Crown), and with non-Crown (Freehold) mineral rights owners. Crown mineral rights are governed by *The Subsurface Mineral Tenure Regulations, 2015*, and Crown Leases are approved and issued by the SMER. The original Lanigan Crown Subsurface Mineral Lease, numbered KL 100, was entered into in March 1964. A minor amendment to this lease in September 1989 resulted in KL 100R. In November 2009, a large area of land was added to the lease resulting in KLSA 001. Shortly after that, in June 2011, a minor amendment to the lease resulted in KLSA 001 A. KLSA 001 B was issued in September 2014 when portions of the adjacent exploration permits, granted in September 2011, were added to the lease. Finally, in November 2015, a minor change to the lease resulted in KLSA 001 C ("Lanigan Crown Lease").

The Lanigan Crown Lease covers an area of approximately 56,328 hectares (139,190 acres), At Lanigan, the Company has leased potash mineral rights for 38,188 hectares (94,365 acres) of Crown land and owns or has leased approximately 17,913 hectares (44,265 acres) of Freehold land within the lease boundary. The Lanigan Crown lease term is for a period of 21 years from March 2006, with renewals (at the Company's option) for 21-year periods. Freehold lands also remain under lease providing, generally, that production is continuing and that there is a continuation of the Crown lease.

Within the Lanigan Crown lease area, 55,950 hectares (138,256 acres) are mined pursuant to unitization agreements with mineral rights holders (Crown and Freehold) within two unitized areas. Lanigan Unit Area #1 includes 19,990 hectares (49,395 acres) while Lanigan Unit Area #2 includes 35,961 hectares (88,861 acres).

ii) History

See "Mineral Projects – a) Allan Potash Operations – ii) History" above for a general overview of the history of potash mines in Saskatchewan.

Exploration drilling for potash in the Lanigan area was carried out in the 1950s and 1960s. The Lanigan mine was built by a company named Alwinsal Potash of Canada Ltd., a consortium of German and French mining and fertilizer companies. Potash production began at Lanigan in 1968 and the mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature. PotashCorp acquired the Lanigan mine in 1976.

Mill rehabilitation, mine expansion and hoist improvement projects were completed at Lanigan between 2005 and 2010. The expansion construction was carried out without significant disruption to existing potash production from the site.

At Lanigan, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968. As of December 31, 2020, the annual nameplate capacity at Lanigan is 3.8 million tonnes.

iii) Geological Setting, Mineralization and Deposit Types

Geological Setting and Mineralization

See "Mineral Projects – a) Allan Potash Operations – iii) Geological Setting, Mineralization and Deposit Types – Geological Setting and Mineralization" above for a general overview of geological setting and mineralization for potash mines in Saskatchewan.

Over the past three years (2018, 2019, 2020), the average, measured potash ore grade of the mill feed at Lanigan was 22.2% K_20 equivalent. The average ore grade reported from 19 historic surface drillhole intersections, all within Lanigan Subsurface Mineral Lease KLSA 001 C, is 25.29% K_20 equivalent for A Zone, and 23.21% K_20 equivalent for B Zone Per the Lanigan Technical Report, the average A Zone ore grade observed from 1,485 in-mine samples is 23.5% K_2O equivalent, and the average B Zone ore grade observed from 20,230 in-mine samples is 20.3% K_2O equivalent.

Deposit Type

There are three mineable potash members within the Prairie Evaporite Formation of Saskatchewan. Stratigraphically highest to lowest, these members are: Patience Lake, Belle Plaine and Esterhazy.

The Lanigan potash deposit lies within the Patience Lake Member of Prairie Evaporite Formation. There are two potash seams named A Zone and B Zone within this Member; both the A Zone and B Zone are being mined at Lanigan. The Belle Plaine potash member is present at Lanigan but is not economically mineable, while the Esterhazy Member is poorly developed and not economically mineable.

Lanigan potash mineralization occurs at an average of about 990 m below surface. Salt cover from the top of the A Zone mining horizon to overlying units is approximately 7 m thick and salt cover from the top of the B Zone mining horizon to overlying units is approximately 12 m thick. The Lanigan mine operates as a conventional, underground potash mine.

iv) Exploration

Before the Lanigan mine was established in 1968, all exploration consisted of drilling from surface and analysis of core from these drillholes. Since mining began in 1968, exploration drilling has been infrequent.

In most of southern Saskatchewan, potash mineralization is in place wherever Prairie Evaporite Formation salts exist, are flat-lying and are undisturbed. Since the surface seismic exploration method is an excellent tool for mapping the top and bottom of Prairie Evaporite salts, this has become the main potash exploration tool in any existing Saskatchewan subsurface (potash) mineral lease. Historically, 2D seismic, and now the more accurate 3D seismic methods are used to map continuity and extent of potash beds in flat-lying potash deposits. Seismic data are relied upon to identify collapse structures that must be avoided in mine development since these structures can act as conduits for water. As a result, isolation pillars or mining buffer zones are left around these anomalous features. This practice reduces the overall mining extraction ratio, but the risk of inflow to mine workings is effectively mitigated.

Seismic coverage is outlined in the Lanigan Technical Report.

Experience has shown that the potash mining zone is continuous when seismic data are undisturbed and flat-lying. Surface seismic data are generally collected three to five years in advance of mining. Any area recognized as seismically unusual is identified early, and mine plans are adjusted to avoid these regions.

v) Drilling

For the original Lanigan potash test holes drilled in the 1950s and 1960s, the primary objective of this drilling was to sample the potash horizons to establish basic mining parameters. Seismic surveys (2D) were done sparingly in those days, so the drillhole information was relied upon heavily to evaluate potash deposits. Test holes would penetrate the evaporite section with a hydrocarbon-based drilling mud (oil-based or diesel fuel) to protect the potash mineralization from dissolution. Basic geophysical well-logs were acquired, and in many cases, drill stem tests were run on the Dawson Bay Formation to help assess mine inflow potential. Core samples from the targeted potash intersections were split or quartered (cut with a masonry saw), crushed and analysed to establish potash grades.

Relatively thin interbeds or seams, referred to as clay seams in the potash industry, are an ever-present component of the A Zone and B Zone at Lanigan. These seams, along with the clay or clay-like material disseminated throughout the rock, make up the water insoluble portion of the mineralized horizons. The same sequences of clay seams can be correlated for many kilometers across the central Saskatchewan potash mining district.

At Lanigan, a particular sequence of two clay seams marks the top of the A Zone. A distinct clay seam marks the top of the B Zone; this clay seam is immediately overlain by a much less consistent clay seam referred to as Shadowband at Lanigan. In 2013, Lanigan modified its cutting practices in the B Zone to improve mine roof stability. This modification involved cutting a slightly higher horizon, just above Shadowband, thus removing the risk associated with the seam. The goal of improved mine roof stability was achieved; however, less potash and more salt is now being mined resulting in a slightly lower reported ore grade for B Zone.

The clay seams are used to guide the vertical positioning of the mining machine. The uppermost portion of the sequence of three seams is maintained at the top of the mining cut to keep the cutting “on grade”. Cutting too high above this upper seam or top marker results in dilution, as lower grade material immediately overlies the production zone. In practice though, the top marker seam is slightly overcut (between 10 cm to 20 cm) to prevent an unstable condition from being created. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to proceeding, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

The A Zone mining interval is fixed at 3.66 m (12 feet). B Zone mining machines have a fixed mining height of 2.74 m (9 feet). In a normal B Zone production room, ore is extracted in two lifts resulting in a mining height of approximately 4.88 m (16 feet). These mining heights allow for comfortable working headroom and efficient extraction of potash ore.

The original Lanigan exploration area was explored with 12 test holes spaced at intervals of 1.6 km to 3.4 km (1–3 miles). In total, 27 potash test holes have been drilled within the Lanigan Crown Lease, but only 19 are used in the average ore grade calculation for A Zone in Table C, and only 19 are used in the average ore grade calculation for B Zone in Table C. Certain drillholes within the Lanigan Crown Lease were not assayed, while others intersected abnormal geology whereby a normal potash zone could not be picked given the limited data available and, therefore, the resulting % K_2O and % water insoluble content could not be evaluated with confidence.

Drill core assay results were studied by independent consultant David S. Robertson and Associates (1976) and by Nutrien technical staff. Results are found in Table C below. The best 3.66 m (12 feet) mining interval in A Zone, and the best approximately 4.88 m (16 feet) mining interval in B Zone was determined from the assay values in each potash test well, using clay marker seams as a guide. Note that while B Zone drillhole assays were derived using intervals of between 4.07 m and 7.30 m averaging 5.08 m, a more conservative mining height of 4.88 m is used for mineral resource and reserve estimates.

Drillhole assay data for the A Zone at Lanigan give an estimated mean grade of 25.29% K_2O with 5.78% water insolubles.

Drillhole assay data for B Zone at Lanigan give an estimated mean grade of 23.21% K_2O with 5.59% water insolubles.

Table C: Assay results for all potash test holes within the Lanigan Crown Lease.

Location	Year Drilled	A Zone			B Zone		
		Interval (m)	% K_2O Equiv.	% Water Insol.	Interval (m)	% K_2O Equiv.	% Water Insol.
01-29-033-22 W2	1955	3.66	27.68	6	*5.49*	*	*
13-34-033-23 W2	1956	-	*	*	-	*	*
16-12-034-24 W2	1956	-	*	*	*4.51*	*25.77*	*
12-24-034-23 W2	1957	3.66	25.61	2.78	*5.12*	*18.51*	*2.37*

Location	Year Drilled	A Zone			B Zone		
		Interval (m)	% K_2O Equiv.	% Water Insol.	Interval (m)	% K_2O Equiv.	% Water Insol.
04-28-033-23 W2	1958	3.66	25.87	2.13	*4.85*	*25.75*	*6.3*
04-29-032-22 W2	1959	-	*	*	-	*	*
13-11-033-23 W2	1959	3.66	21.17	9.65	*4.16*	*26.85*	*5.5*
09-26-033-23 W2	1959	3.66	27.33	2.24	*4.51*	*25.18*	*6.6*
03-10-034-23 W2	1959	3.66	22.06	*	*4.07*	*23.97*	*5.7*
01-10-033-24 W2	1959	3.66	27.32	*	*4.92*	*24.58*	*4.2*
04-24-033-24 W2	1959	3.66	25.68	1.91	*5.19*	*24.02*	*5*
13-18-033-22 W2	1960	3.66	26.29	7.1	*4.72*	*22.84*	*8.15*
08-02-033-23 W2	1960	3.66	26.93	7.1	*7.59*	*15.73*	*5.25*
12-04-033-23 W2	1960	3.66	26.53	6.54	*4.76*	*24.61*	*5.8*
12-16-033-23 W2	1960	3.66	23.87	8.4	*4.31*	*25.89*	*4.2*
09-22-033-23 W2	1960	3.66	29.45	5.69	*5.04*	*25.15*	*6.8*
02-30-033-23 W2	1960	-	*	*	-	*	*
13A-30-033-23 W2	1960	3.66	25.36	8.88	*7.3*	*14.79*	*3.51*
01-12-033-24 W2	1960	3.66	24.72	7.33	*5.02*	*26.62*	*4.8*
12-04-033-23 W2	1961	-	*	*	-	*	*
08-03-033-23 W2	1973	-	*	*	-	*	*
01-20-033-23 W2	1975	-	*	*	*5.96*	*22.4*	*5.6*
04-07-033-22 W2	1981	3.66	22.8	4.15	-	*	*
03-26-032-23 W2	1981	3.66	20.59	6.21	4.57	18.8	7.17
04-28-032-23 W2	1981	3.66	25.67	*	4.94	25.59	6.88
16-25-033-23 W2	1981	-	*	*	-	*	*
13-25-032-24 W2	1981	3.66	25.57	6.4	4.88	24.01	6.8
Average (of usable values):		**3.66**	**25.29**	**5.78**	**5.10**	**23.21**	**5.59**

Italicized numbers from Robertson Associates 1976

*Assay sampling incomplete. In drillholes that intersected abnormal potash geology, a normal potash zone could not be picked given the limited data available and, therefore, the resulting % K_2O and % water insoluble content could not be evaluated with confidence.

Due to the remarkably consistent mineralogy and continuity of the resource, as experienced through decades of mine production, very little potash exploration drilling has been done at Lanigan since 1961. Instead of exploration drillholes, seismic surveying has been relied upon more and more to explore ahead of mine development. Where normal Prairie Evaporite sequences are mapped in the seismic data, potash beds have unfailingly been present. Localized, relatively small mine anomalies, not mapped in seismic data, do occur. When they do, they are dealt with in the normal course of mining and extraction through these anomalous areas is typically minimized. Anomalies associated with possible water inflow problems, which are mapped in the seismic data, are avoided.

vi) Sampling Preparation, Analyses and Security

Basic Approach

Exploration in the Lanigan area was conducted in the 1950s and 1960s. A second phase of drilling associated with a mine expansion project occurred in 1981. Sampling and assaying of potash core samples was done using methods considered consistent with standard procedures for potash exploration at these times.

Drillhole sampling methods have remained essentially the same over the years. Short segments of core usually about 0.3 m (1 foot) in length are labeled based on visible changes in mineralization and sometimes based on more or less fixed intervals. Each segment of core is then split using some type of rock or masonry saw. The split portion of core is then bagged and labeled and sent to a laboratory for chemical analysis. Historical potash samples remain stored at the Subsurface Geological Laboratory (Regina, Saskatchewan) of the SMER. Most of these have deteriorated substantially.

All in-mine samples were analysed in the Lanigan mill laboratory using analysis techniques that were up-to-date for the era in which the sample was collected.

Regarding quality assurance for analytical results of in-mine samples, the Company participates in the Canpotex Producer Sample Exchange Program (CPSEP) using methods developed by the Saskatchewan Potash Producers Association (SPPA). The CPSEP monitors the accuracy of analytical procedures used in its labs. In the early 1970s, the SPPA initiated a round-robin Sample Exchange Program, the purpose of which was to assist the potash laboratories in developing a high level of confidence in analytical results. The CPSEP uses the proven SPPA Methods and has continued up to the present. Current participants include all Canpotex member potash mine site labs, the Nutrien Pilot Plant Lab, and independent third-party surveyor labs. The CPSEP provides participants with three unknown potash samples for analysis quarterly. Results for the unknown sample analysis are correlated by an independent agency that distributes statistical analysis and a summary report to all participants. Completed exchange program samples can be used for control standards as required in QA/QC sections of standard analytical procedures.

The Nutrien Pilot Plant is secured in the same way as modern office buildings are secured. Authorized personnel have access and visitors are accompanied by staff. No special security measures are taken beyond that. Currently, no external laboratory certification is held by the Nutrien Pilot Plant. On occasion, product quality check samples are sent to the SRC, a fully certified analytical facility.

In the opinion of the authors, the sample preparation, security, and analytical procedures are acceptable, are consistent with industry-standard practices, and are adequate for Mineral Resource and Reserve estimation purposes.

Mean Potash Mineral Grade From In-Mine Samples

In the Lanigan A Zone, in-mine grade samples are taken by collecting fine “muck” from the floor of the mine at the start of every cutting sequence. This is equivalent to a sample taken every approximately 23 m (76 feet) in production panels, and a sample taken every approximately 47 m (155 feet) in development panels. Per the Lanigan Technical Report, in-mine potash mineral grade samples collected from the Lanigan A Zone were analysed in the Lanigan mill laboratory using up-to-date analysis techniques. The median ore grade for the family of in-mine samples is 24.5% K_2O equivalent and the mean ore grade is 23.5%.

In the Lanigan B Zone, in-mine grade samples are taken from the floor every 60 m (200 feet) in newly mined rooms. Per the Lanigan Technical Report, in-mine potash mineral grade samples collected from the Lanigan B Zone were analysed in the Lanigan mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

The median ore grade for this family of in-mine samples is 20.8% K_2O equivalent and the mean ore grade is 20.3%.

In 2013, Lanigan modified its cutting practices in the B Zone to improve mine roof stability. This modification involved cutting in a slightly higher, but more stable horizon. The goal of improved mine roof stability was achieved; however, less potash and more salt is now being mined resulting in a slightly lower reported ore grade for B Zone.

Potash Ore Density From In-Mine Mineral Grade Measurements

An estimate of in-situ rock density is used to calculate potash mineralization volumes in Mineral Resource and Reserve assessments. A common approach, and the one used by Nutrien, is to determine in-place Mineral Resource and Reserve volumes (m^3), then multiply this number by in-situ bulk-rock density (kg / m^3) to give in-place Mineral Resource and Reserve tonnes. Well-log data from drillholes can be used to calculate bulk density if accurate and calibrated well-logs are acquired during exploration drilling. In practical terms, modern well-logs tend to meet these criteria, but historic well-logs (collected before the 1990s) do not. In Saskatchewan, almost all potash exploration drilling took place in the 1950s and 1960s, well before density logs were accurate and reliable.

Another approach, and the one used by Nutrien, is to look up density values for the minerals which constitute potash rock – values determined in a laboratory to a high degree of accuracy and published in reliable scientific journals / textbooks – then apply these densities to the bulk rock. Given that the density of each pure mineral is quantified and known, the only variable is what proportion of each mineral makes up the bulk rock. An obvious benefit of this approach is that a mean value computed on in-mine samples has a much greater confidence interval than a mean value computed from just a few drillhole assays.

The four main mineralogical components of the ore zones of Saskatchewan’s Prairie Evaporite Formation with their respective mineral densities are:

Mineral	Density (kg /m^3)	Components
Halite	2,170	NaCl
Sylvite	1,990	KCl
Carnallite	1,600	$KMgCl_3 \cdot 6(H_2O)$
Insolubles	2,510	Anhydrite, dolomite, quartz, muscovite, and other minor mineral components *(Nutrien Pilot Plant, 2018)*

All Nutrien potash mines measure and record the in-mine % K_2O grade and insoluble content of the mined rock. Magnesium content is measured at Lanigan since carnallite is sometimes a component of the ore here. From this set of measurements, density of the ore can be calculated.

The value for insoluble density is based on known densities of the constituent parts of the insoluble components of the mineralization and the average occurrence of these insoluble components, which is known from over 50 years of mining experience at Lanigan. Assuming the lowest plausible density of insolubles known for Saskatchewan potash deposits of this nature, the effect upon overall bulk-rock ore density and Mineral Resource and Reserve calculations would be negligible.

From life-of-mine in-mine samples taken at Lanigan, bulk density for the Lanigan B Zone has been determined to be:

= (halite density * % halite) + (sylvite density * % sylvite) + (carnallite * % carnallite) + (insolubles density * % insolubles)
= (2,170 kg / m^3 * 59.5%) + (1,900 kg / m^3 * 30.8%) + (1,600 kg / m^3 * 4.9%) + (2,510 kg / m^3 * 4.8%)
= 2,120 kg / m^3

$RHO_{bulk\text{-}rock}$ (Lanigan B Zone) = 2,120 kg / m^3

To date, not enough A Zone mining has been carried out at Lanigan to permit the calculation of a proper in-situ bulk-rock potash density based solely on in-mine grade samples. A Zone mining has proven successful at Lanigan and takes place in several different geographic locations within the Lanigan Crown Lease. Therefore, it is likely that, in the future, enough in-mine samples will be available to support the calculation of an accurate in-situ bulk-rock density for A Zone potash ore. However, in the interim, Allan Potash's in-situ bulk-rock density for A Zone potash is used; this has been calculated using in-mine samples from the Allan A Zone:

$RHO_{bulk\text{-}rock}$ (Lanigan A Zone) = $RHO_{bulk\text{-}rock}$ (Allan A Zone) = 2,110 kg/m^3

This estimate is considered acceptable since both Allan A Zone and Lanigan A Zone are the same potash seam.

Assay Data Verification

Original drill core assays were studied by independent consultant David S. Robertson and Associates (1976). The original assay results for core samples from historical drillholes were taken as accurate in these studies, as there is no way to reliably reanalyze these samples. Most of the remaining samples in storage have long since deteriorated to the point where they are not usable. Nutrien technical staff Jennifer Scott (P.Geo) and Tanner Soroka (P.Geo) reanalysed assay results from the A Zone using a 3.66 m (12 feet) mining interval, the mining height currently used in the Lanigan A Zone. Former Company staff evaluated assay results from potash test holes drilled in 1981.

Ore grades of in-mine samples are measured in-house at the Lanigan mine laboratory by Company staff using modern, standard chemical analysis tools and procedures; an independent agency does not verify these results. However, check sampling through the CPSEP has occurred.

It should be noted that assay results from historical drillholes match in-mine sample results reasonably well – within 1% – even though drillhole sample spacing is much greater. This correlation is further validation of the in-mine sampling methodology. Mean mineral grade determined from in-mine samples taken from over 50 years of mining at Lanigan is thought to provide the most accurate measurement of potash grade for the Lanigan mine, also providing a good basis for estimating ore grade in areas of future mining at Lanigan.

Exploration Data Verification

The purpose of any mineral exploration program is to determine extent, continuity and grade of mineralization to a certain level of confidence and accuracy. For potash exploration, it is important to minimize the amount of cross-formational drilling, since each drillhole is a potential conduit for subsurface groundwater from overlying (or underlying) water-bearing formations into future mine workings. Every potash test hole from surface sterilizes potash mineralization as a safety pillar is required around every surface drillhole once underground mining commences. This is the main reason that minimal exploration drilling has been carried out at Lanigan in recent years.

Initial sampling and assaying of cores were done during potash exploration at Lanigan in the 1950s and 1960s. Methods were consistent with standard procedures for that era. The mine began production in 1968 and, except for a potash test hole in 1975 and four potash test holes in 1981 no further core drilling has been carried out since then. This approach to potash sampling is in accordance with widely accepted industry practice for areas adjacent and contiguous to an existing operating potash mine**.**

Assay of physical samples (drillhole cores and/or in-mine samples) is the only way to gain information about mineral grade, but extent and continuity of mineralization are correctly determined using data collected from geophysical surveys correlated with historic drilling information. To date, surface seismic data at Lanigan have been collected, analysed and verified by Company staff, at times, in cooperation with an independent consultant.

Data for the mineral reserve and mineral resource estimates for Lanigan mine were verified by Company staff as follows:

- Review of potash assay sample information (drillholes and in-mine grade samples);
- Review of surface geophysical exploration results (3D and 2D seismic data);
- Crosscheck of mined tonnages reported by mine site technical staff with tonnages estimated from mine survey information; and
- Crosscheck of mineral resource and reserve calculations carried out by corporate technical staff.

In the opinion of the authors, this approach to data verification of potash mineral grade and surface seismic information is in accordance with generally accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

vii) Mineral Processing and Metallurgical Testing

At Lanigan, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968.

Over the 52-year mine life, 220.881 million tonnes of potash ore have been mined and hoisted to produce 64.354 million tonnes of finished potash product (from start-up in 1968 to December 31, 2020). Given this level of sustained production over 52 years, basic mineralogical processing and prospective metallurgical testing of Lanigan potash is not considered relevant.

viii) Mineral Resource and Mineral Reserve Estimates

Definitions of Mineral Resources

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Resource” for an overview of CIM’s mineral resource categories and the Company’s general characterization of mineral resource categories for its potash mines.

The Lanigan mine began production in 1968, and since then just seven potash exploration drillholes have been drilled in the Lanigan lease area; three of which are unusable for assay analysis. Instead, exploration involved collecting surface seismic data, which became better in quality over the years. Exploration drilling has demonstrated the presence of the potash horizon, and seismic coverage shows the continuity of the Prairie Evaporite Formation within which the potash horizon occurs.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zones at Lanigan that is far superior to the level of understanding provided by any surface drilling-based exploration program. The authors believe that this approach provides a body of information that guides and constrains our exploration inferences in a much better way than could be achieved from any conventional exploration investigation in areas immediately surrounding, and contiguous to, the Lanigan potash mine.

Mineral Resource Estimates

Exploration information used to calculate reported mineral resource tonnages at Lanigan consist of both physical sampling (drillhole and in-mine) and surface seismic (2D and 3D). Based on the definitions and guidelines described above, all mineral rights leased or owned by the Company, and within the Lanigan Crown Lease, are assigned to one of the three mineral resource categories.

Mineral resources are reported as mineralization in-place and are exclusive of mineral reserves. In-place tonnes were calculated for each of the mineral resource categories using the following parameters:

Mining Height (A Zone):	3.66 meters (12 feet)
Mining Height (B Zone):	4.88 meters (16 feet)
Ore Density (A Zone):	2.110 tonnes/cubic meter
Ore Density (B Zone):	2.120 tonnes/cubic meter

The mineral resources per the Lanigan Technical Report are as follows:

Lanigan A Zone Resource:		
Inferred Resource	671	million tonnes
Indicated Resource	1,325	million tonnes
Measured Resource	2,142	million tonnes
Total A Zone Resource	4,138	million tonnes
Lanigan B Zone Resource:		
Inferred Resource	899	million tonnes
Indicated Resource	1,775	million tonnes
Measured Resource	2,578	million tonnes
Total B Zone Resource	5,252	million tonnes
Total Resource for Lanigan (A Zone + B Zone):		
Inferred Resource	1,570	million tonnes
Indicated Resource	3,100	million tonnes
Measured Resource	4,720	million tonnes
Total A Zone + B Zone Resource	9,390	million tonnes

The December 31, 2020 Mineral Resource estimates remain the same as those outlined in the Lanigan Technical Report.

Per the Lanigan Technical Report, the average mineral grade of the Lanigan A Zone Mineral Resource is 23.5% K_2O equivalent and was determined from in-mine samples at Lanigan. The average mineral grade of the Lanigan B Zone Mineral Resource is 20.3% K_2O equivalent and was determined from in-mine samples at Lanigan.

The tonnage reported as Lanigan A Zone Measured Resource is comprised of both potash ore that is within 1.6 km (1 mile) of A Zone mine workings, and potash ore that is left behind as pillars in mined-out areas of the A Zone at Lanigan. Also included as Lanigan A Zone Measured Resource is the potash ore within 1.6 km (1 mile) of drillholes for which A Zone assay results are available.

Similarly, the tonnage reported as Lanigan B Zone Measured Resource is comprised of both potash ore that is within 1.6 km (1 mile) of B Zone mine workings, and potash ore that is left behind as pillars in mined-out areas of the B Zone at Lanigan. Also included as Lanigan B Zone Measured Resource is the potash ore within 1.6 km (1 mile) of drillholes for which B Zone assay results are available.

Also included as Measured Resource is the potash in the pillars of mined-out areas of the Lanigan mine as there is the possibility of retrieving ore from the remnant mining pillars at some point in the future. An example of this is the Patience Lake mine which was successfully converted from a conventional mine to a solution mine after being lost to flooding in 1989. Since mining of remnant mining pillars is not anticipated in the near future at Lanigan, in-place pillar mineralization remains as a Mineral Resource rather than a Mineral Reserve at this time.

Definitions of Mineral Reserve

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Reserve” for an overview of CIM’s mineral reserve categories and the Company’s general characterization of mineral reserve categories for its potash mines.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zone at Lanigan that is far superior to the level of understanding provided by any surface drilling-based exploration program. An understanding of the amount of ore that can be conventionally mined from the measured resource category using current mining practices comes from decades of potash mining experience at Lanigan.

Mineral Reserve Estimates

Using the definitions outlined above, a portion of the Lanigan A Zone and B Zone Measured Resource has been converted to Mineral Reserve. The assigned Mineral Reserve category is dependent on proximity to sampled mined entries also described above. An overall extraction ratio for the Lanigan mine has been applied to the qualifying area outlined as Measured Resource.

The overall extraction ratio at the Lanigan mine is 26%. It was derived by dividing the total tonnes mined to date by the tonnage equivalent of the total area of the mine workings (i.e., the perimeter around the mine workings). Since an extraction ratio has been applied, mineral reserves are considered recoverable ore and are reported as such.

Currently, in any specific mining block at Lanigan, only one zone is mined (i.e., bi-level mining is not in practice). As such, mineral reserve has been split by ore zone that will be mined in the future; A Zone Mineral Reserve and B Zone Mineral Reserve do not overlap. Unmined B Zone potash mineralization directly underlying the defined A Zone Mineral Reserve is classified as B Zone Measured Resource. In the same way, unmined A Zone potash mineralization directly overlying the defined B Zone Mineral Reserve is classified as A Zone Measured Resource.

The mineral reserves per the Lanigan Technical Report are as follows:

Lanigan A Zone:		
Probable Reserve	142	million tonnes
Proven Reserve	19	million tonnes
Total A Zone Reserve =	161	million tonnes
Lanigan B Zone:		
Probable Reserve	287	million tonnes
Proven Reserve	92	million tonnes
Total B Zone Reserve =	379	million tonnes
Total for Lanigan (A Zone + B Zone):		
Probable Reserve	429	million tonnes
Proven Reserve	111	million tonnes
Total A Zone and B Zone Reserve =	540	million tonnes

Per the Lanigan Technical Report, average mineral grade of the Lanigan A Zone Mineral Resource is 23.5% K_2O equivalent and was determined from in-mine samples at Lanigan. The average mineral grade of the Lanigan B Zone Mineral Resource is 20.3% K_2O equivalent and was determined from in-mine samples at Lanigan.

The December 31, 2020 Mineral Reserve estimates essentially remain the same as those outlined in the Lanigan Technical Report. Tonnes mined since the Lanigan Technical Report (i.e. 9.037 million tonnes from A Zone and 4.082 million tonnes from B Zone) can be removed from A Zone and B Zone Proven Reserve. This results in an A Zone Proven Reserve of 10.2 million tonnes, and a B Zone Proven Reserve of 88.9 million tonnes.

ix) Mining Operations

All conventional potash mines in Saskatchewan operate at 900 m to 1,200 m below surface within 9 m to 30 m of the top of the Prairie Evaporite Formation. Over the scale of any typical Saskatchewan potash mine, potash beds are tabular and regionally flat-lying, with only moderate local variations in dip. At Lanigan, potash ore is mined using conventional mining methods, whereby:

- Shafts are sunk to the potash ore body;
- Continuous mining machines cut out the ore, which is hoisted to surface through the production shaft;
- Raw potash is processed and concentrated in a mill on surface; and
- Concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Potash ore was first hoisted at Lanigan in the fall of 1968. The Lanigan mine has run on a continuous basis since then, other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

In recent years, mill rehabilitation, mine expansion and hoist improvement projects were completed which brought the nameplate capacity to 3.8 million tonnes per year. In 2020, operational capability at the Lanigan facility was 2.3 million tonnes per year. Operational capability may vary during the year and year-to-year including as between our potash operations.

Virtually all Lanigan underground mining rooms are in one of two potash mineralized zones within the Patience Lake Member of the Prairie Evaporite Formation (the host evaporite salt). In this Member, there are two potash seams named A Zone (the upper seam) and B Zone (the lower seam); at present, both the A Zone and B Zone are being mined at Lanigan. The A Zone and B Zone are separated by approximately 4 m to 6 m of tabular salt. In contrast, some potash mines further east in Saskatchewan mine in a different potash layer, the Esterhazy Member of the Prairie Evaporite Formation. Per the Lanigan Technical Report, mine elevations range from approximately 940 m to 1,030 m, averaging approximately 990 m. These depths to potash mineralization are anticipated over most of the Lanigan lease area. Mine workings are protected from aquifers in overlying formations by approximately 7 m (A Zone) to 12 m (B Zone) of overlying salt and potash beds, along with salt plugged porosity in the Dawson Bay Formation, a carbonate layer lying immediately above potash hosting salt beds.

The Lanigan mine is a conventional underground mining operation where continuous mining machines are used to excavate potash ore by the stress-relief method in the A Zone and the long-room and pillar mining method in the B Zone. Currently, in any specific mining block, only one zone is mined (i.e., bi-level mining is not in practice). Continuous conveyor belts transport ore from the mining face to the bottom of the production shaft. Mining methods employed in Saskatchewan are discussed in Jones and Prugger (1982) and in Gebhardt (1993).

The actual mining thickness at Lanigan is dictated by the height of continuous boring machines used to cut the ore. The A Zone mining interval is fixed at 3.66 m (12 feet). The 3.66 m (12 feet) mining height also allows for comfortable working headroom and efficient extraction of potash ore. The thickness of the B Zone mining horizon varies somewhat and there is some flexibility in the thickness of the potash ore that is extracted there. Production mining machines have a fixed mining height of 2.74 m (9 feet). In a normal production room ore is extracted in two lifts resulting in a mining height of approximately 4.88 m (16 feet).

Carnallite sometimes occurs in minor amounts in the basal part of the B Zone. Carnallite is an undesirable mill feed material. If more than minor amounts of carnallite are detected in the floor after the first lift of a production room in the B Zone, it is left in the floor (i.e., a second lift is not cut). In these instances, the B Zone mining height is just 2.74 m (9 feet). Carnallite is found in trace amounts in the A Zone; however, due to its low occurrence, mining practices remain unchanged when it is encountered.

Mining systems used in both A Zone and B Zone cut to a marker (clay) seam that is slightly above the high-grade mineralized zone to establish a safe and stable mine roof. In both zones, the top marker seam is slightly overcut by 10 to 20 cm. Clay seams are often planes of weakness, and if they are undercut material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to proceeding, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

In 2013, Lanigan modified its cutting practices in the B Zone to improve mine roof stability. This modification involved cutting in a slightly higher, but more stable horizon. The goal of improved mine roof stability was achieved; however, less potash and more salt is now being mined resulting in a slightly lower reported ore grade for B Zone.

Conservative local extraction ratios (never exceeding 45% in any mining block) are employed at all Saskatchewan mines, including Lanigan, in order to minimize potential detrimental effects of mining on overlying strata; this is common practice in flat-lying, tabular ore bodies overlain by water-bearing layers.

From the shaft-bottom potash ore is hoisted approximately 1,000 m from the potash level through the vertical shafts to a surface mill. In addition to hoisting potash ore to surface, the production shaft provides fresh air ventilation to the mine and serves as secondary egress. The service shaft is used for service access, and exhausting ventilation from the mine.

Over the 52-year mine life, 220.881 million tonnes of potash ore have been mined and hoisted at Lanigan to produce 64.354 million tonnes of finished potash products (from start-up in 1968 to December 31, 2020). The life-of-mine average concentration ratio (raw ore/finished potash products) is 3.43 and the overall extraction ratio over this period is 26%.

x) Processing and Recovery Operations

At Lanigan, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1968. Raw potash ore is processed on surface and concentrated red potash products are sold and shipped to markets in North America and offshore.

Over the past three years, production of finished potash products at Lanigan was:

- 2018: 1.962 million tonnes finished potash products at 60.97% K_2O (average grade)
- 2019: 1.748 million tonnes finished potash products at 60.83% K_2O (average grade)
- 2020: 2.330 million tonnes finished potash products at 60.97% K_2O (average grade)

Over the past decade, actual mill recovery rates have been between 81.7% and 85.9%, averaging 83.59%.

Given the long-term experience with potash geology and actual mill recovery at Lanigan, no fundamental potash milling problems are anticipated in the foreseeable future.

Quality control testing and monitoring geared towards fine-tuning and optimizing potash milling and concentrating processes are conducted on a continual basis at all Nutrien mine sites and at Nutrien research facilities. At Lanigan, this is no exception; test work to optimize circuit performance and ensure product quality is carried out on an ongoing basis.

xi) Infrastructure, Permitting and Compliance Activities

Project Infrastructure

Infrastructure is in place to meet current and projected requirements for transportation, energy (electricity and natural gas), water and process materials at Lanigan.

The Lanigan mine is served by a number of villages within 50 kilometres of the minesite. The nearest cities are Humboldt (approximately 45 km distant) and Saskatoon (approximately 100 km distant). Surface facilities are accessed by existing paved roads and highways that are part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

At present, high voltage power capacity at Lanigan is 52 MVA. The ten-year projection of power utilization indicates that the utility can meet all foreseeable future demand.

The Lanigan operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the Dellwood Reservoir (approximately 10 km distant) and from a regional aquifer called the Hatfield Valley Aquifer. This water supply provides a sustainable source of process water for Lanigan milling operations without having any impact on other users of water in the area.

Environmental Studies, Permitting and Compliance Activities

The tailings management strategy at all Nutrien potash mines in Saskatchewan, including Lanigan, is one of sequestering solid mine tailings in an engineered and provincially licensed TMA near the surface plant site. The Lanigan TMA currently covers an area of approximately 708 hectares (1,750 acres) of land owned by the Company. Solid potash mine tailings typically consist of 85% to 95% rock salt (NaCl) and 5% to 15% insolubles (carbonate mud = $CaCO_3$, anhydrite mud = $CaSO_4$, and clays like chlorite, illite, and so on). An engineered slurry-wall has been constructed on the south and south-west sides of the Lanigan TMA in the areas where near-surface aquifers could be impacted by mine waters. Near-surface geology on all other sides of the TMA limits the possibility of brine migration into these areas. The slurry-wall provides secondary containment of any saline mine waters, stopping these brines from reaching surrounding near-surface aquifers. Areas surrounding the TMA are closely monitored; this includes everything from daily visual perimeter inspections to annual investigations and inspections of surrounding groundwater and aquifers.

Lanigan currently operates three brine disposal wells near the surface plant of the Lanigan mine where clear salt brine (i.e. no silt, clay-slimes, or other waste) is borehole-injected into the Winnipeg / Deadwood Formations, deep subsurface aquifers approximately 1500 m to 1700 m below surface. The groundwater in these extensive deep aquifers is naturally saline.

Emissions to air (mostly salt dust and potash dust) are kept below regulatory limits through various modern air pollution abatement systems (e.g. dust collection systems built into mill processes) that are provincially licensed. This same procedure is followed at all Nutrien mines in Saskatchewan.

The Lanigan operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the Dellwood Reservoir (approximately 10 km distant) and from a regional aquifer called the Hatfield Valley Aquifer. This water supply is provincially licensed and provides a sustainable source of process water for Lanigan milling operations without having any impact on other users of water in the area.

In Saskatchewan, all potash tailings management activities are carried out under an “Approval to Operate” granted by the SMOE. The Lanigan mine is in compliance in all material respects with all regulations stipulated by the Environmental Protection Branch of the SMOE. The current Lanigan Approval to Operate has been granted to July 1, 2028, the renewal date.

In terms of long-term decommissioning, environmental regulations in the Province of Saskatchewan require that all operating potash mines in Saskatchewan create a long-term decommissioning and reclamation plan that will ensure all surface facilities are removed and the site is left in a chemically and physically stable condition once mine operations are complete. The Company has conducted numerous studies of this topic, and the most recent decommissioning and reclamation plan for Lanigan was approved by SMOE technical staff in October 2016. Because the current expected mine life for Lanigan is many decades into the future, it is not meaningful to come up with detailed engineering designs for decommissioning annually. Instead, decommissioning plans are reviewed every five years, and updated to accommodate new concepts, technological change, incorporation of new data and adjustments of production forecasts and cost estimates. Any updated decommissioning and reclamation reports generated by this process are submitted to provincial regulatory agencies. For Lanigan, a revised decommissioning and reclamation plan is required in July 2021.

In addition to the long-term decommissioning plan, provincial regulations require that every potash producing company in Saskatchewan set up an Environmental Financial Assurance Fund, which is to be held in trust for the decommissioning, restoration and rehabilitation of the plant site after mining is complete. This fund is for all mines operated by Nutrien in the Province of Saskatchewan (i.e., Allan, Cory, Lanigan, Patience Lake, Rocanville and Vanscoy).

xii) Capital and Operating Costs

The Lanigan mine has been in operation since 1968; in the years immediately preceding this, major capital investment was made to bring this mine into production. Since then, capital expenditures were made on a regular and ongoing basis to sustain production, and to expand production from time to time.

Most recently, mill rehabilitation, mine expansion and hoist improvement projects were completed at Lanigan between 2005 and 2010. The expansion construction was carried out without significant disruption to existing potash production from the site.

xiii) Exploration, Development and Production

Potash production in any given year at the Lanigan mine is a function of many variables, so actual production in any given year can vary dramatically from tonnages produced in previous years. The mineral reserve tonnage and historic average production are used to estimate remaining mine life. If the average mining rate seen over the past three years (6.699 million tonnes of potash ore mined and hoisted per year) is sustained, and if mineral reserves remain unchanged, then Lanigan A Zone mine life is 23 years from December 31, 2020 and Lanigan B Zone mine life is 56 years from December 31, 2020.

d) Rocanville Potash Operations

Certain scientific and technical information regarding our Rocanville potash operations is based on the technical report titled "National Instrument 43-101 Technical Report on Rocanville Potash Deposit (KL 305) Saskatchewan, Canada" dated effective December 31, 2018 (the "Rocanville Technical Report") prepared under the supervision of Craig Funk, B.Sc., M.Sc., P.Eng., P.Geo., who is a "qualified person" as defined in NI 43-101. The Rocanville Technical Report has been filed with the securities regulatory authorities in each of the provinces of Canada and furnished to the SEC. Portions of the following information are based on assumptions, qualifications and procedures that are not fully described herein. References should be made to the full text of the Rocanville Technical Report.

i) Project Description, Location and Access

General

The Rocanville mine is located in southeastern Saskatchewan near the Saskatchewan-Manitoba Provincial Boundary, approximately 15 kilometers northeast of the town of Rocanville, Saskatchewan. The Legal Land Description (Saskatchewan Township/Range) of the Rocanville surface plant is Section 22 Township 17 Range 30 West of the 1st Meridian. More precisely, the Rocanville #2 Shaft collar is located at:

- Latitude: 50 degrees 28 minutes 19.54 seconds North
- Longitude: 101 degrees 32 minutes 42.58 seconds West
- Elevation: 480.36 meters above mean SL
- Northing: 5,596,826.122 m
- Easting: 745,137.307 m
- Projection: UTM
- Datum: NAD83
- Zone: 13

The Company owns approximately 3,061 hectares (7,564 acres) of surface rights required for current Rocanville mine operations, including all areas covered by the existing surface plant and Tailings Management Area (TMA), and all surface lands required for anticipated future Rocanville mine and expanded milling operations. Surface facilities are accessed by an existing paved road that is part of the Saskatchewan Provincial Highway System. Most finished potash products are shipped by rail over existing track, with some product shipped by truck over the North American highway system.

The Rocanville mine is served by a number of towns and villages within 50 kilometers of the mine site. The nearest towns are Rocanville (15 km distant), Moosomin and Esterhazy (both 50 km distant). The nearest city is Yorkton (100 km distant). Rocanville is situated near the north extent of the Great Plains of North America. Topography is relatively flat, with gently rolling hills and occasional valleys.

Mineral Rights

Mineral rights at Rocanville are mined pursuant to mining leases with the Province of Saskatchewan, Canada (the Crown), and with non-Crown (Freehold) mineral rights owners. Crown mineral rights are governed by *The Subsurface Mineral Tenure Regulations, 2015*, and Crown Leases are approved and issued by the SMER. The original Rocanville Crown Subsurface Mineral Lease KL 111 was entered into in June 1966. In the following years various minor amendments were made to this Crown lease, resulting in Crown Subsurface Mineral Lease KL 111R.

In May 2007, application was made for a Permit to Prospect for Subsurface Minerals (Potash Exploration Permit KP 338A) covering approximately 26,184 hectares (64,702 acres) of Crown mineral rights in the area just west of and adjoining the existing Rocanville Crown Lease KL 111R.

A new Crown Subsurface Mineral Lease numbered KLSA 002 was issued in February 2010 incorporating all Crown mineral rights within the existing Crown Lease KL 111R and approximately two-thirds of Crown mineral rights covered in KP 338A. The portion of the lands that were not part of the Lease amalgamation remained as Crown Exploration Permit KP 338B until December 2016 when they were converted to a Crown Subsurface Mineral Lease numbered KL 249.

In October 2017, Rocanville Crown Subsurface Mineral Lease KL 305 ("Rocanville Crown Lease") was formed by the amalgamation of Crown Subsurface Leases KLSA 002 (KLSA 002 B, following minor amendments) and KL 249. The Rocanville Crown Lease covers an area of approximately 113,975 hectares (281,639 acres). At Rocanville, the Company has leased potash mineral rights for 54,184 hectares (133,892 acres) of Crown land and owns or has leased approximately 45,612 hectares (112,710 acres) of Freehold land within the lease boundary. The Rocanville Crown lease term is for a period of 21 years from October 2017, with renewals at the Company's option for 21-year periods. Freehold lands also remain under lease providing, generally, that production is continuing and that there is a continuation of the Crown lease.

Within the current Rocanville Crown lease area, 80,181 hectares (198,132 acres) are mined pursuant to unitization agreements with mineral rights holders (Crown and Freehold) within two Unitized Areas. Rocanville Unit Area #1 includes 35,234 hectares (87,065 acres) while Rocanville Unit Area #2 includes 44,947 hectares (111,067 acres).

ii) History

See "Mineral Projects – a) Allan Potash Operations – ii) History" above for a general overview of the history of potash mines in Saskatchewan.

Exploration drilling for potash in the Rocanville, Saskatchewan area was carried out in the 1960s. Thirty-four potash test holes were drilled during this early exploration phase: 25 in Saskatchewan and nine in Manitoba. The Rocanville mine was built by a company called Sylvite of Canada Ltd. (a division of Hudson's Bay Mining and Smelting Ltd.) in the late 1960s, and potash production began at Rocanville in 1970. The mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature. Potash Corporation of Saskatchewan Inc. acquired the Rocanville mine in 1977.

A major refurbishment and expansion of the Rocanville mine was completed in 2013. Following that, production was ramped up through 2017 when a nameplate capacity of 6.5 million tonnes of finished potash was announced. At Rocanville, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1970.

iii) Geological Setting, Mineralization and Deposit Types

Geological Setting and Mineralization

See "Mineral Projects – a) Allan Potash Operations – iii) Geological Setting, Mineralization and Deposit Types – Geological Setting and Mineralization" above for a general overview of geological setting and mineralization for potash mines in Saskatchewan.

Over the past three years (2018, 2019, 2020), the average, measured potash ore grade of the mill feed at Rocanville was 22.7% K_2O equivalent. Per the Rocanville Technical Report, the average ore grade reported from surface drillhole intersections, all within Rocanville Crown Lease, is 22.4% K_2O equivalent. Average ore grade observed from in-mine samples is 23.4% K_2O equivalent.

Deposit Type

There are three mineable potash members within the Prairie Evaporite Formation of Saskatchewan. Stratigraphically highest to lowest, these members are: Patience Lake, Belle Plaine, and Esterhazy.

The Rocanville potash deposit lies within the Esterhazy Member of the Prairie Evaporite Formation. The Patience Lake Member potash beds are not present in the Rocanville Area. The Belle Plaine and White Bear Members are present, but not conventionally mineable in the Rocanville area. The potash zone at Rocanville is approximately 2.4 meters thick and occurs near the top of the Prairie Evaporite Formation. Potash mineralization in this area is flat-lying and continuous.

Per the Rocanville Technical Report, mine elevations range from approximately 895 m to 1040 m, averaging approximately 955 m. Within the Rocanville Lease, depths to the top of the ore zone can reach up 1,250 m (the deepest potash exploration drillhole) but are expected to be shallower than 1,200 m over most of the lease area. Salt cover from the ore zone to overlying units is approximately 30 m. The Rocanville mine operates as a conventional underground potash mine.

iv) Exploration

Before the Rocanville mine was established in 1970, all exploration consisted of drilling test holes from surface and analysis of core from these drillholes. Since mining began in 1970, exploration drilling has been infrequent.

In most of southern Saskatchewan, potash mineralization is in place wherever Prairie Evaporite Formation salts exist; they are flat-lying and are undisturbed. Since the surface seismic exploration method is an excellent tool for mapping the top and bottom of Prairie Evaporite salts this has become the main potash exploration tool in any existing Saskatchewan Subsurface (potash) Mineral Lease. Historically, 2D seismic, and now the more accurate 3D seismic methods are used to map continuity and extent of potash beds in flat-lying potash deposits. Seismic data are relied upon to identify collapse structures that must be avoided in the process of mine development since these structures can act as conduits for water. As a result, isolation pillars or mining buffer zones are left around these anomalous features. This practice reduces the overall mining extraction ratio, but the risk of inflow to mine workings is effectively mitigated.

Seismic coverage is outlined in the Rocanville Technical Report.

Experience has shown that the potash mining zone is continuous when seismic data are undisturbed and flat-lying. Surface seismic data are generally collected three to five years in advance of mining. Any area recognized as seismically unusual is identified early, and mine plans are adjusted to avoid these regions.

v) Drilling

For the original Rocanville potash test holes drilled in 1960s, the primary objective of this drilling was to sample the potash horizon to establish basic mining parameters. Seismic surveys (2D) were done sparingly in those days, so the drillhole information was relied upon heavily to evaluate potash deposits. Test holes would penetrate the evaporite section with a hydrocarbon-based drilling mud (oil-based or diesel fuel) to protect the potash mineralization from dissolution. Basic geophysical well-logs were acquired and in many cases drill stem tests were run on the Dawson Bay Formation, a carbonate immediately overlying the Prairie Evaporite Formation, to help assess mine inflow potential. Core samples from the targeted potash intersections were split or quartered (cut with a masonry saw) crushed and analysed to establish potash grades.

Original Rocanville drillhole assay data are taken from Robertson et al. (1977), where the best 2.44 m (8 feet) mining interval – the original mining height at Rocanville – is reported. As explained in the Robertson Associates report, the Rocanville prospect was originally explored by 34 drillholes in Saskatchewan and Manitoba. Of these original drillholes, 26 are located within the current Rocanville Crown Lease and are shown in Table D below.

Potash intersections for one drillhole in Table D revealed anomalously low grades. With decades of mining experience at Rocanville, it is the opinion of the authors of the Rocanville Technical Report that areas of low grade (i.e., <15% K_2O) are localized with a relatively small lateral extent. Therefore, the average grade calculation does not include these drillholes.

Except for an exploration drilling program in 2008, drilling has been infrequent since the 1950s and 1960s. Each of the 2008 exploration drillholes and the shaft pilot hole were drilled in such a way as to protect the potash minerals from dissolution while core sampling through the targeted mining zone (the Esterhazy Member of the Prairie Evaporite Formation). To accomplish this, the aquifers above the top of salt (top of the Prairie Evaporite) were isolated behind a casing before the drilling mud was changed over to an oil-based system. Each drillhole penetrated approximately 10 m into the Winnipegosis Formation, which lies immediately below Prairie Evaporite salts, before drilling was terminated (i.e., through the Prairie Evaporite Formation and far enough into the underlying formation to permit proper geophysical logging of the base of salt).

Hydrogeology in the formations immediately overlying the Prairie Evaporite Formation was evaluated in part by core sampling through the Dawson Bay Formation (for examination of porosity and permeability). As well, drill stem tests were run in the Dawson Bay and Lower Souris River Formations. In the shaft pilot hole, core sampling and drill stem testing were done more extensively as part of a comprehensive investigation for a shaft liner design. In every drillhole, coring and testing of formations above the Prairie Evaporite was completed prior to setting the casing and changing the drilling mud to an oil-based system.

A standard suite of geophysical logs was run in each drillhole. These logs included: Gamma Ray, Neutron, Density, Electrical Resistivity (or Induction), Sonic (full-waveform P & S) and Caliper. In certain drillholes, additional specialized logs were run for fracture mapping and/or porosity investigation over certain geological intervals. A deviation survey was run in each drillhole; the results of which were found to be minimal (i.e., all holes are vertical). Stages of open-hole logging had to be completed before casing was put in place. The stages depended on formational permeability (such as the Mannville Formation, which is a major regional aquifer and needs to be isolated) and formational composition (it is necessary to change drilling mud when drilling through salts to not dissolve the rock).

Potash core samples from the four 2008 exploration drillholes and the Scissors Creek shaft pilot hole were assayed. The assay results for these drillholes are listed in Table D. Note that 2008 assay results are for the best 2.59 m (8.5 feet) mining interval, since an operational decision was made to develop parts of the western portion of Rocanville Crown Lease at a height of 2.59 m (8.5 feet). This mining height allows for more headroom with minimal negative impact on ore grade. Mining machines at Rocanville use potassium sensing technology to ensure that rooms are always cut in the best available potash ore. It is difficult to determine at which mining height certain Mineral Resources and Reserves will be cut in the future, so the more conservative mining height of 2.51 m (8.25 feet) was applied to mineral resource and reserve calculations.

Drillhole assay data for the Rocanville mining interval gives an estimated mean grade of 22.4% K_2O, with 1.2% water insolubles and 3.6% carnallite (Table D).

Table D: Assay results for all potash test holes within the Rocanville Crown Lease.

Weighted Average for 2.44 m (8 feet) Mining Interval				
Drillhole	**Year Drilled**	**% K_2O**	**% Water Insolubles**	**% Carnallite**
01-04-17-30 W1	1957	23.84	1.15	4.34
16-14-017-01W2	1957	Excluded	N/A	N/A
04-20-17-32 W1	1958	22.74	0.95	1.77
08-32-17-30 W1	1959	20.74	1.06	5.18
10-12-17-30 W1	1959	16.35	1.06	7.62
13-16-18-30 W1	1959	20.32	0.75	0.74
05-07-18-30 W1	1961	19.95	1.07	4.92
16-04-18-30 W1	1961	21.89	1.26	5.71
02-11-18-30 W1	1961	24.87	0.97	0.2
01-16-17-30 W1	1964	27.05	1.31	4.29
04-20-17-30 W1	1964	23.86	1.22	0.19
16-22-17-30 W1	1964	29.06	1.38	0.11
14-36-17-30 W1	1964	17.06	0.93	6.8
14-36-17-30 W1*	1964	26.26	1.42	4.76
03-28-17-30 W1	1966	26.32	1.26	6.48
13-14-17-30 W1	1966	23.73	1.4	7.02
04-24-17-30 W1	1966	17.88	0.81	0.19
10-34-17-30 W1	1966	24.85	1.48	0.18
11-25-17-30 W1	1966	19.6	1.15	2.13
11-14-18-30 W1	1966	26.53	1.09	0.22
13-22-17-30 W1	1967	35.1	1.3	5.4
01-14-17-33 W1	1967	25.62	2.72	2.52
13-22-17-33 W1	1967	21.75	2.61	7.24
16-26-17-33 W1	1967	24.01	0.92	0.16
14-05-17-30 W1	1969	15.56	0.96	10.27
01-14-17-30 W1	1971	15.67	1.15	N/A
04-01-019-31W1	1989	22.48	0.64	0.00
06-13-17-32 W1**	2008	23.6	0.41	0.25
08-02-18-32 W1**	2008	20.7	1.06	0.76
13-09-16-33 W1**	2008	23.44	1.42	8.32
04-34-16-33 W1**	2008	15.7	0.67	8.84
09-11-18-33 W1**	2008	18.03	0.36	0.25
Average of 31 useable values:		**22.41**	**1.16**	**3.56**

*Refers to a deflection, or whipstock, off original drillhole
**Refers to drillhole from the 2008 exploration program where the best 2.59 m (8.5 feet) mining interval is reported

Due to the remarkably consistent mineralogy and continuity of the potash, as experienced through decades of mine production, very little potash exploration drilling has been done at Rocanville since start-up. Instead of exploration drillholes, seismic surveying has been relied upon to explore ahead of mine development. Where normal Prairie Evaporite sequences are mapped in the seismic data, potash beds have unfailingly been present. Localized, relatively small mine anomalies, not mapped in seismic data, do occur. When they do, they are dealt with in the normal course of mining and extraction through these anomalous areas is typically minimized. Anomalies associated with possible water inflow problems, which are mapped in the seismic data, are avoided.

vi) Sampling Preparation, Analyses and Security

Basic Approach

Exploration in the Rocanville area was conducted in two very different time periods: the 1960s, then in 2008. Sampling and assaying of potash cores samples was done using methods considered consistent with standard procedures for potash exploration at these times.

Drillhole sampling methods have remained essentially the same over the years. Short segments of core usually about 0.3 m (1 foot) in length are labeled based on visible changes in mineralization and sometimes based on more or less fixed intervals. Each segment of core is then split in half using some type of rock or masonry saw. The split portion of core is then bagged and labeled and sent to a laboratory for chemical analysis. Samples from historical drillholes were sometimes quartered; most historical samples have deteriorated substantially. Exploration drillhole samples from 2008 were halved. Potash samples remain stored at the Subsurface Geological Laboratory (Regina, Saskatchewan) of the SMER.

All in-mine samples were analysed in the Rocanville mill laboratory using analysis techniques that were up-to-date for the era in which the sample was collected.

Regarding quality assurance for analytical results of in-mine samples, the Company participates in the Canpotex Producer Sample Exchange Program (CPSEP) using methods developed by the Saskatchewan Potash Producers Association (SPPA). The CPSEP monitors the accuracy of analytical procedures used in its labs. In the early 1970s, the SPPA initiated a round-robin Sample Exchange Program, the purpose of which was to assist the potash laboratories in developing a high level of confidence in analytical results. The CPSEP uses the proven SPPA Methods and has continued up to the present. Current participants include all Canpotex member potash mine site labs, the Nutrien Pilot Plant Lab, and independent third-party surveyor labs. The CPSEP provides participants with three unknown potash samples for analysis quarterly. Results for the unknown sample analysis are correlated by an independent agency that distributes statistical analysis and a summary report to all participants. Completed exchange program samples can be used for control standards as required in QA/QC sections of standard analytical procedures.

The Nutrien Pilot Plant is secured in the same way as modern office buildings are secured. Authorized personnel have access and visitors are accompanied by staff. No special security measures are taken beyond that. Currently, no external laboratory certification is held by the Nutrien Pilot Plant. On occasion, product quality check samples are sent to the SRC, a fully certified analytical facility.

In the opinion of the authors of the Rocanville Technical Report, the sample preparation, security, and analytical procedures are acceptable, are consistent with industry standard practices and are adequate for mineral resource and reserve estimation purposes.

Mean Potash Mineral Grade From In-Mine Samples

In-mine grade samples are taken at 60 m intervals in every underground mine room at Rocanville. Traditionally, Rocanville in-mine grade samples were collected as chips along a sidewall from back (roof) to floor; this methodology is referred to as channel sampling. In 2015, in-mine grade samples were taken by collecting fine “muck” from the floor of the mine at the same 60 m sampling interval. Nutrien technical staff believe that collecting samples from the floor is as representative of ore grade in the mining interval as channel sampling, and far less labor-intensive.

Per the Rocanville Technical Report, in-mine ore grade samples were collected and analysed in the Rocanville mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

The median ore grade for this family of in-mine samples is 23.6% K_2O equivalent and the mean ore grade is 23.4%.

Potash Ore Density From In-Mine Mineral Grade Measurements

An estimate of in-situ rock density is used to calculate potash mineralization volumes in Mineral Resource and Reserve assessments. A common approach, and the one used by Nutrien, is to determine in-place Mineral Resource and Reserve volumes (m^3), then multiply this number by in-situ bulk-rock density (kg / m^3) to give in-place Mineral Resource and Reserve

tonnes. Well-log data from drillholes can be used to calculate bulk density if accurate and calibrated well-logs are acquired during exploration drilling. In practical terms, modern well-logs tend to meet these criteria, but historic well-logs (collected before the 1990s) do not. In Saskatchewan, almost all potash exploration drilling took place in the 1950s and 1960s, well before density logs were accurate and reliable.

Another approach, and the one used by Nutrien, is to look up density values for the minerals which constitute potash rock – values determined in a laboratory to a high degree of accuracy and published in reliable scientific journals / textbooks – then apply these densities to the bulk rock. Given that the density of each pure mineral is quantified and known, the only variable is what proportion of each mineral makes up the bulk rock. An obvious benefit of this approach is that a mean value computed on in-mine samples has a much greater confidence interval than a mean value computed from just a few drillhole assays.

The four main mineralogical components of the ore zones of Saskatchewan's Prairie Evaporite Formation with their respective mineral densities are:

Mineral	Density (kg / m^3)	Components
Halite	2,170	NaCl
Sylvite	1,990	KCl
Carnallite	1,600	$KMgCl_3 \cdot 6(H_2O)$
Insolubles	2,510	Anhydrite, dolomite, quartz, muscovite, and other minor mineral components *(Nutrien Pilot Plant, 2018)*

All Nutrien potash mines measure and record the in-mine % K_2O grade and insoluble content of the mined rock. The magnesium content is not measured at Vanscoy since carnallite is a negligible component of the ore here. From this set of measurements, density of the ore can be calculated.

The value for insoluble density is based on known densities of the constituent parts of the insoluble components of the mineralization and the average occurrence of these insoluble components, which is known from over 50 years of mining experience at Rocanville. Assuming the lowest plausible density of insolubles known for Saskatchewan potash deposits of this nature, the effect upon overall bulk-rock ore density and Mineral Resource and Reserve calculations would be negligible.

From life-of-mine in-mine samples taken at Rocanville, bulk density has been determined to be:

= (halite density * % halite) + (sylvite density * % sylvite) + (carnallite * % carnallite) + (insolubles density * % insolubles)
= (2,170 kg / m^3 * 57.5%) + (1,900 kg / m^3 * 35.4%) + (1600 kg / m^3 * 6.1%) (2,510 kg / m^3 * 1.0%)
= 2080 kg / m^3

$RHO_{bulk\text{-}rock}$ (Rocanville) = 2,080 kg / m^3

This method is as accurate as the ore grade measurements and mineral density estimates.

Assay Data Verification

Original drillhole ore grade assays were studied by independent consultant David S. Robertson and Associates (1977). The original assay results for core samples from historical drillholes were taken as accurate in these studies, as there is no way to reliably reanalyze these samples. Most of the remaining core samples in storage have long since deteriorated to the point where they are no longer usable.

Assay data for the 2008 core samples were supervised and verified by the Company's former Chief Geologist, T. Danyluk (P.Geo.).

Ore grades of in-mine samples are measured in-house at the Rocanville mine laboratory by Company staff using modern, standard chemical analysis tools and procedures; an independent agency does not verify these results. However, check sampling through the CPSEP has occurred.

It should be noted that assay results from historical drillholes match in-mine sample results reasonably well – within 1% – even though drillhole sample spacing is much greater. This correlation is further validation of the in-mine sampling methodology. Mean mineral grade determined from in-mine samples taken from over 50 years of mining at Rocanville is thought to provide the most accurate measurement of potash grade for the Rocanville mine, also providing a good basis for estimating ore grade in areas of future mining at Rocanville.

Exploration Data Verification

The purpose of any mineral exploration program is to determine extent, continuity and grade of mineralization to a certain level of confidence and accuracy. For potash exploration, it is important to minimize the amount of cross-formational drilling, since each drillhole is a potential conduit for subsurface groundwater from overlying (or underlying) water-bearing formations into future mine workings. Every potash test drillhole from surface sterilizes potash mineralization as a safety pillar is required around every surface drillhole once underground mining commences. This is the main reason that minimal exploration drilling has been carried out at Rocanville in recent years.

Initial sampling and assaying of cores were done during potash exploration at Rocanville in the 1960s. Methods were consistent with standard procedures for that era. The mine began production in 1970 and no further core drilling was carried out by the Company at Rocanville until 2008 when the decision was made to expand the mine westward.

Assay of physical samples (drillhole cores and/or in-mine samples) is the only way to gain information about mineral grade, but extent and continuity of mineralization are correctly determined using data collected from geophysical surveys correlated with historic drilling information. To date, surface seismic data at Rocanville have been collected, analysed and verified by Company staff, at times, in cooperation with an independent consultant.

Data for the mineral reserve and mineral resource estimates for Rocanville mine were verified by Company staff as follows:

- Review of potash assay sample information (drillholes and in-mine grade samples);
- Review of surface geophysical exploration results (3D and 2D seismic data);
- Crosscheck of mined tonnages reported by mine site technical staff with tonnages estimated from mine survey information; and
- Crosscheck of mineral resource and reserve calculations carried out by corporate technical staff.

In the opinion of the authors, this approach to data verification of potash mineral grade and surface seismic information is in accordance with generally accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

vii) Mineral Processing and Metallurgical Testing

At Rocanville, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1970.

Over the 50-year mine life, 281.175 million tonnes of potash ore have been mined and hoisted at to produce 91.397 million tonnes of finished potash product (from startup in 1970 to December 31, 2020). Given this level of sustained production over 50 years, basic mineralogical processing and prospective metallurgical testing of Rocanville potash is not considered relevant.

viii) Mineral Resource and Mineral Reserve Estimates

Definitions of Mineral Resource

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Resource” for an overview of CIM’s mineral resource categories and the Company’s general characterization of mineral resource categories for its potash mines.

The Rocanville mine began production in 1970 and core drilling has been infrequent over the years, except for five holes drilled during the 2008 exploration program. Exploration primarily involves collecting surface seismic data which has become better in quality over the years. Exploration drilling has demonstrated the presence of the potash horizon and seismic coverage shows the continuity of the Prairie Evaporite Formation within which the potash horizon occurs.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zone at Rocanville that is far superior to the level of understanding provided by any surface drilling-based exploration program. We believe that our approach provides a body of information that guides and constrains our exploration inferences in a much better way than could be achieved from any conventional exploration investigation in areas immediately surrounding, and contiguous to, the Rocanville potash mine.

Mineral Resource Estimates

Exploration information used to calculate reported mineral resource tonnages at Rocanville consist of both physical sampling (drillhole and in-mine) and surface seismic (2D and 3D). Based on the definitions and guidelines above, all mineral rights leased or owned by the Company and within the Rocanville Crown Lease are assigned to one of the three mineral resource categories.

Mineral resources are reported as mineralization in-place and are exclusive of mineral reserves. In-place tonnes were calculated for each of the mineral resource categories using the following parameters:

Mining Height:	2.51	meters (8.25 feet)
Ore Density:	2.080	tonnes/cubic meter

The mineral resources per the Rocanville Technical Report are as follows:

Inferred Resource	1,376	million tonnes
Indicated Resource	1,342	million tonnes
Measured Resource	1,761	million tonnes
Total Resource =	4,479	million tonnes

The December 31, 2020 Mineral Resource estimates remain the same as the estimates outlined in the Rocanville Technical Report.

The average mineral grade of the Rocanville Mineral Resource is 23.4% K_2O equivalent and was determined from in-mine samples at Rocanville.

The tonnage reported in the Rocanville Measured Resource is comprised of the potash that is within 1.6 km (1 mile) of physically sampled location (i.e., drillhole or mine working). Also included as Measured Resource is the potash in the pillars of mined-out areas of the Vanscoy mine as there is the possibility of retrieving ore from the remnant mining pillars at some point in the future. An example of this is the Patience Lake mine which was successfully converted from a conventional mine to a solution mine after being lost to flooding in 1989. Since mining of remnant mining pillars is not anticipated in the near future at Rocanville, in-place pillar mineralization remains as a Mineral Resource rather than a Mineral Reserve at this time.

Definitions of Mineral Reserve

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Reserve” for an overview of CIM’s mineral reserve categories and the Company’s general characterization of mineral reserve categories for its potash mines.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zone at Rocanville that is far superior to the level of understanding provided by any surface drilling-based exploration program. An understanding of the amount of ore that can be conventionally mined from the measured resource category using current mining practices comes from decades of potash mining experience at Rocanville.

Mineral Reserve Estimates

Using the definitions outlined above, a portion of the Rocanville Measured Resource has been converted to Mineral Reserve. The assigned Mineral Reserve category is dependent on proximity to sampled mined entries also described above. An overall extraction ratio for the Rocanville mine has been applied to the qualifying areas outlined as Measured Resource

The overall extraction ratio at the Rocanville mine is 31%. It was derived by dividing the total tonnes mined to date by the tonnage equivalent of the total area of the mine workings (i.e., the perimeter around the mine workings) less future mining blocks. Since an extraction ratio has been applied Mineral Reserves are considered recoverable ore and are reported as such.

The mineral reserves per the Rocanville Technical Report are as follows:

Probable Reserve	348	million tonnes
Proven Reserve	195	million tonnes
Total Reserve (Proven + Probable) =	543	million tonnes

The average mineral grade of the Rocanville Mineral Reserve is 23.4% K_2O equivalent and was determined from in-mine samples at Rocanville.

The December 31, 2020 Mineral Reserve estimates essentially remain the same as the estimates outlined in the Rocanville Technical Report. Tonnes mined since the Rocanville Technical Report (i.e. 32.982 million tonnes) can be removed from the Proven Reserve resulting in a total Proven Reserve estimate of 162 million tonnes.

ix) Mining Operations

All conventional potash mines in Saskatchewan operate at 900 m to 1,200 m below surface within 9 m to 30 m of the top of the Prairie Evaporite Formation. Over the scale of any typical Saskatchewan potash mine, potash beds are tabular and regionally flat-lying, with only moderate local variations in dip. At Rocanville potash ore is mined using conventional mining methods, whereby:

- Shafts are sunk to the potash ore body;
- Continuous mining machines cut out the ore, which is hoisted to surface through the shafts;
- Raw potash is processed and concentrated in a mill on surface; and
- Concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Sinking of the two original shafts (Shaft #1 and Shaft #2) from surface to the potash zone was completed in early 1970, and the first potash ore was hoisted by the fall of that year. The Rocanville mine has run on a continuous basis since the first ore was hoisted in 1970, other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

In recent years the Rocanville mine has undergone a major expansion which brought the nameplate capacity of the Rocanville facility to 6.5 million tonnes of finished potash products per year. In 2020, operational capability at the Rocanville facility was 5.4 million tonnes per year. Operational capability may vary during the year and year-to-year including as between our potash operations.

Virtually all Rocanville underground mining rooms are in one potash mineralized zone within the Esterhazy Member the Prairie Evaporite Formation (the host evaporite salt). In contrast, Nutrien potash mines further west in Saskatchewan mine in a different potash layer, the Patience Lake Member of the Prairie Evaporite. Per the Rocanville Technical Report, mine elevations range from approximately 895 m to 1,040 m, averaging approximately 955 m. Within the Rocanville Crown Lease, depths to the top of the ore zone can reach up 1,250 m (the deepest potash exploration drillhole) but are expected to be shallower than 1,200 m over most of the lease area. Mine workings are protected from aquifers in overlying formations by approximately 30 m of overlying salt and potash beds, along with salt plugged porosity in the Lower Dawson Bay Formation, a carbonate layer lying immediately above potash hosting salt beds.

The Rocanville mine is a conventional underground mining operation whereby continuous mining machines are used to excavate the potash ore by the long-room and pillar mining method. Continuous conveyor belts transport ore from the mining face to the bottom of the production shaft. Mining methods employed in Saskatchewan are discussed in Jones and Prugger (1982) and in Gebhardt (1993).

The highest mineral grade section of the Rocanville potash seam is approximately 2.3 m (7.5 feet) thick, with gradations to lower grade sylvinite salts immediately above and below the mining horizon. The actual mining thickness at Rocanville is dictated by the height of continuous boring machines used to cut the ore, which are designed to cut slightly thicker than the high-grade mineralized zone. Historically, Rocanville borers cut at a thickness of 2.44 m (8 feet). These five older machines were recently adjusted to cut a thicker 2.51 m (8.25 feet) mining height. Six newly acquired boring machines cut a slightly thicker 2.59 m (8.5 feet) mining height. This mining height allows for more headroom with minimal negative impact on ore grade. Mining machines at Rocanville use potassium sensing technology to ensure that rooms are always cut in the best available potash ore. It is difficult to determine at which mining height certain mineral resources and reserves will be cut in the future, so the more conservative mining height of 2.51 m (8.25 feet) was applied to mineral resource and reserve calculations.

Conservative local extraction ratios (never exceeding 45% in any mining block) are employed at all Saskatchewan mines, including Rocanville, in order to minimize potential detrimental effects of mining on overlying strata; this is common practice in flat-lying, tabular ore bodies overlain by water-bearing layers.

From the shaft-bottom, potash ore is hoisted approximately 960 m from the potash level through the vertical shafts to a surface mill. Both production shafts also provide exhaust ventilation from underground workings; the third shaft from surface at Scissors Creek is used for service access, fresh air ventilation and second egress.

Over the 50-year mine life, 281.175 million tonnes of potash ore have been mined and hoisted at Rocanville to produce 91.397 million tonnes of finished potash products (from startup in 1970 to December 31, 2020). The life-of-mine average concentration ratio (raw ore/finished potash products) is 3.08 and the overall extraction ratio over this period is 31%.

x) Processing and Recovery Operations

At Rocanville, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1970. Raw potash ore is processed on surface, and concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Over the past three years, production of finished potash products at Rocanville was:

- 2018: 5.222 million tonnes finished potash products at 60.46% K_2O (average grade)
- 2019: 5.144 million tonnes finished potash products at 60.53% K_2O (average grade)
- 2020: 5.285 million tonnes finished potash products at 60.60% K_2O (average grade)

Over the past decade actual mill recovery rates have been between 81.5% and 85.7%, averaging 83.42%. Given the long-term experience with potash geology and actual mill recovery at Rocanville no fundamental potash milling problems are anticipated in the foreseeable future.

Quality control testing and monitoring geared towards fine-tuning and optimizing potash milling and concentrating processes are conducted on a continual basis at all Nutrien mine sites and at Nutrien research facilities. At Rocanville, this is no exception; test work to optimize circuit performance and ensure product quality is carried out on an ongoing basis.

xi) Infrastructure, Permitting and Compliance Activities

Project Infrastructure

Infrastructure is in place to meet current and projected requirements for transportation, energy (electricity and natural gas), water and process materials at Rocanville.

The Rocanville mine is served by a number of towns and villages within 50 kilometers of the mine site. The nearest towns are Rocanville (15 km distant), Moosomin and Esterhazy (both 50 km distant). The nearest city is Yorkton (100 km distant). Surface facilities are accessed by an existing paved road that is part of the Saskatchewan Provincial Highway System. Most finished potash products are shipped by rail over existing track, with some product shipped by truck over the North American highway system.

At present, high voltage power utilization at the Rocanville mine is 84 MVA (i.e., 72 MVA to the Rocanville Plant site plus 12 MVA to the Scissors Creek site). The ten-year projection of power utilization indicates that the utility can meet foreseeable future demand.

The Rocanville operation requires a sustained fresh water supply for the milling process which is sourced from two subsurface reservoirs called the Welby Plains Surficial Aquifer and the Welby Plains Middle Aquifer. These aquifers provide a sustainable source of process water for Rocanville milling operations, without having any perceptible impact on other users of water drawn from these aquifers.

Environmental Studies, Permitting and Compliance Activities

The tailings management strategy at all Nutrien potash mines in Saskatchewan, including Rocanville, is one of sequestering solid mine tailings in an engineered and provincially licensed TMA near the surface plant site. The Rocanville TMA currently covers an area of approximately 567 hectares (1,400 acres) of land owned by the Company. Solid potash mine tailings typically consist of 85% to 95% rock salt (NaCl) and 5% to 15% insolubles (carbonate mud = $CaCO_3$, anhydrite mud = $CaSO_4$, and clays like chlorite, illite, and so on). An engineered slurry-wall has been constructed around the entire Rocanville TMA. The slurry-wall provides secondary containment for any saline mine waters, minimizing brine impacts from the TMA to surrounding surface water bodies and near-surface aquifers. Areas surrounding the TMA are closely monitored: this includes everything from daily visual perimeter inspections to annual investigations and inspections of surrounding subsurface aquifers.

Rocanville currently operates five brine disposal wells near the surface plant of the Rocanville mine where clear salt brine (i.e., no silt, clay slimes or other waste) is borehole-injected into the Interlake Carbonates, at a depth of approximately 1,200 m to 1,400 m below surface. The groundwater in these extensive deep aquifers is naturally saline.

Emissions to air (mostly salt dust and potash dust) are kept below regulatory limits through various modern air pollution abatement systems (e.g., dust collection systems built into mill processes) that are provincially licensed. This same procedure is followed at all Nutrien mines in Saskatchewan.

The Rocanville operation requires a sustained fresh water supply for the milling process which is sourced from two subsurface reservoirs called the Welby Plains Surficial Aquifer and the Welby Plains Middle Aquifer. This water supply is provincially licensed and provides a sustainable source of process water for Rocanville milling operations, without having any perceptible impact on other users of water drawn from these aquifers.

In Saskatchewan, all potash tailings management activities are carried out under an “Approval to Operate” granted by the SMOE. The Rocanville mine is in compliance with all regulations stipulated by the Environmental Protection Branch of the SMOE. The current Rocanville Approval to Operate has been granted to July 1, 2028, the renewal date.

In terms of long-term decommissioning, environmental regulations in the Province of Saskatchewan require that all operating potash mines in Saskatchewan create a long-term decommissioning and reclamation plan that will ensure all surface facilities are removed, and the site is left in a chemically and physically stable condition once mine operations are complete. The Company has conducted numerous studies of this topic, and the most recent decommissioning and reclamation plan for Rocanville was approved by SMOE technical staff in October 2016. Because the current expected mine life for Rocanville is many decades into the future, it is not meaningful to come up with detailed engineering designs for decommissioning annually. Instead, decommissioning plans are reviewed every five years, and updated to accommodate new concepts, technological change, incorporation of new data and adjustments of production forecasts and cost estimates. Any updated decommissioning and reclamation reports generated by this process are submitted to provincial regulatory agencies. For Rocanville, a revised decommissioning and reclamation plan is required in July 2021.

In addition to the long-term decommissioning plan, provincial regulations require that every potash producing company in Saskatchewan set up an Environmental Financial Assurance Fund, which is to be held in trust for the decommissioning, restoration and rehabilitation of the plant site after mining is complete. This fund is for all mines operated by Nutrien in the Province of Saskatchewan (i.e., Allan, Cory, Lanigan, Patience Lake, Rocanville, and Vanscoy).

xii) Capital and Operating Costs

The Rocanville mine has been in operation since 1970; in the years immediately preceding this, major capital investment was made to bring this mine into production. Since then, capital expenditures were made on a regular and ongoing basis to sustain production and to expand production from time to time.

A major refurbishment and expansion of the Rocanville mine was completed in 2013. Following that, production was ramped up through 2017 when a nameplate capacity of 6.5 million tonnes of finished potash was announced. This work involved construction of a third shaft, enhancement of hoists and shaft conveyances, major expansions of both mine and mill, improvements to loadout facilities and some infrastructure improvements. All construction was carried out without significant disruption to existing potash production from the site.

xiii) Exploration, Development and Production

Potash production in any given year at the Rocanville mine is a function of many variables, so actual production in any given year can vary dramatically from tonnages produced in previous years. The mineral reserve tonnage and historic average production are used to estimate remaining mine life. If the average mining rate seen over the past three years (16.572 million tonnes of potash ore mined and hoisted per year) is sustained, and if mineral reserves remain unchanged then the Rocanville mine life is 31 years from December 31, 2020.

e) Vanscoy Potash Operations

Certain scientific and technical information regarding our Vanscoy potash operations is based on the technical report titled "National Instrument 43-101 Technical Report on Vanscoy Potash Deposit (KL 114C) Saskatchewan, Canada" dated effective December 31, 2020 ("Vanscoy Technical Report") prepared under the supervision of Craig Funk, B.Sc., M.Sc., P.Eng., P.Geo., who is a "qualified person" as defined in NI 43-101. The Vanscoy Technical Report has been filed with the securities regulatory authorities in each of the provinces of Canada and furnished to the SEC. Portions of the following information are based on assumptions, qualifications and procedures that are not fully described herein. References should be made to the full text of the Vanscoy Technical Report.

i) Project Description, Location and Access

The Vanscoy mine is located in central Saskatchewan, approximately 26 kilometers west of the city of Saskatoon, Saskatchewan. The Legal Land Description (Saskatchewan Township / Range) of the Vanscoy surface plant is Section 16 Township 35 Range 08 West of 3rd Meridian. More precisely, the Vanscoy service shaft collar is located at:

- Latitude: 52 degrees 00 minutes 28.74 seconds North
- Longitude: 107 degrees 05 minutes 25.18 seconds West
- Elevation: 505 meters above mean SL
- Easting: 356,531 m
- Northing: 5,763,989 m
- Projection: UTM
- Datum: NAD83
- Zone: 13

The Company owns approximately 2,740 hectares (6,770 acres) of surface rights required for current Vanscoy mine operations, including all areas covered by the existing surface plant and Tailings Management Area (TMA), and all surface lands required for anticipated near-future Vanscoy mine and expanded milling operations. Surface facilities are accessed by an existing paved road that is part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

The Vanscoy mine is served by a number of villages within 50 kilometers of the mine site. The nearest city is Saskatoon (26 km distant). Vanscoy is situated near the northern extent of the Great Plains of North America. Topography is relatively flat, with gently rolling hills and occasional valleys. The Vanscoy surface plant lies approximately 20 km north-west of the South Saskatchewan River, a major continental drainage channel.

Mineral Rights

Mineral rights at Vanscoy are mined pursuant to mining leases with the Province of Saskatchewan, Canada (the Crown), and with non-Crown (Freehold) mineral rights owners. Crown mineral rights are governed by *The Subsurface Mineral Tenure Regulations, 2015,* and Crown Leases are approved and issued by the SMER. The original Vanscoy Crown Subsurface Mineral Lease, numbered KL 114, was signed and executed in January 1969. In the following years, minor amendments were made to the Lease, resulting in Crown Subsurface Mineral Lease KL 114B.

In April 2007, application was made for a Permit to Prospect for Subsurface Minerals (Potash Exploration Permit KP 313) covering approximately 22,623 hectares (55,919 acres) of Crown mineral rights in the area just south of and adjoining the existing Vanscoy Crown Lease KL 114. In March 2008, the SMER approved the conversion of Agrium's Potash Exploration Permit KP 313 to a new Crown Subsurface Mineral Lease numbered KL 204.

In December 2020, after additional geological studies were completed, Vanscoy Crown Subsurface Mineral Lease KL 114C (the "Vanscoy Crown Lease") was executed incorporating most of the lands held previously under KL 204. As part of this amalgamation of the two leases, a total of 14,138 hectares (34,935 acres) of Crown land previously held under KL 204 deemed unmineable was surrendered. There was, however, a substantial and favourable net gain, when an additional 19,952 hectares (49,303 acres) of undisposed Crown mineral land to the west of the Vanscoy lease was secured following the lease expansion process set out in *The Subsurface Mineral Tenure Regulations, 2015*.

Additionally, following the Merger, synergies were identified and realized whereby 3,503 hectares (8,656 acres) of inaccessible land in the northern part of Vanscoy's Crown Lease were transferred into Nutrien's adjacent Cory Crown Lease where they could be developed, while 1,298 hectares (3,207 acres) of inaccessible land from the Cory Crown Lease were transferred into Vanscoy's Crown Lease where they could be developed. Cory's Crown Subsurface Mineral Lease KL 103C was amended in 2020 at the same time as KL 114C.

KL 114C covers an area of approximately 82,115 hectares (202,910 acres). At Vanscoy, the Company has leased potash mineral rights for 63,973 hectares (158,081 acres) of Crown land and owns or has leased from freeholders approximately 13,669 hectares (33,777 acres) within the lease boundary. The Vanscoy Crown Lease term is for a period of 21 years from July 1, 2012, with renewals (at the Company's option) for 21-year periods. Freehold lands also remain under lease providing, generally, that production is continuing and that there is a continuation of the Crown Lease.

Within the Vanscoy Crown Lease area 12,671.59 hectares (31,312.17 acres) are mined pursuant to a unitization agreement with mineral rights holders. Mining has occurred outside of Unit #1 in lands that are leased but not unitized. There are plans for a second unitization agreement at Vanscoy.

ii) History

See "Mineral Projects – a) Allan Potash Operations – ii) History" above for a general overview of the history of potash mines in Saskatchewan.

Exploration drilling for potash in the Vanscoy area was first carried out in the 1960s. The Vanscoy mine was built by Cominco Ltd. (formerly the Consolidated Mining and Smelting Company of Canada Limited) in the 1960s. Potash production began at Vanscoy in April 1969. With the exception of the 1970 inflow which halted production for two years, the Vanscoy mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

In 1993, Cominco Fertilizers Ltd. was formed as a separate entity from Cominco Ltd. In 1995 all Cominco involvement in Cominco Fertilizers Ltd. ceased and shares were transferred to the new entity, Agrium.

A major refurbishment and expansion of the Vanscoy mine was completed in 2015, increasing nameplate capacity to 3.0 million tonnes of finished potash products per year. At Vanscoy, potash ore has been mined and concentrated to produce saleable quantities of high grade finished potash products since 1969.

iii) Geological Setting, Mineralization and Deposit Types

Geological Setting and Mineralization

See "Mineral Projects – a) Allan Potash Operations – iii) Geological Setting, Mineralization and Deposit Types – Geological Setting and Mineralization" above for a general overview of geological setting and mineralization for potash mines in Saskatchewan.

Over the past three years (2018, 2019, 2020), the average, measured potash ore grade of the mill feed at Vanscoy was 25.6% K_20 equivalent. The average ore grade reported from 36 historic surface drillhole intersections, all within Vanscoy Subsurface Mineral Lease KL 114C, is 24.9 K_20 equivalent. The average ore grade observed from thousands of in-mine samples collected to the end of December 2020 is 24.2% K_20 equivalent.

Deposit Type

There are three mineable potash members within the Prairie Evaporite Formation of Saskatchewan. Stratigraphically highest to lowest, these members are: Patience Lake, Belle Plaine, and Esterhazy.

The Vanscoy potash deposit lies within the Patience Lake Potash Member of Prairie Evaporite Formation. There are two potash seams named A Zone and B Zone within this Member; at present, only the A Zone is being mined at Vanscoy and no test mining has been carried out in the B Zone to date. Neither the Esterhazy nor the White Bear Potash Members are present in the Vanscoy area. The Belle Plaine Potash Member is not well-developed, and therefore is not mined.

Vanscoy potash mineralization occurs at approximately 1,000 m to 1,120 m depth below surface. The A Zone is approximately 3.35 m thick and occurs near the top of the Prairie Evaporite Formation salts. Salt cover from the ore zone to overlying units is approximately 12 m. The Vanscoy mine operates as a conventional, underground potash mine.

iv) Exploration

Before the Vanscoy mine was established, all exploration consisted of drilling from surface and analysis of core from these drillholes. Since mining began in 1969, there have been several exploration drillholes that intersect the ore zone of the Prairie Evaporite Formation.

In most of southern Saskatchewan, potash mineralization is in place wherever Prairie Evaporite Formation salts exist, are flat-lying, and are undisturbed. Since the surface seismic exploration method is an excellent tool for mapping the top and bottom of Prairie Evaporite salts, this has become the main potash exploration tool in any existing Saskatchewan Subsurface (potash) Mineral Lease. Historically, 2D seismic, and now full coverage 3D seismic methods are used to map continuity and extent of potash beds in flat-lying potash deposits. Seismic data are relied upon to identify collapse structures that must be avoided in the process of mine development since these structures can act as conduits for water ingress to the mine. As a result, isolation pillars or mining buffer

zones are left around these anomalous features. This practice reduces the overall mining extraction ratio, but the risk of inflow to mine workings are effectively mitigated.

Seismic coverage is outlined in the Vanscoy Technical Report.

Experience has shown that the potash mining horizon is continuous when seismic data are undisturbed and flat-lying. It is now Nutrien's policy to collect detailed 3D seismic data ahead of mining. Any areas recognized as seismically unusual is identified early, and mine plans are adjusted as needed.

v) Drilling

For the original Vanscoy potash test holes drilled in the 1950s and 1960s, the primary objective of drilling was to sample potash horizons to establish basic mining parameters. Seismic surveys (2D) were done sparingly in those days, so the drillhole information was relied upon heavily to evaluate potash deposits. Test holes would penetrate the evaporite section with a hydrocarbon-based drilling mud (oil-based or diesel fuel) to protect the potash mineralization from dissolution. Basic geophysical well-logs were acquired, and in many cases, drill stem tests were run on the Dawson Bay Formation to help assess water-make potential of the caprock. Core samples from the targeted potash intersections were split or quartered (cut with a masonry saw), crushed, and analysed to establish potash grades.

Relatively thin interbeds or seams of insoluble material, referred to as clay seams in the potash industry, are an ever-present component of the A Zone and B Zone at Vanscoy. These seams, along with the clay or clay-like material disseminated throughout the mining horizon, make up the water insoluble portion of the ore. The same sequences of clay seams can be correlated for many kilometers across the central Saskatchewan potash mining district.

At Vanscoy, a particular sequence of three clay seams marks the top of the A Zone. These seams are used to guide the vertical positioning of the mining machine. The uppermost portion of the sequence of three seams is maintained at the top of the mining cut to keep the cutting "on grade". Cutting too high above this upper seam or top marker results in dilution, as halite (rather than sylvinite) immediately overlies the production zone. In practice though, the top marker seam is slightly overcut (between 10 cm to 20 cm) to prevent an unstable condition from being created. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to advancing mining, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

The A Zone mining interval at Vanscoy has been fixed at 3.35 m (11'). This mining height allows for comfortable working headroom and efficient extraction of potash ore.

The original exploration area was explored with 23 test holes laid out in a 1.6 km to 3.2 km (1 mile by 2 mile) grid pattern. Initial exploratory drilling was conducted under the engineering supervision of E.D. Bietz of J.C. Sproule & Associates, and under the well site geological supervision of Dr. W.J. Pearson and D.M. Lane of C.M.&S. Since mining commenced in 1969, 19 additional drillholes have been completed. These later holes were conducted under the engineering supervision of either Cavern Engineering Ltd., Artisan Consulting, or Barlon Engineering Group Ltd., and under the well site geological supervision of either R.H. Brown Consulting Geologists Ltd. or North Rim Exploration Consultants Ltd. Logging and assaying of the core were performed by ADM Consulting Ltd. All drilling and sampling was carried out following the regulations in place at the time.

Assays from all drillholes within Vanscoy's current Crown Lease (KL 114C) are provided in Table A. In each case, the best 3.35 m (11') mining interval intersected in the drillhole was determined from the assay values, using clay marker seams as a guide. With over 50 years of mining experience at Vanscoy, it is the opinion of the authors that areas of low grade (i.e. <15% K_2O) are localized with a relatively small lateral extent. Drillhole assay data for the A Zone at Vanscoy gives an estimated mean grade of 24.9% K_2O with 5.1% water insolubles.

B Zone mineralization is indicated by gamma ray geophysical log response in each of the exploration drillholes listed in Table A indicating a potash Mineral Resource, but no test mining has been carried out in the B Zone to date. Assay results for the B Zone are not presented here.

Table A: Assay results for all potash test holes within Vanscoy Lease KL 114C.

Average in 3.35 m (11') mining interval (undiluted)			
Drillhole	**Year Drilled**	**%K2O**	**% Water Insolubles**
13-22-036-08 W3	1957	27.6	2.4
15-32-034-08 W3	1964	6.5	5.9
16-28-034-08 W3	1964	29.4	4.3
04-36-035-09 W3	1964	29.1	7.8
04-10-035-08 W3	1964	26.3	6.4
04-18-035-08 W3	1964	25.8	5.6
04-20-035-08 W3	1964	26.3	4.8
04-22-035-08 W3	1964	29.7	3.5
04-24-035-08 W3	1964	1.6	5.2
04-28-035-08 W3	1964	28.1	2.7
04-34-035-08 W3	1964	26.8	4.4
13-01-035-08 W3	1964	28.9	5.8
13-11-035-08 W3	1964	28.6	5.5
14-29-035-08 W3	1964	25.9	4.3
16-06-035-08 W3	1964	27.4	4.3
16-08-035-08 W3	1964	28.0	6.3
11-16-035-08 W3	1965	26.1	5.6
13-16-035-08 W3	1965	26.5	6.0
13-23-035-08 W3	1965	28.9	3.9
02-16-036-08 W3	1989	26.7	5.4
01-24-034-08 W3	1999	25.7	4.3
04-03-035-07 W3	2007	27.9	6.2
01-21-034-07 W3	2010	27.7	5.5
12-31-034-07 W3	2010	24.5	3.6
13-35-033-08 W3	2010	26.7	5.9
01-11-035-07 W3	2011	29.4	4.0
01-15-035-07 W3	2011	18.2	6.8
01-29-034-07 W3	2011	9.1	4.2
08-07-034-07 W3	2011	19.1	3.4
08-11-035-07 W3	2011	*	*
13-09-034-07 W3	2011	*	*
13-23-034-07 W3	2011	26.8	6.8
15-28-034-08 W3	2011	27.4	5.0
16-26-034-07 W3	2011	29.3	6.2
04-05-034-07 W3	2011	27.2	6.0
06-03-034-07 W3	2011	25.0	5.2
07-07-034-06 W3	2018	25.9	5.1
02-25-035-08 W3	2019	23.6	6.4
Average of 36 usable values:		**24.9**	**5.1**

Due to the remarkably consistent mineralogy and continuity of the resource as experienced over 50 years of mine production, only a few exploration drilling programs were conducted after the 1960s. Instead of exploration drillholes, seismic surveying has been relied upon to explore ahead of mine development. Where normal Prairie Evaporite sequences are mapped in the seismic data, potash beds have unfailingly been present. Localized, relatively small mine anomalies not mapped in seismic data do occur. When they do, they are dealt with in the normal course of mining, and extraction through these anomalous areas is typically minimized. Anomalies associated with possible water inflow problems, which are mapped in the seismic data, are avoided.

vi) Sampling Preparation, Analyses and Security

Basic Approach

Exploration in the Vanscoy area was initially conducted in the 1950s and 1960s. Sampling and assaying of potash core samples was done using methods considered consistent with standard procedures for potash exploration at these times.

Drillhole sampling methods have remained essentially the same over the years. Potash core samples are acquired as described above. Short segments of core usually about 1 foot (0.3 m) in length are labeled based on visible changes in mineralization, and

sometimes based on fixed intervals. Each segment of core is then split using some type of rock or masonry saw. The split portion of core is then bagged and labeled and sent to a laboratory for chemical analysis. Historical potash samples remain stored at the Subsurface Geological Laboratory (Regina, Saskatchewan) of the SMER. Most of these have deteriorated substantially.

All in-mine samples were analysed in the Vanscoy mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

Regarding quality assurance for analytical results of in-mine samples, the Company participates in the Canpotex Producer Sample Exchange Program (CPSEP) using methods developed by the Saskatchewan Potash Producers Association (SPPA). The CPSEP monitors the accuracy of analytical procedures used in its labs. In the early 1970s, the SPPA initiated a round-robin Sample Exchange Program, the purpose of which was to assist the potash laboratories in developing a high level of confidence in analytical results. The CPSEP uses the proven SPPA Methods and has continued up to the present. Current participants include all Canpotex member potash mine site labs, the Nutrien Pilot Plant Lab, and independent third-party surveyor labs. The CPSEP provides participants with three unknown potash samples for analysis quarterly. Results for the unknown sample analysis are correlated by an independent agency that distributes statistical analysis and a summary report to all participants. Completed exchange program samples can be used for control standards as required in QA/QC sections of standard analytical procedures.

The Nutrien Pilot Plant is secured in the same way as modern office buildings are secured. Authorized personnel have access and visitors are accompanied by staff. No special security measures are taken beyond that. Currently, no external laboratory certification is held by the Nutrien Pilot Plant. On occasion, product quality check samples are sent to the SRC, a fully certified analytical facility.

In the opinion of the authors, the sample preparation, security, and analytical procedures are acceptable, are consistent with industry-standard practices, and are adequate for Mineral Resource and Reserve estimation purposes.

Mean Potash Mineral-Grade From In-Mine Samples

At Vanscoy, in-mine grade samples have been acquired by 1) sampling ore from the beltline, 2) channel samples from the sidewall, or 3) collecting fine “muck” from the floor of the mine. At present, fine muck sampling from the floor is most common, and each mining room is sampled at a frequency of approximately 95 m to 125 m. Since start-up in 1969 through to the end of December 2020, a total of 3,173 useable in-mine potash mineral grade samples were collected from the Vanscoy A Zone, the main potash horizon at Vanscoy. All samples were analysed in the Vanscoy mill laboratory using analysis techniques that were up to date for the era in which the sample was collected.

The median ore grade for this family of in-mine samples is 25.5% K_2O equivalent and the mean ore grade is 24.2%.

Per the Vanscoy Technical Report, the B Zone at Vanscoy, mineral grade is reported to be 20.3% K_2O equivalent, the grade observed from 20,230 in-mine samples at the Lanigan mine where the B Zone has been extensively mined. Even though Vanscoy mine is some distance from Lanigan, this is considered the best estimate of expected mineral grade for this potash layer because the deposit is known to be regionally continuous from west of Vanscoy to east of Lanigan (Fuzesy, 1982 and references therein). Although it is possible that if mining proceeds into the B Zone, the reported grade could change from what is reported. It is expected that any such change would be minimal.

Potash Ore Density From In-Mine Mineral Grade Measurements

An estimate of in-situ rock density is used to calculate potash mineralization volumes in Mineral Resource and Reserve assessments. A common approach, and the one used by Nutrien, is to determine in-place Mineral Resource and Reserve volumes (m^3), then multiply this number by in-situ bulk-rock density (kg / m^3) to give in-place Mineral Resource and Reserve tonnes. Well-log data from drillholes can be used to calculate bulk density if accurate and calibrated well-logs are acquired during exploration drilling. In practical terms, modern well-logs tend to meet these criteria, but historic well-logs (collected before the 1990s) do not. In Saskatchewan, almost all potash exploration drilling took place in the 1950s and 1960s, well before density logs were accurate and reliable.

Another approach, and the one used by Nutrien, is to look up density values for the minerals which constitute potash rock – values determined in a laboratory to a high degree of accuracy and published in reliable scientific journals / textbooks – then apply these densities to the bulk rock. Given that the density of each pure mineral is quantified and known, the only variable is what proportion of each mineral makes up the bulk rock. An obvious benefit of this approach is that a mean value computed on the in-mine samples has a much greater confidence interval than a mean value computed from just a few drillhole assays.

The four main mineralogical components of the ore zones of Saskatchewan’s Prairie Evaporite Formation with their respective mineral densities are:

Mineral	Density (kg / m^3)	Components
Halite	2,170	NaCl
Sylvite	1,990	KCl
Carnallite	1,600	$KMgCl_3 \cdot 6(H_2O)$
Insolubles	2,510	Anhydrite, dolomite, quartz, muscovite, and other minor mineral components *(Nutrien Pilot Plant, 2018)*

All Nutrien potash mines measure and record the in-mine % K_2O grade and insoluble content of the mined rock. The magnesium content is not measured at Vanscoy since carnallite is a negligible component of the ore here. From this set of measurements, density of the ore can be calculated.

The value for insoluble density is based on known densities of the constituent parts of the insoluble components of the mineralization and the average occurrence of these insoluble components, which is known from over 50 years of mining experience at Vanscoy. Assuming the lowest plausible density of insolubles known for Saskatchewan potash deposits of this nature, the effect upon overall bulk-rock ore density and Mineral Resource and Reserve calculations would be negligible.

From life-of-mine in-mine samples taken at Vanscoy, bulk density for the Vanscoy A Zone has been determined to be:

= (halite density * % halite) + (sylvite density * % sylvite) + (insolubles density * % insolubles)
= (2,170 kg / m^3 * 57.3%) + (1,900 kg / m^3 * 38.3%) + (2,510 kg / m^3 * 4.4%)
= 2,116 kg / m^3

$RHO_{bulk\text{-}rock}$ (Vanscoy A Zone) = 2,116 kg / m^3

This method is as accurate as the ore grade measurements and mineral density estimates.

No test mining of the B Zone has been conducted at Vanscoy to permit a bulk density calculation based on Vanscoy in-mine grade samples. If test mining of the B Zone at Vanscoy is conducted in future, there may be enough samples with all constituent minerals measured to warrant a change from what is reported. It is expected that any such change would have only a minimal effect on bulk-rock density used in tonnage calculations.

Instead, the potash bulk-rock density is calculated using thousands of in-mine grade samples from Lanigan B Zone:

$RHO_{bulk\text{-}rock}$ (Vanscoy B Zone) = $RHO_{bulk\text{-}rock}$ (Lanigan B Zone) = 2,120 kg / m^3

This estimate is considered acceptable since both Vanscoy B Zone and Lanigan B Zone are the same potash seam. Should the Vanscoy B Zone bulk density change from the predicted value of 2,120 kg / m^3, the later defined Vanscoy B Zone Mineral Resources and Reserves will also change, albeit, insignificantly.

Assay Data Verification

Most of the original drillhole assays were sent to Core Laboratories Canada Ltd. in Calgary, Alberta for analyses. Later drillholes, along with two historical drillholes still intact, were prepared for sampling by ADM Consulting Ltd. and sent to SRC Geoanalytical Laboratory for analyses using accredited assaying procedures.

The original assay results for core samples from historical drillholes were taken as accurate in these studies, as there is no way to reliably reanalyse these samples. Most of the remaining samples in storage have long since deteriorated to the point where they are not usable.

Ore grades of in-mine samples are measured inhouse at the Vanscoy mine laboratory by Company staff using modern, standard chemical analysis tools and procedures; an independent agency does not verify these results. However, check sampling through the CPSEP has occurred.

It should be noted that assay results from historical drillholes match in-mine sample results reasonably well – within 1% – even though drillhole sample spacing is much greater. This correlation is further validation of the in-mine sampling methodology. Mean mineral grade determined from in-mine samples taken from over 50 years of mining at Vanscoy is thought to provide the most accurate measurement of potash grade for the Vanscoy mine, also providing a good basis for estimating ore grade in areas of future mining at Vanscoy.

Exploration Data Verification

The purpose of any mineral exploration program is to determine extent, continuity, and grade of mineralization to a certain level of confidence and accuracy. For potash exploration, it is important to minimize the amount of cross-formational drilling, since each drillhole is a potential conduit for subsurface groundwater from overlying (or underlying) water-bearing formations into future mine workings. Every potash test drillhole from surface sterilizes potash mineralization; a safety pillar is required around every surface drillhole once underground mining commences.

Initial sampling and assaying of cores were done during potash exploration at Vanscoy in the 1950s and 1960s. Methods were consistent with standard procedures for that era. The mine began production in 1969 and test drilling conducted after that was largely for the purpose of better understanding the caprock rather than potash mineralization. This approach to potash sampling is in accordance with widely accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

Assay of physical samples (drillhole cores and/or in-mine samples) is the only way to gain information about mineral grade, but extent and continuity of mineralization are correctly determined using data collected from geophysical surveys correlated with historic drilling information. To date, surface seismic data at Vanscoy have been collected, analysed, and verified by Company staff, at times, in cooperation with an independent consultant.

Data for the Mineral Resource and Reserve estimates for Vanscoy mine were verified by Company staff as follows:

- Review of potash assay sample information (drillholes and in-mine grade samples),
- Review of surface geophysical exploration results (3D and 2D seismic data),
- Crosscheck of mined tonnages reported by mine site technical staff with tonnages estimated from mine survey information, and
- Crosscheck of Mineral Resource and Mineral Reserve calculations carried out by corporate technical staff.

In the opinion of the authors, this approach to data verification of potash mineral grade and surface seismic information is in accordance with generally accepted industry practice for areas adjacent and contiguous to an existing operating potash mine.

vii) Mineral Processing and Metallurgical Testing

At Vanscoy, potash ore has been mined and concentrated to produce saleable quantities of high-grade finished potash products since 1969.

Over the 51-year mine life, 180.108 million tonnes of potash ore have been mined and hoisted to produce 60.885 million tonnes of finished potash product (from startup in 1969 to December 31, 2020). Given this level of sustained production over several decades, basic mineralogical processing and prospective metallurgical testing of Vanscoy potash is not considered relevant.

viii) Mineral Resource and Mineral Reserve Estimates

Definitions of Mineral Resource

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Resource” for an overview of CIM’s mineral resource categories and the Company’s general characterization of mineral resources categories for its potash mines.

The Vanscoy mine began production in 1969 and test drilling conducted after that was largely for the purpose of better understanding the caprock rather than potash mineralization. Instead, exploration involved collecting surface seismic data, which became better in quality over the years. Exploration drilling has demonstrated the presence of the potash horizon, and seismic coverage shows the continuity of the Prairie Evaporite Formation within which the potash horizon occurs.

Along with this approach, analysis of in-mine samples for potash grade has provided an observation-based understanding of the potash mineralized zone at Vanscoy that is far superior to the level of understanding provided by any surface drilling-based exploration program. The authors believe that this approach provides a body of information that guides and constrains exploration inferences in a much better way than could be achieved from any conventional exploration investigation in areas immediately surrounding, and contiguous to, the Vanscoy potash mine.

Mineral Resource Estimates

Exploration information used to calculate reported Mineral Resource tonnages at Vanscoy consist of both physical sampling (drillhole and in-mine) and surface seismic (2D and 3D). Based on the definitions and guidelines above, all mineral rights leased or owned by the Company, and within Vanscoy Crown Lease, are assigned to one of the three mineral resource categories.

Mineral resources are reported as mineralization in-place and are exclusive of Mineral reserves. In-place tonnes were calculated for each of the mineral resource categories using the following parameters:

Mining Height:	3.35 meters (11 feet)
Ore Density:	2.116 tonnes / cubic metre (A Zone)
Ore Density:	2.120 tonnes / cubic metre (B Zone)

The mineral resources per the Vanscoy Technical Report are as follows:

Vanscoy A Zone:		
Inferred Resource	932	millions of tonnes
Indicated Resource	1,850	millions of tonnes
Measured Resource	1,975	millions of tonnes
Total A Zone Resource	4,757	millions of tonnes

Vanscoy B Zone:		
Inferred Resource	933	millions of tonnes
Indicated Resource	1,853	millions of tonnes
Measured Resource	2,669	millions of tonnes
Total B Zone Resource	5,455	millions of tonnes

Total Vanscoy Resource (A Zone + B Zone):		
Inferred Resource	1,865	millions of tonnes
Indicated Resource	3,703	millions of tonnes
Measured Resource	4,644	millions of tonnes
Total A Zone + B Zone Resource	10,212	millions of tonnes

Per the Vanscoy Technical Report, the average mineral grade of the Vanscoy A Zone Mineral Resource is 24.2% K_20 equivalent and was determined from thousands of in-mine samples at Vanscoy. The average mineral grade of the Vanscoy B Zone Mineral Resource is 20.3% K_20 equivalent and was determined from thousands of in-mine samples at Lanigan mine where the B Zone has been extensively mined.

The tonnage reported in the Vanscoy A Zone Measured Resource is comprised of the potash that is within 1.6 km (1 mile) of a physically sampled location (i.e. drillholes or mine workings). Also included as Measured Resource is the potash in the pillars of mined-out areas in the Vanscoy mine as there is the possibility of retrieving ore from the remnant mining pillars at some point in the future. An example of this is the Patience Lake mine which was successfully converted from a conventional mine to a solution mine after being lost to flooding in 1989. Since mining of remnant mining pillars is not anticipated in the near future at Vanscoy, in-place pillar mineralization remains as a Mineral Resource rather than a Mineral Reserve at this time.

Definitions of Mineral Reserve

See “Mineral Projects – a) Allan Potash Operations – viii) Mineral Resource and Mineral Reserve Estimates – Definitions of Mineral Reserve” for an overview of CIM’s mineral reserve categories and the Company’s general characterization of mineral reserve categories for its potash mines.

Along with this approach, analysis of in-mine samples for potash grade has provided us with an observation-based understanding of the potash mineralized zone at Vanscoy that is far superior to the level of understanding provided by any surface drilling-based exploration program. An understanding of the amount of ore that can be conventionally mined from the Measured Resource category using current mining practices comes from decades of potash mining experience at Vanscoy.

Mineral Reserve Estimates

Using the definitions outlined above, a portion of the Vanscoy A Zone Measured Resource has been converted to Mineral Reserve. The assigned Mineral Reserve category is dependent on proximity to sampled mined entries also described above. An overall extraction ratio for the Vanscoy mine has been applied to the qualifying areas outlined as Measured Resource.

The overall extraction ratio at the Vanscoy mine is 28%. It was derived by dividing the total tonnes mined to date by the tonnage equivalent of the total area of the mine workings (i.e. the perimeter around the mine workings) less future mining blocks. Since an extraction ratio has been applied, Mineral Reserves are considered recoverable ore, and are reported as such. Note that only drillholes whose 1.6 km radii are contiguous to mine workings or the 1.6 km radius placed around mine workings are used to compute probable mineral reserve. The remaining non-contiguous drillholes remain in the measured resource category.

The Mineral Reserves for Vanscoy as of December 31, 2020 are as follows:

Vanscoy A Zone:		
Probable Reserve	326	millions of tonnes
Proven Reserve	183	millions of tonnes
Total A Zone Reserve	509	millions of tonnes

Vanscoy B Zone:	
Probable Reserve	nil
Proven Reserve	nil
Total B Zone Reserve	nil

Total Vanscoy Reserves (A Zone + B Zone):		
Probable Reserve	326	millions of tonnes
Proven Reserve	183	millions of tonnes
Total A Zone + B Zone Reserve	509	millions of tonnes

The average mineral grade of the Vanscoy A Zone Mineral Reserve is 24.2% K_20 equivalent, and was determined from thousands of in-mine samples at Vanscoy.

ix) Mining Operations

All conventional potash mines in Saskatchewan operate at 900 m to 1200 m below surface within 9 m to 30 m of the top of the Prairie Evaporite Formation. Over the scale of any typical Saskatchewan potash mine, potash beds are tabular and regionally flat-lying, with only moderate local variations in dip. At Vanscoy, potash ore is mined using conventional mining methods, whereby:

- Shafts are sunk to the potash ore body;
- Continuous mining machines cut out the ore, which is hoisted to surface through the production shaft;
- Raw potash is processed and concentrated in a mill on surface; and
- Concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Sinking of the two original shafts (Shaft #1 and Shaft #2) from surface to the potash zone was completed in 1968, and the first potash ore was hoisted the year after. With the exception of the 1970 inflow which halted production for two years, the Vanscoy mine has run on a continuous basis other than short-term shutdowns taken for inventory management purposes, occasional plant maintenance and construction work, or other outages that are typical for operations of this nature.

In recent years, the Vanscoy mine underwent a major expansion which brought the nameplate capacity up to 3.0 million tonnes of finished potash products per year. In 2020, operational capability at the Vanscoy facility was 1.7 million tonnes per year. Operational capability may vary during the year and year-to-year including as between our potash operations.

Virtually all Vanscoy underground mining rooms are in one potash mineralized zone, the upper layer (or A Zone) of the Patience Lake Member of the Prairie Evaporite Formation (the host evaporite salt). In contrast, some potash mines further east in Saskatchewan mine in a different potash layer. At Vanscoy, mine elevations range from approximately 1,000 m to 1,120 m depth below surface. Mine workings are protected from aquifers in overlying formations by approximately 12 m of overlying salt and potash beds, along with salt plugged porosity in the Dawson Bay Formation, a carbonate layer lying immediately above potash hosting salt beds.

The Vanscoy mine is a conventional underground mining operation whereby continuous mining machines are used to excavate the potash ore by the stress-relief mining method. Continuous conveyor belts transport ore from the mining face to the bottom of the production shaft. Mining methods employed in Saskatchewan are discussed in Jones and Prugger (1982) and in Gebhardt (1993). The highest mineral grade section of the Vanscoy potash seam is approximately 3.35 m (11') thick, with gradations to lower grade salts immediately above and below the mining horizon. The actual mining thickness at Vanscoy is dictated by the height of continuous boring machines used to cut the ore which has been fixed at 3.35 m (11'). This mining height allows for comfortable working headroom and efficient extraction of potash ore.

Vanscoy cuts to a marker (clay) seam that is slightly above the high-grade mineralized zone to establish a safe and stable mine roof. The top marker seam is slightly overcut by 10 cm to 20 cm. Clay seams are often planes of weakness, and if they are undercut, material immediately below the clay seam becomes a hazard as it may separate and fall. Since the hazard must be remediated prior to proceeding, thus slowing production, the moderately diluted mineral grade that results from the overcutting is preferable from a safety point of view.

Conservative local extraction ratios (never exceeding 45% in any mining block) are employed at all Saskatchewan mines, including Vanscoy, in order to minimize potential detrimental effects of mining on overlying strata; this is common practice in flat-lying, tabular ore bodies overlain by water-bearing layers.

From the shaft-bottom, potash ore is hoisted approximately 1,000 m from the potash level through the vertical shafts to a surface mill. In addition to hoisting potash ore to surface, the production shaft is used for exhaust ventilation from the mine and serves as a secondary egress. The Service Shaft is used for service access, primary egress, and fresh air ventilation into the mine.

Over the 51-year mine life, 180.108 million tonnes of potash ore have been mined and hoisted at Vanscoy to produce 60.885 million tonnes of finished potash products (from startup in 1969 to December 31, 2020). The life-of-mine average concentration ratio (raw ore / finished potash products) is 2.96 and the overall extraction ratio over this period is 28%.

x) Processing and Recovery Operations

At Vanscoy, potash ore has been mined and concentrated to produce saleable quantities of high grade finished potash products since 1969.

Raw potash ore is processed on surface, and concentrated finished potash products (near-pure KCl) are sold and shipped to markets in North America and offshore.

Over the past three years, production of finished potash products at Vanscoy was:

2018: 2.242 million tonnes finished potash products at 61.03% K_2O (average grade)
2019: 1.414 million tonnes finished potash products at 60.90% K_2O (average grade)
2020: 0.513 million tonnes finished potash products at 60.76% K_2O (average grade)

Over the past decade, actual mill recovery rates have been between 76.0% and 83.2%, averaging 80.4%. Given the long-term experience with potash geology and actual mill recovery at Vanscoy, no fundamental potash milling problems are anticipated in the foreseeable future.

Quality control testing and monitoring geared towards fine-tuning and optimizing potash milling and concentrating processes are conducted on a continual basis at all Nutrien mine sites and at Nutrien research facilities. At Vanscoy, this is no exception; test work to optimize circuit performance and ensure product quality is carried out on an ongoing basis.

xi) Infrastructure, Permitting and Compliance Activities

Project Infrastructure

Infrastructure is in place to meet current and projected requirements for transportation, energy (electricity and natural gas), water and process materials at Vanscoy.

The Vanscoy mine is served by a number of villages within 50 kilometers of the mine site. The nearest city is Saskatoon (26 km distant). Surface facilities are accessed by existing paved roads and highways that are part of the Saskatchewan Provincial Highway System. All potash product is shipped by rail over existing track.

At present, high voltage power capacity at Vanscoy is 57 MVA. The ten-year projection of power utilization indicates that the utility can meet all foreseeable future demand.

The Vanscoy operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the Saskatchewan River (approximately 20 km distant). This water supply is provincially licensed and provides a sustainable source of process water for Vanscoy milling operations without having any impact on other users of water in the area.

Environmental Studies, Permitting and Compliance Activities

The tailings management strategy at all Nutrien potash mines in Saskatchewan, including Vanscoy, is one of sequestering solid mine tailings in an engineered and provincially licenced TMA near the surface plant site. The Vanscoy TMA currently covers an area of approximately 610 hectares (1,507 acres) of land owned by the Company. Solid potash mine tailings typically consist of 85% to 95% rock salt (NaCl) and 5% to 15% insolubles (carbonate mud = $CaCO_3$, anhydrite mud = $CaSO_4$, and clays like chlorite, illite, and so on). An engineered slurry-wall (bentonite cut-off wall) has been constructed around the Vanscoy TMA. In future years this wall can be expanded if required for operational needs. The slurry-wall provides secondary containment for any saline mine waters, minimizing brine impacts from the TMA to surrounding surface water bodies and near-surface aquifers. Areas surrounding the TMA are closely monitored: this includes everything from daily visual perimeter inspections to annual investigations and inspections of surrounding groundwater and aquifers.

Vanscoy currently operates two brine disposal wells near the surface plant of the Vanscoy mine where clear salt brine (i.e. no silt, clay slimes, or other waste) is borehole-injected into the Winnipeg / Deadwood Formations, deep subsurface aquifers approximately 1,500 m to 1,700 m below the surface. The disposal wells are provincially licensed, and groundwater in these extensive deep aquifers is naturally saline.

Emissions to air (mostly salt dust and potash dust) are kept below regulatory limits through various modern air pollution abatement systems (e.g. dust collection systems built into mill processes) that are provincially licensed. This same procedure is followed at all Nutrien mines in Saskatchewan.

The Vanscoy operation requires a sustained fresh water supply for the milling process which is provided by a waterline from the Saskatchewan River (approximately 20 km distant). This water supply is provincially licensed and provides a sustainable source of process water for Vanscoy milling operations without having any impact on other users of water in the area.

In Saskatchewan, all potash tailings management activities are carried out under an “Approval to Operate” granted by the SMOE, the provincial regulator. The Vanscoy mine is in compliance with all regulations stipulated by the Environmental Protection Branch of SMOE. The current Vanscoy Approval to Operate has been granted to July 1, 2028, the renewal date.

In terms of long-term decommissioning, environmental regulations of the Province of Saskatchewan require that all operating potash mines in Saskatchewan create a long-term decommissioning and reclamation plan that will ensure all surface facilities are removed, and the site is left in a chemically and physically stable condition once mine operations are complete. The Company has conducted numerous studies of this topic, and the most recent decommissioning and reclamation plan for Vanscoy was approved by SMOE technical staff in October 2016. Because the current expected mine life for Vanscoy is many decades into the future, it is not meaningful to come up with detailed engineering designs for decommissioning annually. Instead, decommissioning plans are

reviewed every five years, and updated to accommodate new concepts, technological change, incorporation of new data, and adjustments of production forecasts and cost estimates. Any updated decommissioning and reclamation reports generated by this process are submitted to provincial regulatory agencies. For Vanscoy, a revised decommissioning and reclamation plan is required in July 2021.

In addition to the long-term decommissioning plan, provincial regulations require that every potash producing company in Saskatchewan set up an Environmental Financial Assurance Fund, which is to be held in trust for the decommissioning, restoration and rehabilitation of the plant site after mining is complete. This fund is for all mines operated by Nutrien in the Province of Saskatchewan (i.e. Allan, Cory, Lanigan, Patience Lake, Lanigan, Rocanville, and Vanscoy).

xii) Capital and Operating Costs

The Vanscoy mine has been in operation since 1969; in the years immediately preceding this, major capital investment was made to bring this mine into production. Since then, capital expenditures were made on a regular and ongoing basis to sustain production, and to expand production from time to time.

A major refurbishment and expansion of the Vanscoy mine was completed in 2015, increasing nameplate capacity to 3.0 million tonnes of finished potash products per year. This work involved increased hoist capacity, infrastructure improvements, major expansions of mine, mill, and TMA. All construction was carried out without significant disruption to existing potash production from the site.

xiii) Exploration, Development and Production

Potash production in any given year at the Vanscoy mine is a function of many variables, so actual production in any given year can vary dramatically from tonnages produced in previous years. The Mineral Reserve tonnage and historic average production are used to estimate remaining mine life. If the average mining rate seen over the past three years (4.003 million tonnes of potash ore mined and hoisted per year is sustained), and if Mineral Reserves remain unchanged, then the Vanscoy mine life is 127 years from December 31, 2020.

f) Taxes Relating to Potash Operations

Royalties are paid to the Province of Saskatchewan in connection with the Company's Potash operations, which holds most of the mineral rights in the lease areas, and royalties from Freehold lands are paid to various freeholders of mineral rights in the area. The Crown royalty rate is 3 percent and is governed by *The Subsurface Mineral Royalty Regulations, 2017*. The actual amount paid is dependent on selling price and production tonnes.

Municipal taxes are paid based on site property values to the applicable municipality in Saskatchewan. Saskatchewan potash production is taxed at the provincial level under *The Mineral Taxation Act, 1983*. This tax, governed by *The Potash Production Tax Regulations*, consists of a base payment and a profit tax, collectively known as the potash production tax. As a resource corporation in the Province of Saskatchewan, the Company is also subject to a resource surcharge equal to a percentage of the value of its resource sales (as defined in *The Corporation Capital Tax Act of Saskatchewan*). In addition to this, the Company pays federal and provincial income taxes based on corporate profits from all of its operations in Canada.