NI 43-101 TECHNICAL REPORT PRELIMINARY ECONOMIC ASSESSMENT FOR THE SAGE PLAIN POTASH PROPERTY, SAN JUAN COUNTY, UTAH, USA

REPORT RSI-3679

PREPARED BY
Erik Hemstad, PE
Susan Patton, PhD, RM-SME

RESPEC
660 Rood Avenue, Suite A
Grand Junction, Colorado 81501
UNITED STATES

and

Kathy Adams, PEng, PE
Nick Gow, PhD, CP

Patterson & Cooke
1150 Catamount Drive
Golden, Colorado 80403
UNITED STATES

PREPARED FOR
Sage Potash Corp.
#605-889 West Pender St
Vancouver, British Columbia V6C 3B2
CANADA

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DATE AND SIGNATURE PAGE

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S/S Erik Hemstad

________ Date Signed: November 6, 2025

Erik Hemstad, PE
Items 1.1–1.5, 6–12, and 14–16, and co-authored Items 25 and 26

S/S Susan B. Patton

________ Date Signed: November 6, 2025

Susan B. Patton, PhD, RM-SME
Items 1.6–1.10, 2–5, and 18–24, and co-authored Items 25 and 26

S/S Kathy Adams

________ Date Signed: November 6, 2025

Kathy Adams, PEng, PE
Items 1.6 and 17, and co-authored Items 25 and 26

S/S Nick Gow

________ Date Signed: November 6, 2025

Nick Gow, PhD, CP
Item 13 and co-authored Items 25 and 26

CERTIFICATE OF AUTHOR

I, Erik Hemstad, Professional Engineer, as a co-author of the *Preliminary Economic Assessment for the Sage Plain Potash Property* (PEA), San Juan County, Utah, USA, effective date September 8, 2025, do hereby certify that:

- I am a Consulting PE of RESPEC Company, LLC, with an office located at 660 Rood Avenue, Suite A, Grand Junction, Colorado, 81501.
- I am a graduate of Michigan Technological University and earned a Bachelor of Science degree in Geological Engineering in 2005 and a Master's degree in Civil Engineering in 2011.
- I am a Professional Engineer, registered in Colorado, Utah, Montana, Nevada, New Mexico and Wyoming.
- As a geological engineer, I have been involved with potash and other industrial minerals exploration and reporting since 2011. These tasks have included the following:
  - Geologic modeling and technical resource reporting for evaporite and aggregate deposits for conventional surface and underground mining and solution mined deposits across North America.
  - Exploration program design and management across various industrial minerals, including lithium clays and brines, potash, trona, gypsum, limestone, and coal where I provided geological interpretation, geophysical evaluation, quality assurance/quality control program development and execution, and mining engineering design.
  - Performing due diligence reviews on conventional and solution mined potash properties in the United States, Canada, Europe, Africa, and Asia.
- As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument (NI) 43-101.
- I am independent of Sage Potash, as outlined in Section 1.5 of NI 43-101 Standards of Disclosure.
- I am responsible for 1.1-1.5, 6-12, and 14-16, and co-authored Items 25 and 26.
- I have not had prior involvement with the Property that is the subject of the PEA.
- My most recent personal inspection of the Property was on May 16 and 17, 2022, for a total of 10 hours.
- I have read NI 43-101 and Form 43-101 and the PEA for which I am responsible, and the document has been prepared in compliance with NI 43-101.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the parts of this PEA for which I am responsible contain all scientific and technical information that is required to be disclosed to ensure it is not misleading.

Signed in Grand Junction, Colorado, November 6, 2025.

S/S Erik Hemstad

Erik Hemstad, PE, MBA
RESPEC Company, LLC

CERTIFICATE OF AUTHOR

I, Dr. Susan B. Patton, RM-SME, as a co-author of the *Preliminary Economic Assessment for the Sage Plain Potash Property* (PEA) San Juan County, Utah, USA, effective date September 8, 2025, do hereby certify that:

- I am a Principal Consultant of RESPEC Company, LLC, with an office located at 660 Rood Avenue, Suite A, Grand Junction, Colorado, 81501.
- I am a mining engineer and have been practicing in this capacity since 1983. I hold a Bachelor of Science in Mining Engineering from the New Mexico Institute of Mining and Technology, a Master of Science in Mineral Engineering and an Interdisciplinary Doctorate in Mineral and Environmental Engineering from the University of Alabama.
- I am a registered member in good standing of the Society for Mining, Metallurgy, and Exploration (Member #248220). I am a PE, registered in Alabama, Colorado, Montana, New Mexico, Pennsylvania, South Dakota, Utah, Kentucky and West Virginia.
- I have more than 35 years of mining engineering experience across the metal and nonmetal mining sectors. I have 16 years of experience working on various potash projects and operating mines in the United States and worldwide. These tasks have included the following:
  - Responsibility for Mineral Resource and Reserve reporting for Intrepid Potash since 2012
  - Completing pre-feasibility and feasibility level studies for mining projects of potash and evaporite deposits in New Mexico, Utah, Wyoming, and Spain
- I have conducted site visits and operational reviews at multiple solution mining sites. I have also conducted multiple due diligence projects for potash operations throughout the world.
- I visited the site for 3.5 hours on January 27, 2022.
- I am responsible for Items 1.6-1.10, 2-5, and 18-24, and co-authored Items 25 and 26.
- As a result of my experience and qualifications, I am a Qualified Person as defined in NI 43-101.
- I am independent of Sage Potash, as outlined in Section 1.5 of the NI 43-101 Standards of Disclosure.
- I do not have previous involvement with the Property that is the subject of the PEA.
- I have read NI 43-101 and the PEA for which I am responsible, and the document has been prepared in compliance with NI 43-101.
- I do not have any reason to believe that information derived from the PEA contains any misrepresentations or that the written disclosure contains any misrepresentations of the PEA.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the parts of this PEA for which I am responsible contain all scientific and technical information that is required to be disclosed to ensure it is not misleading.

Signed in Grand Junction, Colorado, November 6, 2025.

S/S Susan B. Patton

Susan B. Patton, PhD, RM-SME
RESPEC Company, LLC

CERTIFICATE OF AUTHOR

I, Kathy Adams, PEng, PE, as a co-author of the *Preliminary Economic Assessment for the Sage Plain Potash Property* (PEA), San Juan County, Utah, USA, effective date September 8, 2025, do hereby certify that:

- I am the Mineral Processing Manager: North America of Paterson & Cooke USA Ltd, with an office located at 1150 Catamount Drive, Golden, Colorado, 80403.
- I am a mineral processing engineer and have been practicing in this capacity since 2007. I hold a Bachelor of Applied Science degree in Mining Engineering: Mineral Processing from Queen's University, Canada.
- I am a PE in Canada, registered in the Yukon and British Columbia; and a PE in the United States, registered in Nevada and Colorado.
- I have been employed as a mineral processing engineer continuously for more than 18 years. My experience has been in mineral processing and extractive metallurgy for base and precious metals and industrial minerals, including process engineering from early-stage concept-level designs through detailed design, construction, and commissioning.
- I have not visited the site.
- I am responsible for Items 1.6 and 17, and co-authored Items 25 and 26.
- As a result of my experience and qualifications, I am a Qualified Person as defined in NI 43-101.
- I am independent of Sage Potash, as outlined in Section 1.5 of the NI 43-101 Standards of Disclosure.
- I do not have previous involvement with the Property that is the subject of the PEA.
- I have read NI 43-101 and the PEA for which I am responsible, and the document has been prepared in compliance with NI 43-101.
- I do not have any reason to believe that information derived from the PEA contains any misrepresentations or that the written disclosure contains any misrepresentations of the PEA.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the parts of this PEA for which I am responsible contain all scientific and technical information that is required to be disclosed to ensure it is not misleading.

Signed in Golden, Colorado, November 6, 2025.

S/S Kathy Adams

Kathy Adams, PE, P.Eng.
Paterson & Cooke USA

CERTIFICATE OF AUTHOR

I, Dr. R. Nick Gow, QP-MMSA, as a co-author of the *Preliminary Economic Assessment for the Sage Plain Potash Property (PEA)*, San Juan County, Utah, USA, effective date September 8, 2025, do hereby certify that:

- I am a Senior Study Lead of Paterson & Cooke USA Ltd, with an office located at 1150 Catamount Drive, Golden, Colorado, 80403.
- I am a mineral processing engineer and have been practicing in this capacity since 2012. I hold a Bachelor of Science in Chemistry, a Bachelor of Science in Metallurgical and Materials Engineering, and a Master of Science in Metallurgical Engineering from Montana Technological University, and an Interdisciplinary Doctorate in Chemistry and Metallurgical Engineering from the University of Montana.
- I am a Qualified Professional member (#1538QP) in good standing with the Mining and Metallurgical Society of America and a PE registered in Nevada.
- I have been employed as a mineral processing engineer continuously for more than 13 years. My experience has been in mineral processing and extractive metallurgy for metal and nonmetal sectors, including hands-on metallurgical testing, testing campaign design, and facility and process auditing for domestic and international operations. I have also served as an Adjunct Professor with the Colorado School of Mines for the past 5 years.
- I have not visited the site.
- I am responsible for Item 13 and co-authored Items 25 and 26.
- As a result of my experience and qualifications, I am a Qualified Person as defined in NI 43-101.
- I am independent of Sage Potash, as outlined in Section 1.5 of the NI 43-101 Standards of Disclosure.
- I do not have previous involvement with the Property that is the subject of the PEA.
- I have read NI 43-101 and the PEA for which I am responsible, and the document has been prepared in compliance with NI 43-101.
- I do not have any reason to believe that information derived from the PEA contains any misrepresentations or that the written disclosure contains any misrepresentations of the PEA.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the parts of this PEA for which I am responsible contain all scientific and technical information that is required to be disclosed to ensure it is not misleading.

Signed in Windsor, Colorado, November 6, 2025.

S/S R. Nick Gow

R. Nick Gow, PhD, QP-MMSA
Paterson & Cooke USA

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1.0 SUMMARY

This Technical Report (TR) presents a Preliminary Economic Assessment (PEA) for Sage Potash Corp.'s (Sage Potash) Sage Plain Property (the Property). Thorson [2023] prepared a Resource Estimation and National Instrument (NI) 43-101 Technical Report. A previous Technical Report for the Property [Stirrett et al., 2015] was completed by North Rim Exploration Ltd.[1] (North Rim) for Sennen Potash Corporation (Sennen). Sennen relinquished interest in the Property as of January 31, 2017. This PEA presents the evaluation of the potential for economic development of the potash resource within the San Juan County, Utah, State and Private Mineral Leases granted to Sage Potash.

The Property is covered under the Mineral Lease (ML) 53646 Other Business Arrangement (OBA), which is wholly owned by Sage Potash. The Property is located approximately 110 kilometers (km) south of the Intrepid Potash solution mining facility that currently exploits the potash resources of Salt Cycle 5 (Cycle 5) and Salt Cycle 9 (Cycle 9) of the Paradox Formation. The Technical Report by Thorson [2023] classified the Potential Quantity on historical drill data for the Property. Sage Potash, a natural resource company focused on the exploration and development of the Property in southeast Utah, is based in Vancouver, British Columbia, Canada. Sage Potash plans to develop a small-scale potash production facility and deploy solution mining techniques with recovery using multiple-effect evaporation.

The terms "Mineral Resource" and "Inferred Mineral Resource," as used in the Mineral Resource estimate, is terminology from the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), Definition Standards [CIM, 2014]. The effective date of this report is September 8, 2025, which is the date of the updated lease holdings.

Potash was first discovered in the Paradox Basin in 1922 while groups explored for oil and gas southeast of Crescent Junction [Evans, 1956]. Between 1953 and 1961, several companies actively explored the basin for both petroleum and potash resources, and several drillholes were drilled into the Paradox Formation that helped further define the potash resource and formulate geologic models for the deposits.

1.1 PROPERTY

Sage Potash's Property is in an area of gently rolling hills in San Juan County, southeastern Utah, near the Utah/Colorado border. The Johnson 1 Well, located at a North American Datum of 1983 (NAD83) latitude of 37.7994°N and a longitude of 109.1172°W, is approximately 24 km southeast of Monticello, Utah. Sage Potash currently holds 2,646 hectares (6,538 acres) of potash mineral leases – ML 53646 OBA; 2,991 hectares (7,392 acres) of mineral salts and lithium mineral leases – ML 54315 OBA; and 4,845 hectares (11,972 acres) of private saline mineral leases. In addition to the mineral leases, Sage Potash has secured 368 hectares (909 acres) of Surface Use Agreements (SUAs) that overlay Utah state mineral lease parcels.

[1] North Rim Exploration Ltd. joined RESPEC as a wholly owned international subsidiary in April 2016.

1.2 GEOLOGY

The Paradox Basin is situated largely within southeastern Utah, extending into southwestern Colorado. The Paradox Basin is characterized by thick, cyclical successions of interbedded evaporite and clastic sediments deposited within a northwest to southeast trending, elongated basin. The Paradox Basin is of Pennsylvanian–Permian age.

The Paradox Basin is part of the Colorado Plateau Province and was formed during ancient orogenic events that took place during the Pennsylvanian Period. The geometry of the present-day Paradox Formation is roughly wedge-shaped, with the thickest sedimentary sequences present along the steeply dipping northeastern basin margin. A large lateral portion of the Paradox Formation, known as the Fold and Thrust Belt (FTB), is more structurally complex than the rest. Evaporite beds in the FTB, and the clastic beds by extension, have been notably deformed by post-depositional tectonic effects of salt diapirism. The Property is located outside of the general FTB area and, therefore, is less likely to exhibit complex structural features.

Drillhole data from the Property identify potash mineralization within the Salt Cycle 18 (Cycle 18) potash horizon. This horizon is known to occasionally split into two discrete zones, termed the Cycle 18 Upper and Lower Potash Beds. The uppermost bed generally contains the greatest concentration of potash. Detailed examination of the drill core indicates the potash sequence mainly comprises halite, sylvite, and minor anhydrite.

1.3 HISTORICAL EXPLORATION WORK

Sennen began to work on the project in 2012 with Paradox Basin Resources, of Toronto, Ontario, Canada. North Rim was contracted to assist with a phased exploration program, including seismic interpretation and drilling. Approximately 275 linear km (170 miles [mi]) from 13 individual 2D seismic lines covering the Project Area, of which generally encompasses Sage Potash's mineral leases, surface use agreements, and immediate surrounding region, was purchased and interpreted on behalf of Sennen by RPS Group (RPS) of Calgary, Alberta, Canada, in 2013 [Flynn, 2013]. The results of the 2D surveys, coupled with regional and local geologic cross sections, were used to avoid potentially anomalous ground in the placement of a single exploration drillhole, Johnson 1 (Per Utah Division of Oil, Gas & Mining, Johnson 1 has been renamed Jesse #1 [API 4303750088] after Valence Resources attempted to re-enter the well in March 2022). The Johnson 1 Well, drilled by Sennen in San Juan County, Utah, on State Lease NW-NW, S30, T34S, R26E in the fall of 2014, serves as a modern stratigraphic exploration drillhole in support of the Mineral Resource estimates.

1.4 RECENT EXPLORATION WORK

Sage Potash has not performed new exploration work on the Property since the leases were acquired.

1.5 MINERAL RESOURCE ESTIMATE

The Mineral Resource estimate assumes that the recovery of the potash will be by solution mining methods.

The Cycle 18 Lower Potash Bed was present in the Johnson 1 Well, and the Cycle 18 Upper Potash Bed was found in both the Johnson 1 and the Western Natural Gas holes. The Cycle 18 Upper Potash Bed appears to be present across the Property. Engineering studies are in the early stages; therefore, the Mineral Resource of the Cycle 18 potash horizon is constrained to the Inferred category.

Cut-off parameters were applied to distinct potash beds (upper and lower) for each drillhole location. The determinations of parameters are summarized as follows:

- For the Johnson 1 Well, the Inferred Radius of Influence (ROI) is 0 to 2,400 meters (m) and the Potential Quantity ROI is 2,400 to 5,000 m.
- For the Western Natural Gas 1 Well, the Potential Quantity ROI is 0 to 5,000 m.
- A 25 percent deduction was applied for undetectable seismic anomalies.
- A 5 percent potassium oxide (K_2O) grade cut-off was applied to delineate the geological boundaries (top and base) of the mineralized section of the potash bed. No thickness cut-off was applied.
- The K_2O grade was estimated using a Gamma-Ray Equivalent Calculation (GREC) for the Western Natural Gas 1 Well.
- Carnallite and insoluble concentrations present in the Johnson 1 Well are very low, and similar values are expected across the Property.

A summary of the Potential Quantity and Inferred Resource tonnage is provided in Table 1-1.

Note: The reader is cautioned that the Potential Quantity Tonnage and grade are conceptual in nature and exploration is insufficient to classify the potash beds as a Mineral Resource at this time. It is uncertain at this time whether additional exploration work will result in the Potential Quantity Tonnage and grade being further delineated as a Mineral Resource. The Mineral Resource Tonnage (not considering the addition of any new geological data) will decrease as the project progresses. For example, mining parameters such as extraction ratio and refined economic cut-off grades (Modifying Factors) are expected outputs from future engineering studies at which time an updated Mineral Resource estimate will be completed. At this time no Modifying Factors have been applied to the Mineral Resource estimate.

1.6 MINERAL PROCESSING

Processing for the recovery of potassium chloride (KCl) uses triple-effect evaporators, crystallization, and a fluidized bed dryer for the removal of sodium chloride (NaCl) and recovery of KCl. The recovery method was determined based on 300,000 metric tonnes per annum (mt/a) of KCl. This method of evaporation requires a minimal amount of fresh water (approximately 43 cubic meters per hour [m^3/h]) when compared to solar evaporation. Furthermore, the use of triple-effect evaporation and crystallization allows the facility to operate year-round.

1.7 CAPITAL AND OPERATING COSTS

Note: The reader is cautioned that these capital and operating costs are preliminary in nature and include Inferred Mineral Resources that are considered too speculative geologically to have the *economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized.*

These costs and the associated mining schedule are based on Inferred tonnage. Capital costs are estimated at an accuracy of ±50 percent.

Sage entered into an agreement with a subsidiary of International Process Plants (IPP) for the purchase of processing equipment for €11 million ($13 million USD). This equipment is capable of processing up to 300 thousand tonnes per year (ktpy) of potash. The majority of the equipment being purchased, which had never been assembled or used and currently is in storage in Europe, was fabricated in 2012. The balance of the equipment to be acquired by Sage will come from IPP's inventory of second-hand machinery.

The capital expenditure (CAPEX) is estimated at $324M over the 20-year study. Costs have been estimated using the purchase agreement for the major plant equipment and factored from engineering estimates. The CAPEX also includes the wellfield drilling and completions equipment. Drying, product storage, and loadout facilities are also estimated. Support infrastructure is planned for utilities and access.

Operating costs are based on year-round operation with a headcount of approximately 74 personnel at full production of 300 ktpy. The operating expenditure (OPEX) is expected to be $143 USD/tonne at steady state production.

1.8 ECONOMIC EVALUATION

Note: The reader is cautioned that this PEA is preliminary in nature, including Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized.

A price of $450 per tonne Free on Board (FOB) at the mine site was selected for the economic analysis. This price is based on publicly available information through the U.S. Department of Agriculture (USDA), U.S. Geological Survey (USGS), Intrepid Potash financial statements, and Green Markets regional quotes. The after-tax net present value (NPV) is $501.9 million U.S. dollars ($M USD) at an 8 percent discount rate and an after-tax internal rate of return (IRR) of 39 percent. The undiscounted cash flow is $1,258.3M USD. Cumulative cash flow shows a payback period of 5 years.

Table 1-1. Resource Estimation Summary (Effective Date September 8, 2025)

Cycle 18 Member	Area With Exclusions (km^2)	Thickness (m)	Weighted Average K_2O Grade (percent)	Weighted Average KCl Grade (percent)	Weighted Average Carnallite Content (percent)	Weighted Average Insoluble Content (percent)	In-Place Sylvinite Tonnage (MMT)[a,b,c]	Gross K_2O Tonnage (MMT)[a,b,c]
Inferred Mineral Resources[d]								
Upper Potash Bed	11.25	7.26	29.11	46.07	0.01	0.56	169.9	45.8
Inferred Mineral Resources[e]								
Lower Potash Bed[f]	11.25	5.48	22.60	35.77	N/A	N/A	128.2	29.0
Potential Quantities[g]								
Upper Potash Bed (Johnson 1 Well)	35.1	6.3–7.3	25.2–29.1	39.8–46.1	0.0–0.07	0.30–1.0	459.9–530.0	128.6–142.9
Upper Potash Bed (Western Natural Gas 1)[h]	7.47	6.3–10.7	5.0–17.0	7.9–26.9	N/A	N/A	97.9–166.3	4.9–28.3

km^2 = square kilometers
MMT = Million Metric Tonnes
N/A = Not Applicable
(a) Density of sylvinite = 2.08 tonnes per cubic meter (t/m^3)
(b) In-place sylvinite is calculated based on area × thickness × density.
(c) Gross Resource is based on 100 percent extraction ratio and 0 percent plant loss with deduction for unknown seismic anomalies of 25 percent.
(d) Inferred Resource ROI is 0–2,400 m.
(e) Upper Potash Bed Inferred Resource uses a 5 percent K_2O bed cut-off to define the upper and lower contacts.
(f) K_2O from wireline logs are from GREC.
(g) Potential Quantity ROI is 0–5,000 m for Western Natural Gas 1 Well and 2,400–5,000 m for Johnson 1 Well.
(h) Potential quantities for Cycle 18 Upper Potash Bed (Western Natural Gas 1 Well) were estimated from GREC using a range between a minimum thickness based on Johnson 1 Well and a maximum thickness as seen in the Western Natural Gas 1 Well.

1.9 CONCLUSIONS

The following is a summary of conclusions pertaining to the Property's geology, Mineral Resource, infrastructure, and data quality:

- Potash mineralization shows economic potential from drillhole data within the Project Area that consist of two principal zones: the Cycle 18 Upper Potash Bed and the Cycle 18 Lower Potash Bed.
- The Cycle 18 structure contours show that the mapped horizons are all relatively flat units that dip very gently in a south to southwest direction at an angle less than 5 degrees in the proposed Project Area. Major structural irregularities and geological anomalies were not identified in the review of the 2D seismic data.
- The estimated bottom hole temperature from the wireline tools is recorded at 68 degrees Celsius (°C) and is conducive to solution mining.
- Overall, access to the Property is good. Natural gas and electric power infrastructure is available regionally to support the operations.
- Initial capital investment costs are estimated to be $324M USD ±50 percent for the 300 ktpy.
- After-tax IRR is estimated to be 39 percent.
- Economic modeling results in an undiscounted cash flow of more than $501.9M USD.
- Permitting is ongoing and not considered a project risk, in part, because of the limited surface disturbance of active farming areas and SUAs.
- The authors of this report believe the data is of acceptable quality and reliability for use in a restatement of the Mineral Resource estimation.
- Solution mining of potash requires the injection of a NaCl-saturated brine, which accommodates the use of brackish water for cavern development, thereby limiting the demand for fresh water.
- Triple-effect evaporation of the halite and mechanical crystallization of the KCl with recycling of water limit risks associated with water sourcing.
- The limited use of reagents allows the product to be eligible for organic certification, which is expected to result in a pricing premium.

1.10 RECOMMENDATIONS

The authors recommend the following:

- Complete one additional stratigraphic drillhole to be used to assess the full potential of the Cycle 18 Upper and Lower Potash Beds. If positive results are returned, this well could be converted to a pilot test well. The cost for this well is estimated between $3.5 and $3.7M USD.
- Conduct geochemical assay and geotechnical rock mechanics testing during the stratigraphic drillhole program to assist with future mining studies. The required additional testing and engineering review would cost approximately $750,000 USD.
- For future drillhole planning, consider sufficient overlap of the Resource ROI and step out data when possible.

- Conduct a 3D seismic survey to further delineate the geological structure and potential anomalies in the area (e.g., collapses, faulting, and dip), determine well placement, and aid in other considerations for future solution mining operations. The estimated cost to acquire the 3D seismic survey is $40,000 to $50,000 USD per square mile [mi^2].
- As confidence in the resource increases, continue to advance the engineering studies to refine the process and solution mining design and cost estimation.
- Drill or acquire an additional well for water sourcing and complete testing for use in process design and mine water requirements evaluation.
- Drill an injection well for processing plant purge and perform injection well testing of the formation to characterize the disposal capacity.
- Confirm the efficiency and recovery in the plant. The impact of this would be that the brine feed rate would need to increase slightly to maintain the targeted production rate of potash.

2.0 INTRODUCTION

2.1 ISSUER OF REPORT

This TR was prepared at the request of Sage Potash to disclose the PEA on its Property in southeastern Utah. The Property is situated east of the town of Monticello, Utah. Sage Potash, based in Vancouver, British Columbia, Canada, is a natural resource company focused on the exploration and development of the Property in southeast Utah. Sage Potash has a 100 percent right, title, and interest in the Property.

2.2 SOURCE OF INFORMATION

The interpretations and conclusions presented in this TR are primarily based upon information acquired from one potash test hole completed by Sennen in late 2014. The drillhole data were supplemented by public record sources, including additional Technical Reports and publicly available historical exploration records within the vicinity of the Project Area.

For this TR, the authors performed the following scope:

- Updated the Property lease coverage mapping
- Reviewed and summarized historical exploration data and geological reports pertinent to the Project Area
- Reviewed geological interpretations of the local and regional potash geology
- Reviewed the available historical drillholes and drillhole data in the vicinity of the Project Area
- Reviewed 2D seismic interpretation provided by RPS within the Project Area
- Reviewed the parameters for the Mineral Resource estimate
- Estimated Potential Quantity Tonnage and Inferred Mineral Resources based on NI 43-101 requirements
- Evaluated mining and processing options
- Evaluated the validity of the procured processing plant
- Created preliminary cavern models
- Estimated capital and operating costs
- Established a permitting strategy and timeline
- Developed and evaluated the preliminary economic model
- Performed an initial risk assessment

Property descriptions and land status were obtained from the lists of lands as set forth in the documents provided by Sage Potash and are outlined in Appendix A. State lease holdings were verified through documentation recorded with the State of Utah School and Institutional Trust Lands Administration (TLA). The authors made no attempt to independently verify the land tenure information. Throughout the PEA, geological, technical, and potash industry–specific terminology is commonly employed. Table 2-1 provides a list of definitions for the most common of these terms and phrases.

Table 2-1. Glossary of Terms

Term	Chemical Formula	Definition
API		American Petroleum Institute
Assay		A test performed to determine a sample's chemical content
bgs		Below Ground Surface
CAPEX		Capital Expenditure
Carnallite	$KCl.MgCl_2 6(H_2O)$	A mineral containing hydrated potassium and magnesium chloride
CFR		Code of Federal Regulations
CIC		Certified Infrastructure Cost
CIM		The Canadian Institute of Mining, Metallurgy, and Petroleum
CRM		Certified Reference Material
DNR		Department of Natural Resources
DOGM		Utah Division of Oil, Gas, and Mining
DWQ		Utah Division of Water Quality
DWRi		Utah Division of Water Rights
EDTIF		Economic Development Tax Increment Financing
EPCM		Engineering Procurement and Management
FOB		Free on Board
ft		Feet
FTB		Fold and Thrust Belt
GOEO		Governor's Office of Economic Opportunity
GREC		Gamma-Ray Equivalent Calculation
Halite	NaCl	Sodium Chloride – Naturally occurring sodium salt mineral
HCITC		High-Cost Infrastructure Tax Credit
Insoluble		Water-insoluble impurities, generally clay, anhydrite, dolomite, or quartz
IPA		Initial Production Area
IRR		Internal Rate of Return
K_2O	K_2O	Potassium oxide – A standard generally used to indicate/report a potash deposit ore grade
KCl		Potassium chloride
km		Kilometer
ktpy		Thousand Tonnes per Year
kW		Kilowatts
m		Meter
MBTU		British Thermal Units
mi		Mile
MMT		Millions of Metric Tonnes
MOP		Muriate of Potash
Mpa		Megapascal
MT		Metric Tonnes
NOI		Notice of Intent
NPV		Net Present Value

OPEX		Operational Expenditure
PEA		Preliminary Economic Assessment
PNW		Pacific Northwest
psi		Pounds per Square Inch
QA/QC		quality assurance/quality control
QP		Qualified Person
REDTIF		Rural Economic Development Tax Increment Financing
ROI		Radius of Influence
Seismic anomaly		A structural change in the natural, uniformly bedded geology
SOP	$K_2Ca_2Mg(SO_4)_4{\cdot}2H_2O$	Sulfate of Polyhalite
SOPM	$K_2SO_4{\cdot}2MgSO_4$	Sulfate of Potassium and Magnesium
SUA		Surface Use Agreement
Sylvinite		A rock comprised of a mineralogical mixture of halite and sylvite crystals ± minor clay and sometimes carnallite
Sylvite	KCl	Potassium chloride – A metal halide salt composed of potassium and chlorine. Generally known as potash
TD		Total Depth
TR		Technical Report
TLA		Trust Lands Agreement
UIC		Underground Injection Control
USD		U.S. Dollars
USDA		U.S. Department of Agriculture

2.3 TERMS OF REFERENCE

The authors prepared this TR in accordance with the following:

- NI 43-101 Standards of Disclosure for Mineral Projects [CIM, 2011]
- NI 43-101CP Companion Policy [British Columbia Securities Commission, 2016]

The Mineral Resources were prepared following:

- CIM Metallurgy and Petroleum Best Practices and Reporting Guidelines [CIM, 2019]
- CIM Definition Standard for Mineral Resources and Mineral Reserves [CIM, 2014]
- CIM Industrial Minerals Best Practice Guidelines for Potash [CIM, 2003]

In this TR, the terms “Mineral Resource” and “Inferred Mineral Resource” have the meanings ascribed to those terms by the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by the CIM Council, as amended [CIM, 2014].

Investors are cautioned that Mineral Resources cannot be classified as Mineral Reserves until further drilling and mine planning are completed. Resources also cannot be classified until other economic and technical feasibility factors based upon such work have been resolved and it can be demonstrated that the Mineral Resources may be legally and economically extracted and produced. As a result, investors should not assume that all or any part of the mineralized material reported in any of these categories referred to in the Mineral Resource estimate and TR will be converted into Mineral Reserves.

2.4 QUALIFIED PERSONS

The Qualified Persons (QPs), as defined in NI 43-101, and principal authors of this TR are Erik Hemstad of RESPEC, Susan Patton of RESPEC, Kathy Adams of Paterson & Cooke, and Nick Gow of Patterson & Cooke.

2.5 SITE VISIT

Susan Patton and Erik Hemstad conducted site visits on January 27, 2022 and May 16-17, 2022, respectively. The QPs visited Johnson 1 Well location and historical drillhole locations and inspected general infrastructure and access. Future potential drill locations were also scouted out to determine access and general topography in the area. Figure 2-1 is a site visit photograph showing the Johnson 1 Well location and site activity.

Figure 2-1. Johnson 1 Well Location Looking Northeast.

3.0 RELIANCE ON OTHER EXPERTS

The authors rely on information for the legal land holdings provided by the TLA for ML 53646 OBA, accessed June 30, 2022 (see Appendix A), and ML 54315 OBA, accessed January 13, 2023. The legal land holdings were reverified in 2025 within the content of this PEA. Private lease holdings were provided by Sage Potash via email.

4.0 PROPERTY DESCRIPTION AND LOCATION

Sage Potash's Johnson 1 Well and the Property are situated in southeastern Utah in San Juan County, near the Utah/Colorado border. The Johnson 1 Well, located at a NAD83 latitude of 37.7994°N and a longitude of 109.1172°W, is approximately 24 km southeast of Monticello, Utah, and approximately 24 km northwest of Dove Creek, Colorado. The larger center of Moab, Utah, is approximately 110 km to the northwest of Johnson 1 Well. A regional property map outlining the Property and Johnson 1 Well location is provided in Figure 4-1.

4.1 MINERAL TENURE

Sage Potash currently holds mineral leases with the State of Utah and private saline mineral leases, as indicated by the green and blue shaded areas in Figure 4-1. In addition to the listed mineral leases, Sage Potash holds Federal Bureau of Land Management (BLM) Potash Prospecting Permit Applications (PPPAs) encompassing 23,787 hectares (58,780 acres) on U.S. Federal potash mineral rights in lands south of the areas of state leases and private mineral leases. PPPAs allow an applicant to propose an exploration plan for each application block, and when accepted by the BLM, an exclusive right to explore for potash in that area. Successful exploration, confirming the presence of potash resources on a PPPA block, allow the PPA-holder the right to negotiate a federal lease on those potash resources. In addition to the mineral leases, Sage Potash has secured 368 hectares (909 acres) of Surface Use Agreements (SUAs) that overlay Utah state mineral lease parcels. The TLA lease holdings are detailed in Appendix A. Utah state potash leases were effective April 21, 2022, and December 27, 2022, and are granted a 10-year primary term in issuance to Trust Lands Statute and Regulations, Title 53C, Utah Code Annotated, 1953. The Utah state potash and mineral salts leases have an effective date of December 27, 2022. Sage Potash has the right to the subsurface to explore, drill, mine, remove, transport, convey, cross-haul, commingle, and sell the leased minerals. Sage Potash has the right to use surface lands for purposes incident to mining, subsidence, mitigation, restoration, and reclamation. Annual rental for the state leases is $2.00 per acre. A production royalty of 5 percent of the gross value is to be paid to TLA. The private mineral terms vary. Private mineral leases are listed in tabular format in Appendix B.

4.2 TERMS OF SUBSURFACE MINERAL PERMIT AND OBLIGATIONS OF A PERMITTEE/LESSEE

In accordance with the Utah state mineral lease forms, Sage Potash must comply with all federal, state, and local statutes and regulations. This includes, but is not limited to, the Utah Mined Land Reclamation Act, and regulations pertaining to occupational safety and health, public health, pollution control, management of hazardous substances, and environmental protection. A complete list of regulations and terms is supplied within the Utah state mineral lease form. Before any exploration, drilling, or mining operations on the leased lands, the Lessee is required to gain the Lessor's approval with a plan of operations. Hazardous substances of any kind must not be kept on the leased lands or Property, in accordance with the 42 United States Code 9601(14). The Lessee must provide a waste certificate upon expiration of the lease as defined in 40 Code of Federal Regulations (CFR), with no record of reportable hazardous substances. Upon expiration of the Lease, the Lessee must restore and reclaim the leased lands in agreement with the requirements of applicable law, including mine permits and reclamation plans. The Lessee is required to remove all equipment, stockpiles, and dumps from the leased lands within 6 months of the expiration date. The authors are unaware of any development restrictions within the Project Area.

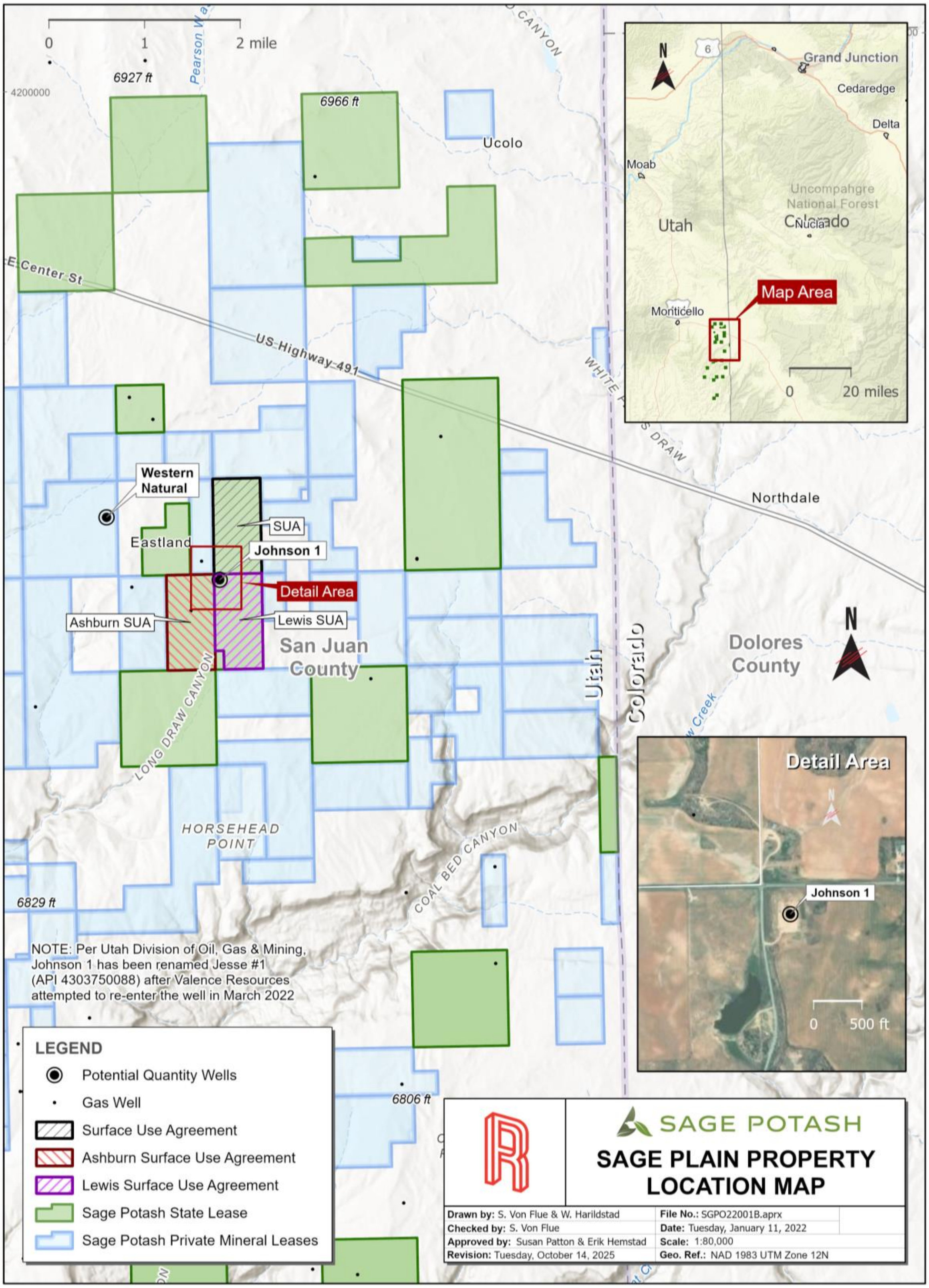

Figure 4-1. Sage Plain Property Location Map.

Table 4-1. Details of Mineral Leases

Mineral Lease No.	Minerals	Holder	Effective Date	Lease Life	Area (hectares)	Area (acres)
ML 53646 OBA	Potash	Sage Potash Corp. 100%	November 1, 2017	10 years	2,646	6,538
ML 54315 OBA	Mineral Salts and Lithium	Sage Potash Corp. 100%	January 1, 2023	10 years	2,991	7,392
Private	Saline Minerals	Sage Potash Corp. 100%	varies	Nominally 5 years	4,845	11,972

Note: Sage Potash holds 23,787 hectares (58,780 acres) of Potash Prospecting Permits Applications (PPPAs)

4.3 ROYALTIES, BACK-IN RIGHTS, AND OTHER AGREEMENTS AND ENCUMBRANCES

The Project Area is currently not subject to back-in rights, payments, or other agreements and encumbrances, aside from the work commitments, fees, and rentals as described in the preceding sections.

4.4 ENVIRONMENTAL LIABILITIES

The authors are unaware of any environmental liabilities to which the Project Area is subject, other than the normal licensing and permitting requirements that must be met before undertaking operations and those environmental restrictions as set forth in the Utah's State Acts and Regulations. Best efforts to avoid adverse environmental effects and maintain the original state of the land should be made by Sage Potash by taking reasonable measures to reduce the environmental footprint from the construction and operation of the Project Area. The Property has undergone an Environmental Impact Analysis and submitted an Environmental Assessment as a requirement for the Rural Business Service funding through the USDA. Cultural, historical, and biological surveys were included in the assessment.

4.5 CONCURRENT PROPERTY LEASES

Valence Resources LLC (Valence) holds several mineral leases (registered in the name of RCS Resources, LLC) located in the same area as the Property. The terms of these mineral leases entitle the holder to explore and develop the land for oil, gas, associated hydrocarbons, and helium. As shown in Figure 4-2, some of Valence's mineral leases overlap Sage Potash's mineral leases.

Based on the current understanding of solution mined caverns commingling with helium production wells, an initial two-phased approach is recommended if both entities operate within close proximity. The helium wells and maximal areal extent of the solution mined caverns should be offset by a minimum of 150 m. Helium wells penetrating through actively mined potash caverns should provide dual-casing protection through that zone to prevent inadvertently fracturing the salt and potash members that could result in conduit pathways into the caverns. Formation fracture gradient testing should be performed during development to better quantify the fracture pressure near the potash horizons.

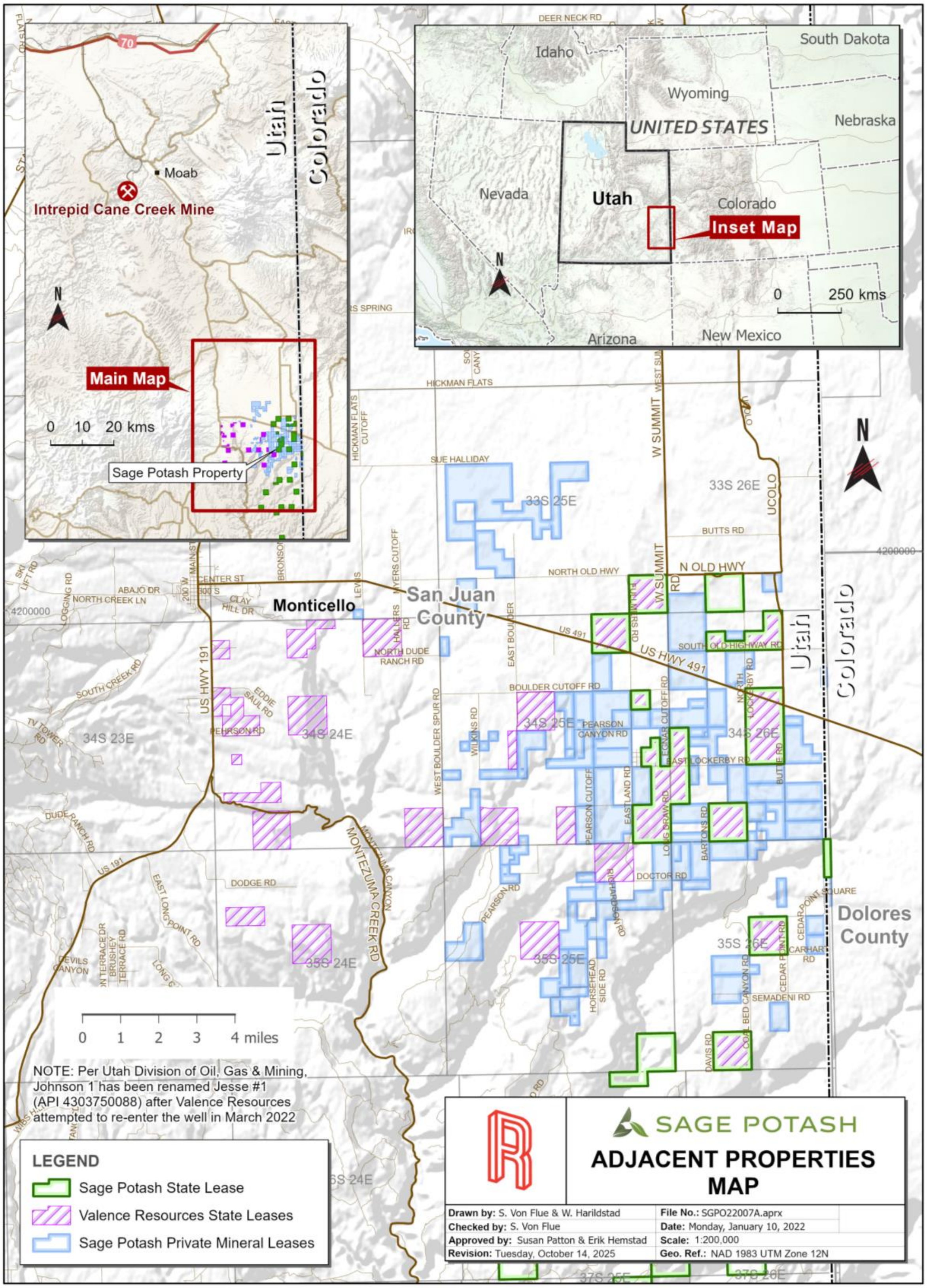

Figure 4-2. Adjacent Properties Map.

Future engagements with potential helium producers in the area should focus on establishing the lease areas that should be targeted first and the expectation for production timelines and maximum life extents of production wells. This information could be tied with the production timing and scheduling for solution mined caverns to sequence the development and extraction of each resource in a mutually beneficial manner. The value from each resource could be maximized, and potential negative impacts from the production operations interfering with one another could be minimized.

Although helium by nature is stable and will not burn or react with other elements, it is sourced within natural gas deposits with other compounds that may adversely affect the solution mining activities. The infrastructure and wellfield controls within the solution mining system are designed with accommodation for relieving pressure buildups because those parameters are vital for controlling the mining operation and stabilizing the solution mined caverns. Consideration for effectively managing and integrating helium production over the contiguous spatial area of the current leases should be planned and designed in advance to prevent an unexpected interaction between potentially reactive compounds, such as hydrogen sulfide (H_2S), within the targeted helium extraction horizon and potash production.

These findings should be further researched and planned, as helium production from areas within the Sage Potash lease boundaries could substantially impact the solution caverns if not managed carefully.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 TOPOGRAPHY AND VEGETATION

The Project Area is situated in an area of gently rolling hills in San Juan County, southeastern Utah, as shown in Figure 5-1. Elevations in the Project Area are roughly 2,075 m (6,810 feet [ft]) above sea level. The land around the Project Area is predominantly used for farming purposes, but the land also contains localized bluffs and small patches of pinyon and juniper trees. No significant drainages are located in the Project Area. South of the Resource Estimation Area, the topography becomes more varied with sharply incised canyons separated by flat-topped mesas.

Figure 5-1. Looking Northwest Toward the Historical Western Natural Gas 1 Well Location.

5.2 ACCESSIBILITY AND LOCAL RESOURCES

U.S. Highway 491 passes from east to west through the northern portion of the Project Area, providing easy access to the Project Area. A series of highways and gravel roads can be used to travel from U.S. Highway 491 to access the northern and southern extents of the Project Area. The Project Area can also be accessed from the south through a series of county roads. Two nearby towns are located equidistant from the Project Area. Monticello, Utah, is west on U.S. Highway 491 and Dove Creek, Colorado, is east on U.S. Highway 491, approximately 12.8 km (8 mi) east of the Utah/Colorado border. Monticello's population is approximately 1,975; the town has a grocery store, hospital, schools, restaurants, accommodations, gas stations, and other small services. Dove Creek's population is approximately 635. Blanding, Utah, is 32 km (20 mi) south of Monticello, has population of 3,394, and offers similar services.

Larger urban centers nearby with a wider variety of services include Grand Junction, Colorado, and Cortez, Colorado. Grand Junction has a population of approximately 59,778 and is located approximately 290 km (180 mi) northeast of the Project Area. Cortez has a population of 8,766 and is located approximately 115 km (71 mi) southeast of the Project Area. Both locations have larger airports with daily scheduled flights.

5.3 CLIMATE

San Juan County, in the southeastern portion of Utah, experiences a climate that ranges from a humid continental climate to a dry semiarid steppe climate, as classified by the Koppen Climate Classification System. Utah weather consists of a winter period generally lasting from November through March when the state experiences average low temperatures of –7.4°C (19 degrees Fahrenheit [°F]). Modest amounts of snow occur in the southeast. The spring (April through May) and fall (September through October) temperatures average approximately 18°C (65°F) and precipitation rates average around 2.3 centimeters (cm) (0.9 inch) during the season, either in the form of rain and/or snow. The summer season, from June through August, is characterized by a warm and dry climate with high temperatures averaging around 29.9°C (86°F), and a lower average rate of precipitation of 2.9 cm (1.1 inches) during the season. The Project Area is well suited for year-round operations because exploration activities in Utah are not typically constrained by seasonal variations in weather. Table 5-1 shows the San Juan County climate data monthly averages from 2015 to 2025.

Table 5-1. Climate Data for the Sage Plain Property [National Weather Service, 2025]

San Juan County, Utah, Data: 2015–2025 Normals						
	January	February	March	April	May	June
Average High (°C)	2.4	5.3	10.2	15.6	20.5	28.8
Average low in (°C)	–11.7	–9.6	–4.9	–2.8	1.4	7.1
Average Precipitation (cm)	3.35	3.33	3.15	1.02	2.67	2.08
	July	August	September	October	November	December
Average High (°C)	31.2	29.7	26.0	17.9	10.4	4.2
Average low (°C)	11.2	10.6	5.9	2.1	–8.3	–9.7
Average Precipitation (mm)	30.7	31.0	24.1	31.0	19.1	27.4

5.4 INFRASTRUCTURE

The following points summarize the key infrastructure considerations for the Property:

/ A network of highways and gravel roads gives access to the Project Area from all cardinal directions, as depicted in Figure 5-2, making the Project Area easily accessible for the transportation of personnel and equipment.

/ U.S. Highway 491 provides access to the northern portion of the Property.

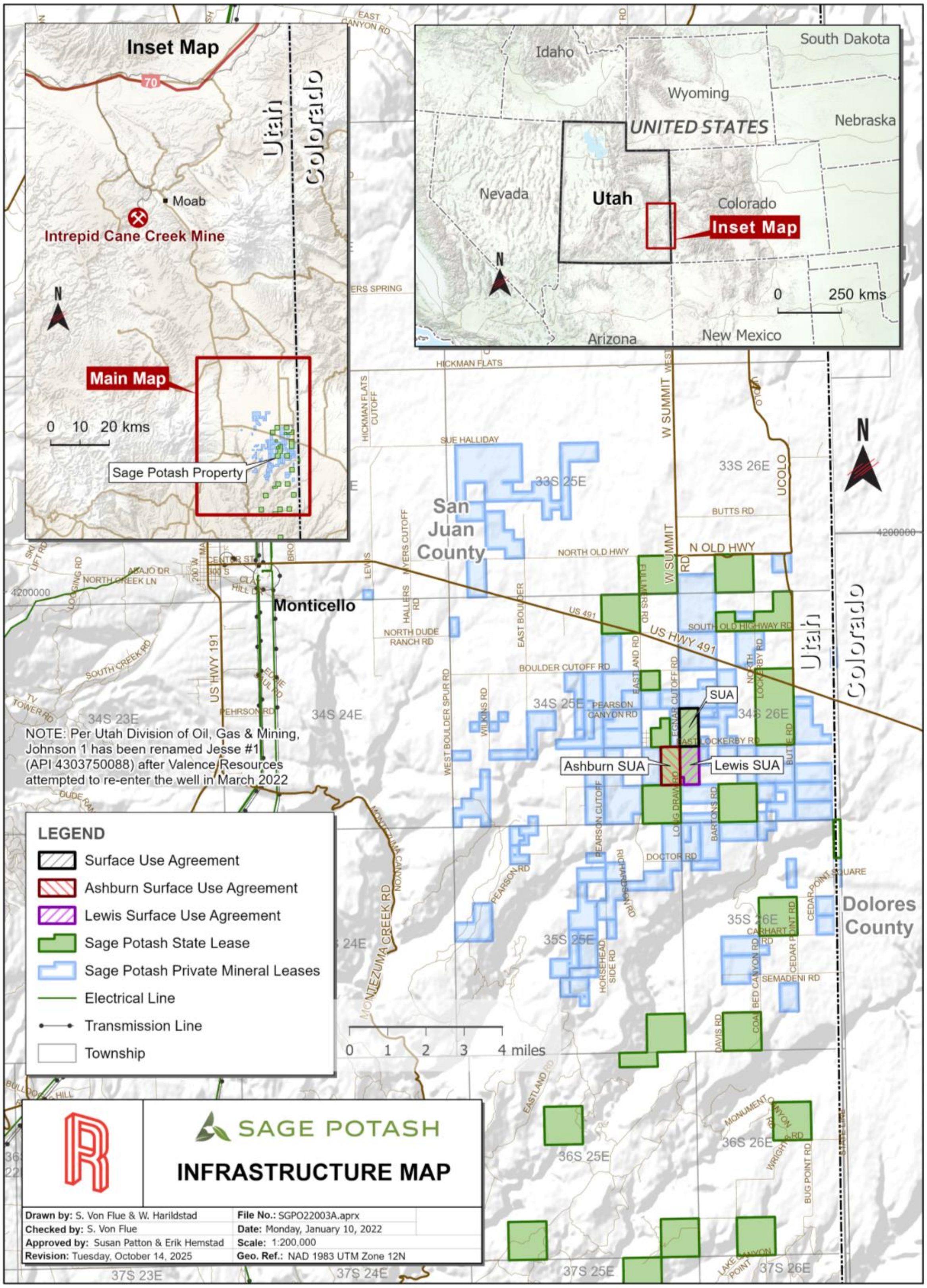

Figure 5-2. Infrastructure Map.

- The Project Area is located close to an existing power and energy distribution grid system.
- The Project Area has natural gas pipeline service in proximity.
- Gallup, New Mexico, which is approximately 315 km (195 mi) south of the Property via U.S. Highway 491, has a rail transloading point.
- Freshwater sources are limited in the area, but the solution mining method requires salt-saturated water, making the use of brackish water practical for development.

6.0 HISTORY

6.1 HISTORY OF POTASH EXPLORATION IN THE PARADOX BASIN

Potash was first discovered in the Paradox Basin in 1922 while groups explored for oil and gas southeast of Crescent Junction [Evans, 1956]. Between 1953 and 1961, several companies were actively exploring the basin for both petroleum and potash resources, and several drillholes were drilled into the Paradox Formation that helped further define the potash resource and formulate geologic models for the deposits. Figure 6-1 summarizes the historical drilling in the Project Area as well as other historical exploration efforts discussed in the following sections. Promising results from Cane Creek were obtained, and Texas Gulf Sulfur was in full production as an underground potash mine by 1965 [Durgin, 2011]. The target potash horizon at Cane Creek was the Cycle 5 Potash Bed, located at a depth of 850 m, with a 3.4-m thickness and an average of 25 to 30 percent K_2O [Jackson, 1973]. After years of operations, the difficulty associated with steep dips and undulation of the deposit, the Cane Creek Mine was intentionally flooded and converted to a solution mining operation using solar evaporation recovery techniques in 1971. Intrepid Potash is the current mine operator and is producing approximately 90,700 tonnes (100,000 tons) of potash per year [RESPEC, 2024]. Currently, Intrepid Potash produces from the flooded underground mine in Cycle 5 Potash Bed and has a series of horizontal caverns in the Cycle 9 Potash Bed according to Tripp [2010]. To date, there has been no commercial production of potash within the Sage Property. All the historical exploration drillholes on the Property are classified as exploration wells, are nonproducing, and have been abandoned. Historical Mineral Resource estimates were completed for the Property and documented in previous Technical Reports. Stirrett and Shewfelt [2015] reported the initial Mineral Resource for the Sennen property, and Thorson [2023] incorporated new lease boundaries and updated the resource.

6.2 SENNEN HISTORICAL POTASH EXPLORATION ON THE SAGE PLAIN PROPERTY

In 2013, 13 individual 2D seismic lines totaling approximately 275 linear km covering the Project Area were purchased and interpreted on behalf of Sennen by RPS. The 2D seismic data were tied to historical drillholes to correlate seismic horizons with the local Project Area stratigraphy. Seismic surveys are highly effective subsurface analytical tools for potash exploration and are used to identify and estimate the total salt thickness, degree of salt loss, salt dissolution-induced collapse structures, and to identify other geological elements such as faulting. No anomalous ground was identified in the Project Area; however, a highly faulted area south of the Project Area was identified.

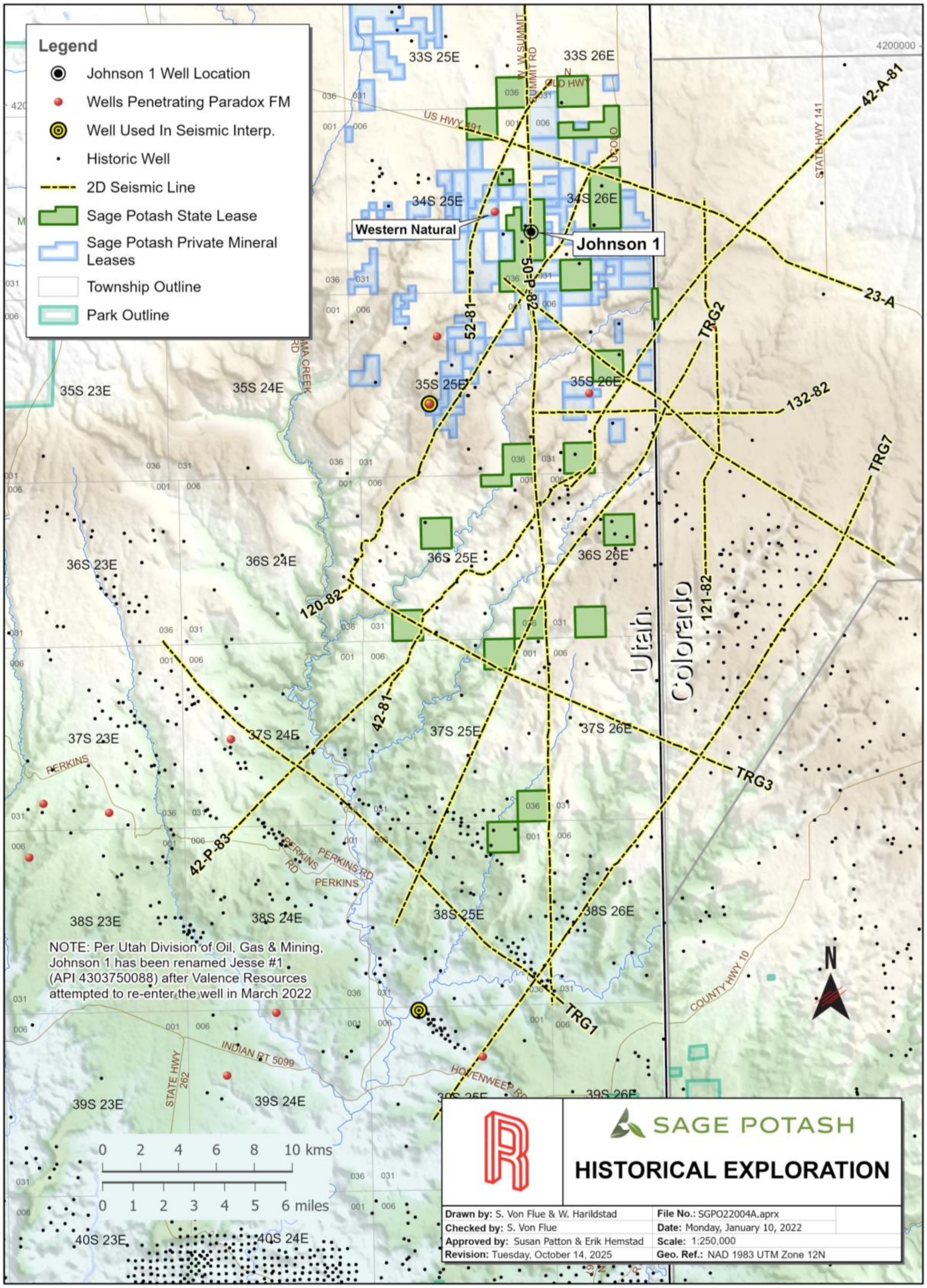

Figure 6-1. Historical Drilling and Exploration Efforts in the Area.

RESPEC

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Paradox Basin covers most of southeast Utah, portions of southwest Colorado, and minor parts of northern Arizona and New Mexico. The Paradox Basin is characterized by a thick sequence of interbedded evaporites and clastics deposited within a northwest to southeast trending, elongated basin [Williams-Stroud, 1994]. The basin's boundary is distinguished by the extent of its salt-bearing member, the Paradox Formation of the Hermosa Group. The areal extent of the Paradox Basin, shown in Figure 7-1, coincides with the lateral extent of potash-bearing beds in the subsurface; an area measuring approximately 28,500 km^2 (11,000 mi^2) [Hite, 1960].

Formation of the Paradox Basin was concurrent with the Ancestral Rocky Mountain orogeny (late Paleozoic in age). It developed as a foreland basin parallel to and along the southwestern margin of the Uncompahgre Uplift. Characteristic to foreland basin development, the Paradox Basin is generally wedge-shaped, with its deepest catchment directly along the uplift margin. The Paradox Basin is bounded, in part, by the San Rafael Uplift to the northwest, the Monument Upwarp to the west, and the Defiance Uplift to the south, as shown in Figure 7-1. A detailed summary of the geological history of the Paradox Basin is provided in Williams-Stroud [1994].

The FTB, a large lateral portion of the Paradox Formation, is more structurally complex than the rest of the formation. Evaporite beds in the FTB, and the clastic beds by extension, have been notably deformed by post-depositional tectonic effects of salt diapirism, as shown in Figure 7-2. The Property is located outside of the general FTB area and, therefore, is less likely to exhibit complex structural features.

7.2 PARADOX BASIN GEOLOGY

The Hermosa Group is Pennsylvanian in age and comprises, in descending order, the Honaker Trail Formation, Paradox Formation, and Pinkerton Trail Formation. The Paradox Formation hosts Sage Potash's mineral deposit, as shown in Figure 7-3. The Honaker Trail Formation conformably overlies the Paradox Formation and is the uppermost formation of the Hermosa Group. The Honaker Trail is made up of gray to reddish-gray, fine-grained to coarse-grained limestone with black and red chert, and reddish-gray to buff-gray carbonaceous sandy siltstones [Williams, 1994]. The Paradox Formation is divided into three members—Upper, Lower, and Middle (known as the salt member). The Upper and Lower members have similar lithology. Underlying the Paradox Formation is the Pinkerton Trail Formation, which has a similar lithology to the Honaker Trail.

The Paradox Formation was deposited through a series of transgressive-regressive eustatic sea level changes, resulting in a recognizable sequence of clastic and evaporite beds. Hite [1960] identified 29 of these depositional sequences, known as evaporite cycles. The general stratigraphic order commonly found in each evaporite cycle is, in ascending order, anhydrite, silty dolomite, black shale, silty dolomite, anhydrite, and evaporite minerals [Trudgill and Arbuckle, 2009]. Exceptions to this stratigraphic order occur when cycles are incomplete or lithologies are missing, repeated, or out of order. As many as 33 evaporite cycles may be present in certain localities, especially in deeper pockets of the Paradox Basin [Williams, 1994].

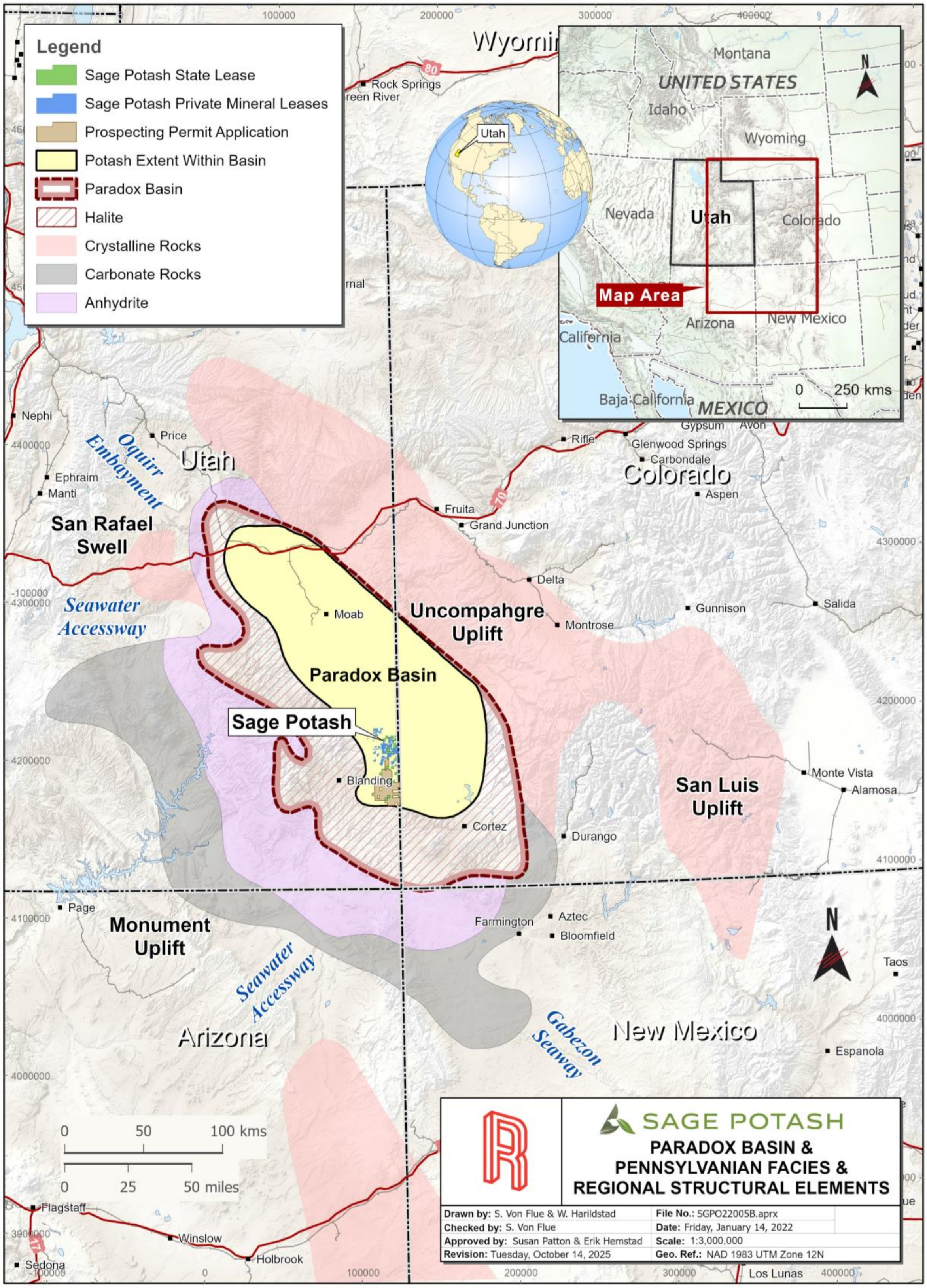

Figure 7-1. Project Area and Paradox Basin Regional Structural Element (Modified From Williams-Stroud [1994]).

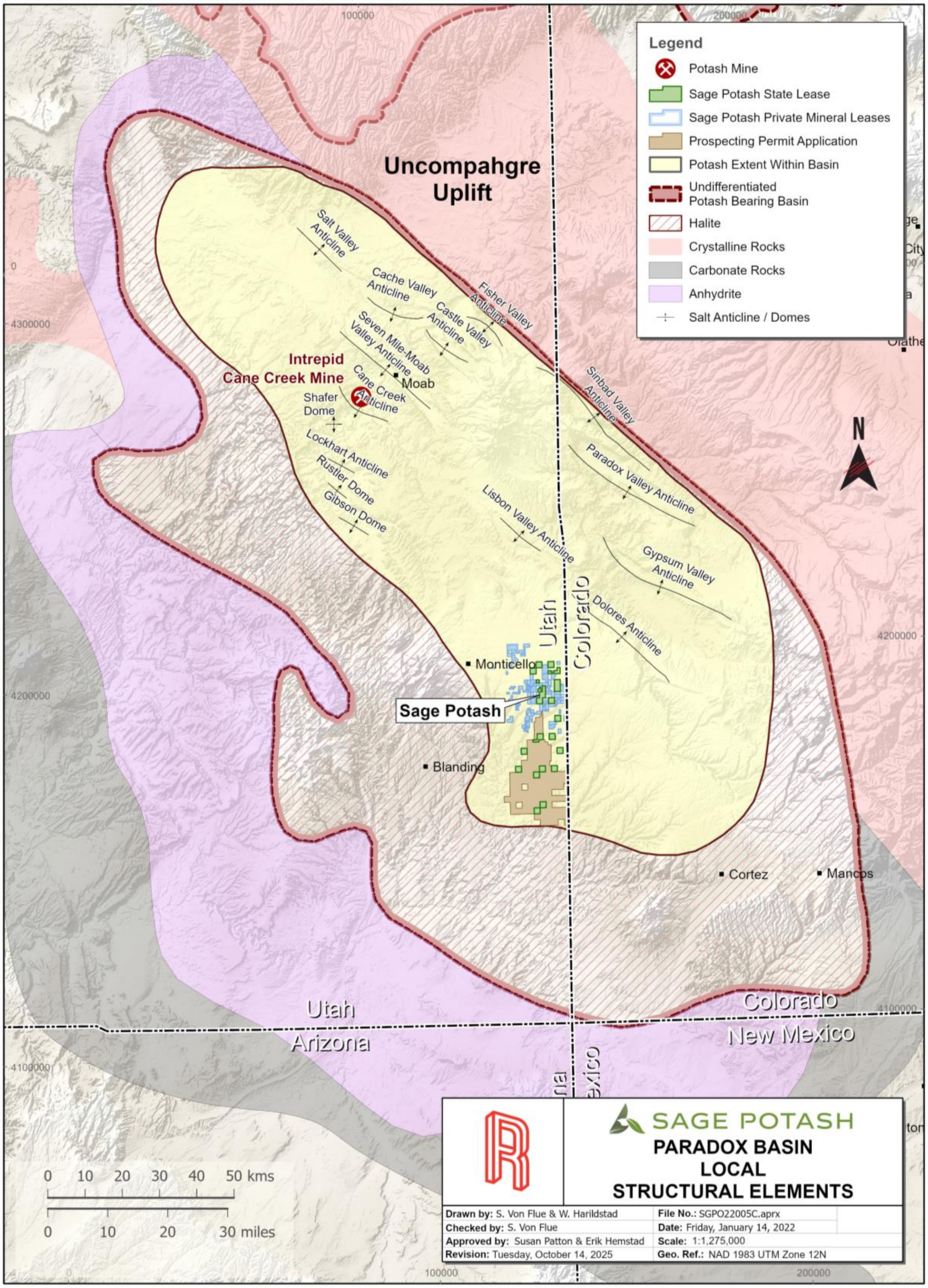

Figure 7-2. Structural Features Associated With the Paradox Basin (Modified From Raup and Hite [1992]).

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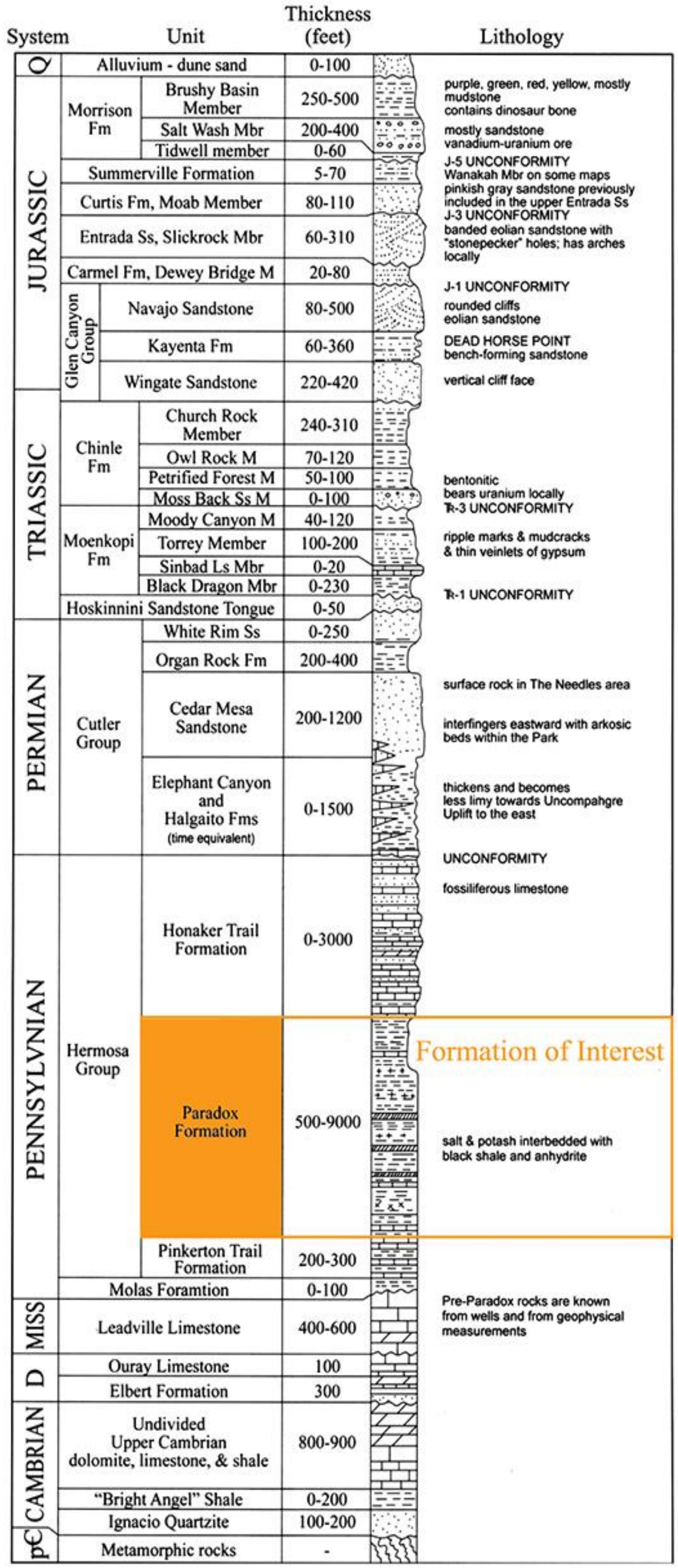

Figure 7-3. Detailed Stratigraphic Column of the Project Area (Modified From Massoth and Tripp [2011]).

The thickness of each salt cycle can range from 7 to 270 m in the depositional center of the basin. The widely accepted naming scheme for these salt cycles has been adopted after Raup and Hite [1992], whereby the uppermost salt bed is termed "Salt 1" and the uppermost clastic interval "Clastic 1." The evaporite and clastic beds are numbered sequentially downward in this manner. Figure 7-4 indicates the most regionally occurring salt cycles and mineralized horizons within the Paradox Formation. In areas where one or more of these cycles are absent, marker horizons such as the potash and/or carnallite-bearing salt cycles are used to determine the stratigraphic architecture of a particular area. Potash mineralization has been identified in as many as 18 of these salt cycles. The distribution of these potash beds is not uniform across the entire Paradox Basin because varied rates of subsidence shifted the basin center over time. These mineralized horizons are often assigned names corresponding to their respective depositional cycles. For example, one of the potash horizons mined at Cane Creek, the "Sylvite 5" bed, occurs within the uppermost salts of "Cycle 5".

7.3 PROPERTY GEOLOGY AND MINERALIZATION

Potash mineralization showing economic potential was encountered in the Johnson 1 exploration well. The economic zones of interest within the Project Area are the Cycle 18 Upper and Lower Potash Beds. The Cycle 18 Upper and Lower Potash Beds occur as discrete, stratiform evaporite seams mid-way through the Paradox Formation at approximately 2,100 m depth. The Cycle 18 potash horizon predominantly comprises sylvite and halite with minor amounts of carnallite and insolubles and is overlain and underlain by barren salt interbeds. The Cycle 18 Upper and Lower Potash Beds were identified from geochemical assays, core descriptions, and wireline log interpretation.

The following geological factors are examined when solution mining is considered: dip of target beds, notable structures, potash grade, thickness, in situ temperature, and carnallite and insoluble content. Appendix C provides a detailed summary of the North Rim geological interpretations for the exploration drillhole.

7.4 DIP AND STRUCTURE

The structural geology of the top and base of the Paradox Formation is illustrated in Figures 7-5 and 7-6. The maps were created using seismic interpretations provided by RPS [Flynn, 2013]. Historical drillhole data and 2D seismic lines indicate the depth to the top of the Paradox Formation in the Project Area averages 365 m (1,198 ft) above sea level and the base averages 300 m (984 ft) above sea level. The Paradox Formation structural dip angle is regionally interpreted at less than 5 degrees toward the south. The dip shown on the maps appears to be consistent with the expected regional trends of the area.

Figures 7-5 and 7-6 depict the structural trend of the Cycle 18 Upper and Lower Potash Beds at less than 2 degrees to the southwest, confirmed to be nearly flat between the Western Natural Gas 1 Well and the Johnson 1 Well. Seismic data indicate a highly faulted area south of the Property. For all interpretations, the seismic data were interpolated from actual data points and are not a representation of true structure. The maps are for illustration of regional trends only.

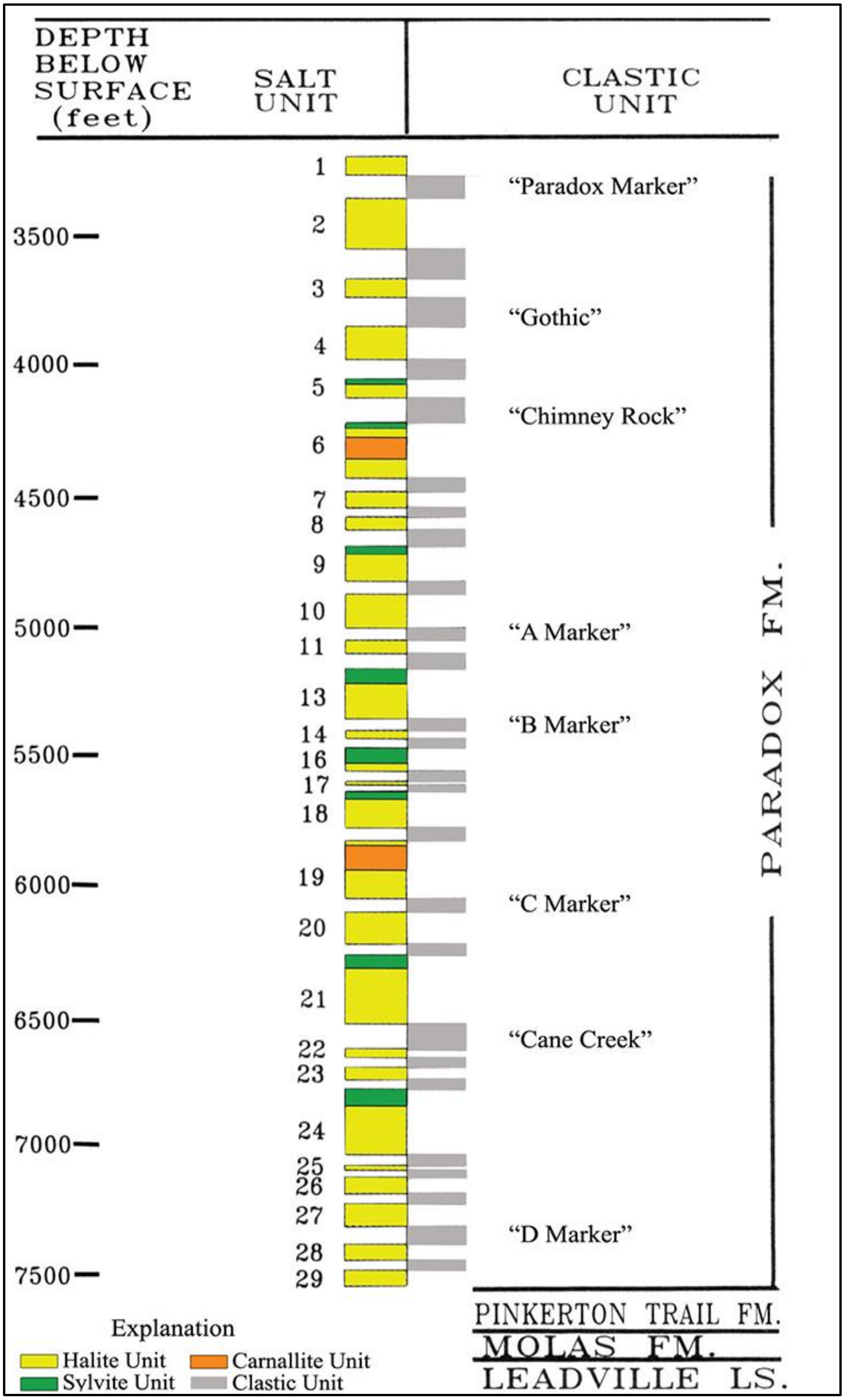

Figure 7-4. Stratigraphic Column of the Paradox Formation (Modified From Massoth and Tripp [2011]).

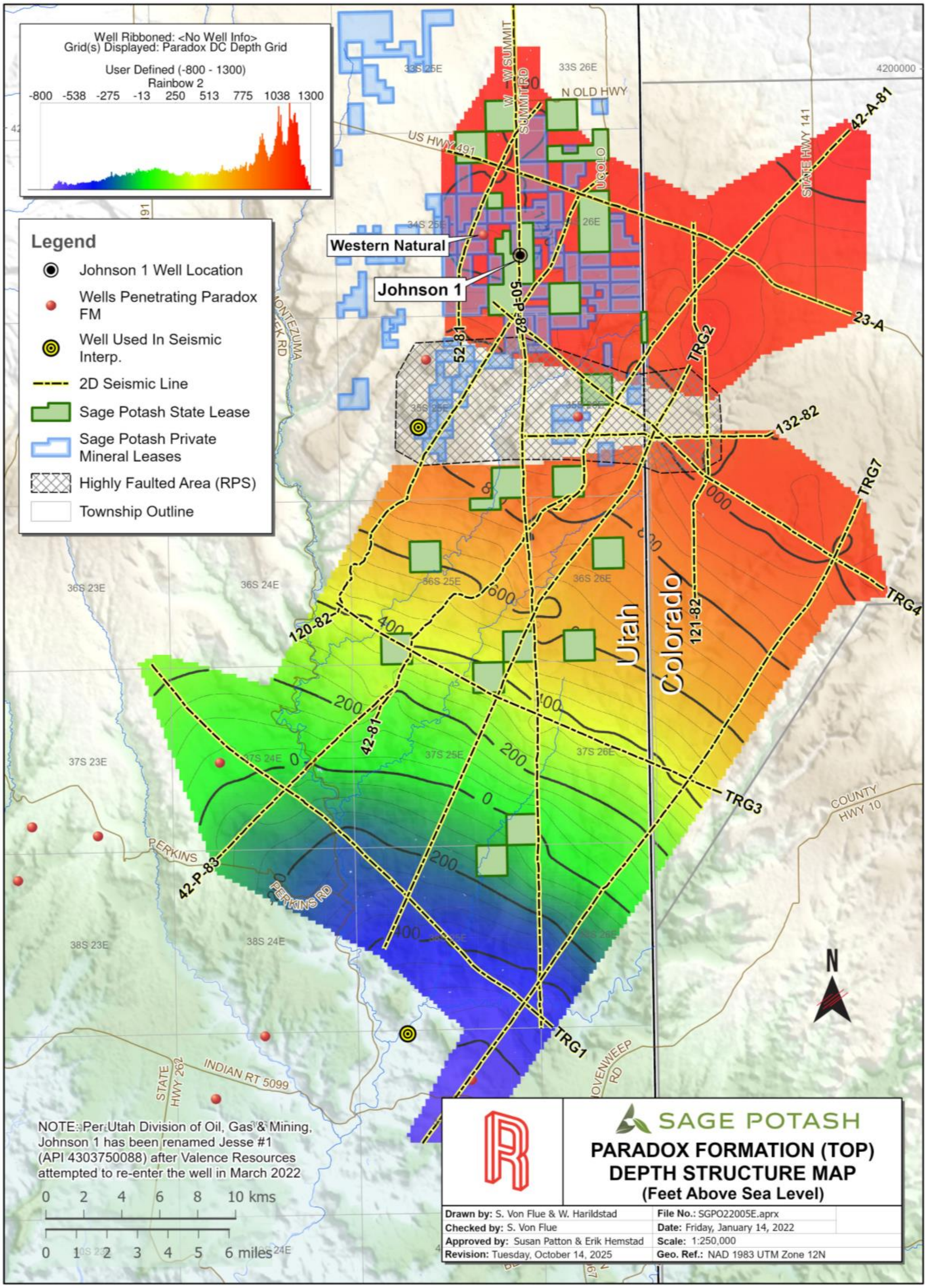

Figure 7-5. Top of Paradox Formation – Depth Structure Map [Flynn, 2013].

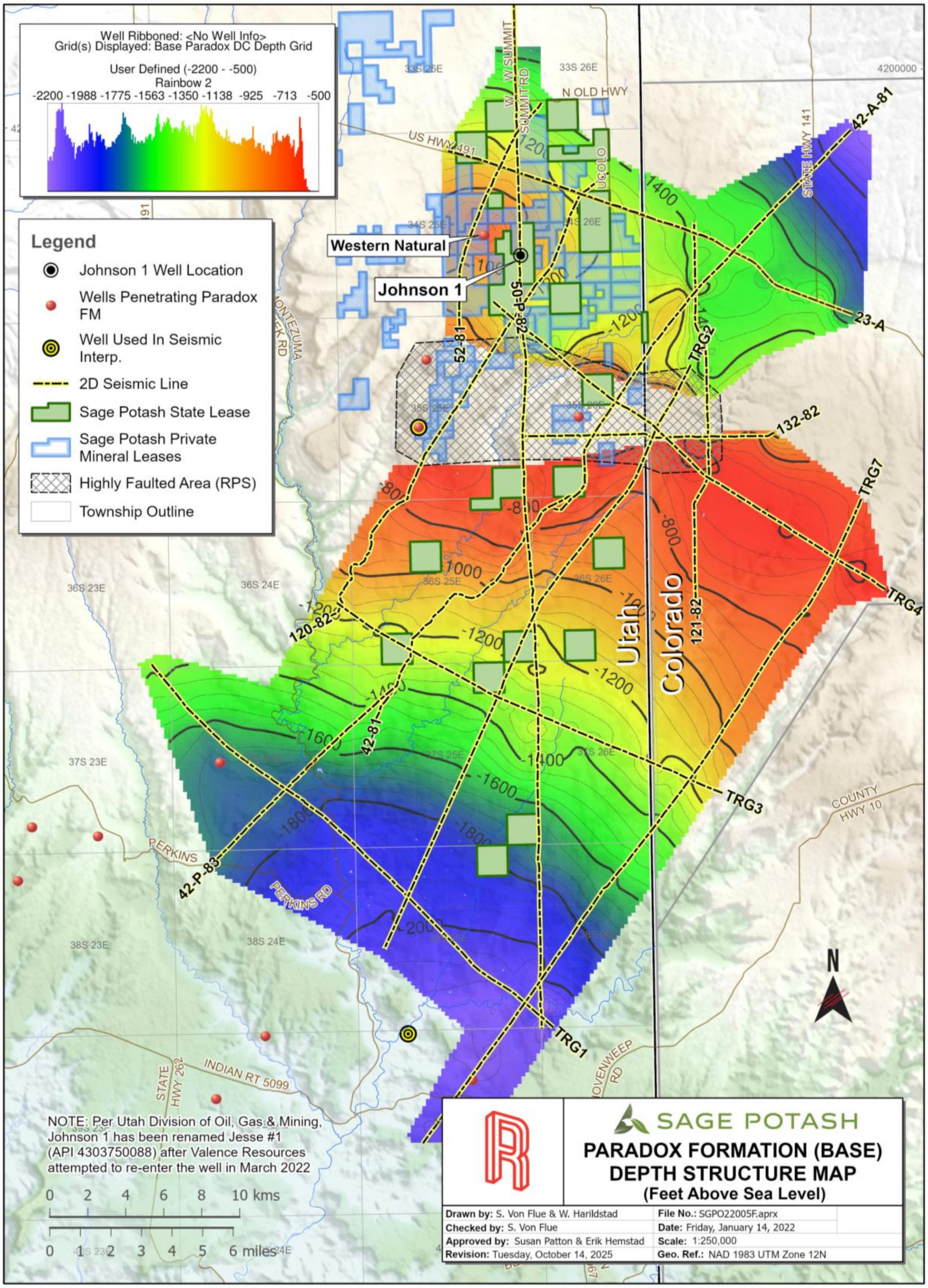

Figure 7-6. Base of Paradox Formation – Depth Structure Map [Flynn, 2013].

7.5 STRATIGRAPHY AND MINERALOGY

Potash mineralization encountered from drillhole data consists of Cycle 18 potash. Potash mineralization in Cycle 18 generally occurs in one main horizon; however, potash can also occur as two discrete zones, termed the Cycle 18 Upper and Lower Potash Beds. These horizons are separated by as much as 10 m (33 ft) of barren halite. The uppermost deposit generally contains the greatest concentration of potash [Hite, 1978a]. Detailed examination of modern drill core indicates the presence of several horizontal, thin dark bands throughout the potash sequence, as shown in Figure 7-7. X-ray diffraction (XRD) analysis completed on Cycle 18 samples indicates that these areas have similar mineralogy to the adjacent cycles and largely comprise halite, sylvite, and minor anhydrite.

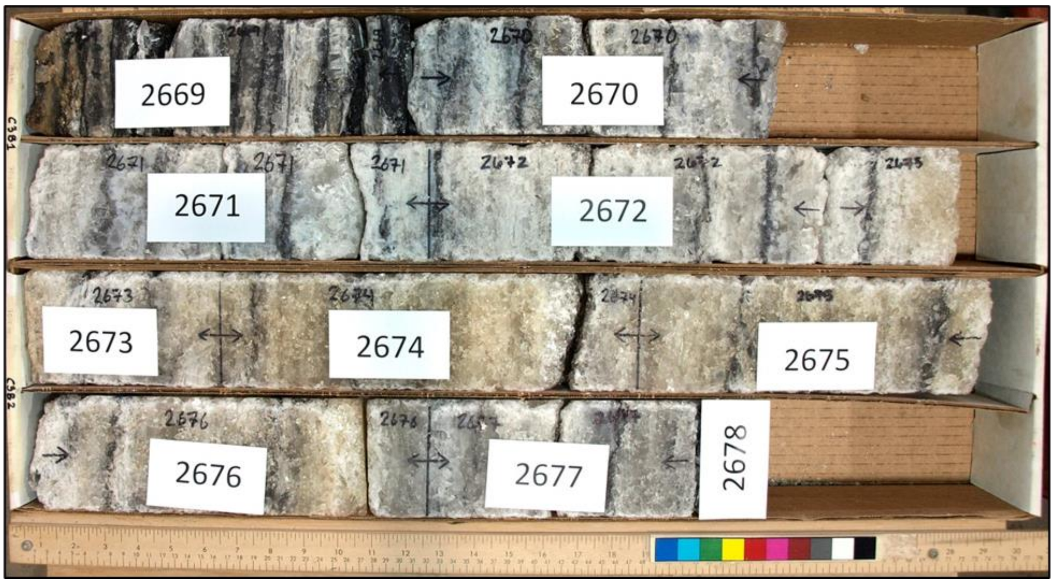

Figure 7-7. Johnson 1 Well Drill Core Photograph Example of the Cycle 18 Upper Potash Bed.

A summary plot for Sennen's Johnson 1 Well is provided in Appendix C. The plot illustrates specific correlations between various datasets, namely Cycle 18 potash geology, geophysical wireline logs, and geochemical assay results. The horizon tops were chosen using the gamma ray, neutron porosity, and density porosity wireline log signatures in conjunction with examination of drill core and geochemical analyses. The Cycle 18 potash horizons demonstrate the lateral continuity across the Project Area and potash grade and thickness required to classify it as a potential economic resource. The Cycle 18 Lower Potash Bed was observed in the geophysical logs after completion of the hole. This interval was captured while drilling the sump for wireline logging tools. As such, no drill core was captured for this bed. Inferences on the potash grade and thickness were determined by examination of the geophysical logs.

Geologic Cross Section X – X', presented in Figures 7-8, 7-9, and Appendix D, illustrates the stratigraphic relationships of the Paradox Formation horizons between historical drillholes selected for their suite of legible geological data, Well 4303711277, Well 4303710430, Johnson 1 Well, Western Natural Gas 1 Well, and Well 4303730572, as shown in Figure 7-8. The following points summarize the mineralogy and stratigraphy of the Cycle 18 potash horizons, as observed in drill core, geophysical logs, seismic interpretations, assay results, and subsequent summary plots and cross sections:

- The interpreted structural geology of the Paradox Basin within the Project Area was deduced through interpolation between historical and recent drillholes and seismic data, and is demonstrated in Figures 7-4 through 7-6. The dip angle of the beds over the Resource Estimation Area is interpreted to be approximately 2° in a south to southwestern direction.
- The Cycle 18 Upper Potash Bed has north to northeastward thickening from less than 4 m near the (seismically interpreted) highly faulted area to approximately 7.3 m (24 ft) at the Johnson 1 exploration well, as shown in Figure 7-8.
- The depth to the top of Cycle 18 economic potash horizons averages 2,113 m (6,932 ft).
- The upper and lower potash horizons are both vertically adjacent to zones primarily comprising barren halite and insoluble sediments.
- Johnson 1 Well is characterized by the following:
  - Cycle 18 Upper Potash Bed:
    - The weighted average grade is 26.96 percent K_2O over 7.26 m (23.8 ft).
    - Sylvite occurs as white to gray/colorless cloudy crystals that are very fine to fine crystalline to locally very coarse crystalline in texture. The average crystal size is 2 to 15 millimeters (mm) (0.08 to 0.59 in) in diameter.
    - Halite occurs as gray to white/colorless, very fine to fine crystalline with local coarse crystalline texture. The average crystal size is 2 to 35 mm (0.08 to 1.4 in) in diameter.
    - Very low carnallite (0.01 percent magnesium oxide) and insoluble content (0.56 percent) exists.
    - Thin, dark horizontal banding of similar mineralogy to adjacent cycles exists, as identified by XRD.
  - Cycle 18 Lower Potash Bed:
    - The estimated average grade is 22.60 percent K2O over 5.48 m (18.0 ft).
    - Very low carnallite and insoluble content exists compared with the Upper Potash Horizon in geophysical well logs.
    - Between the Cycle 18 Upper and Lower Potash Beds, the interbed salt is 12.5 m (41 ft).

The Paradox Basin Cycle 18 potash horizons are at a favorable depth for solution mining. A bottom-hole temperature of 68°C (154°F) was recorded at a depth of 2,169 m in the Johnson 1 Well. These parameters, as well as the generally flat-lying nature of the deposit, further contribute to the potential economic viability of solution mining.

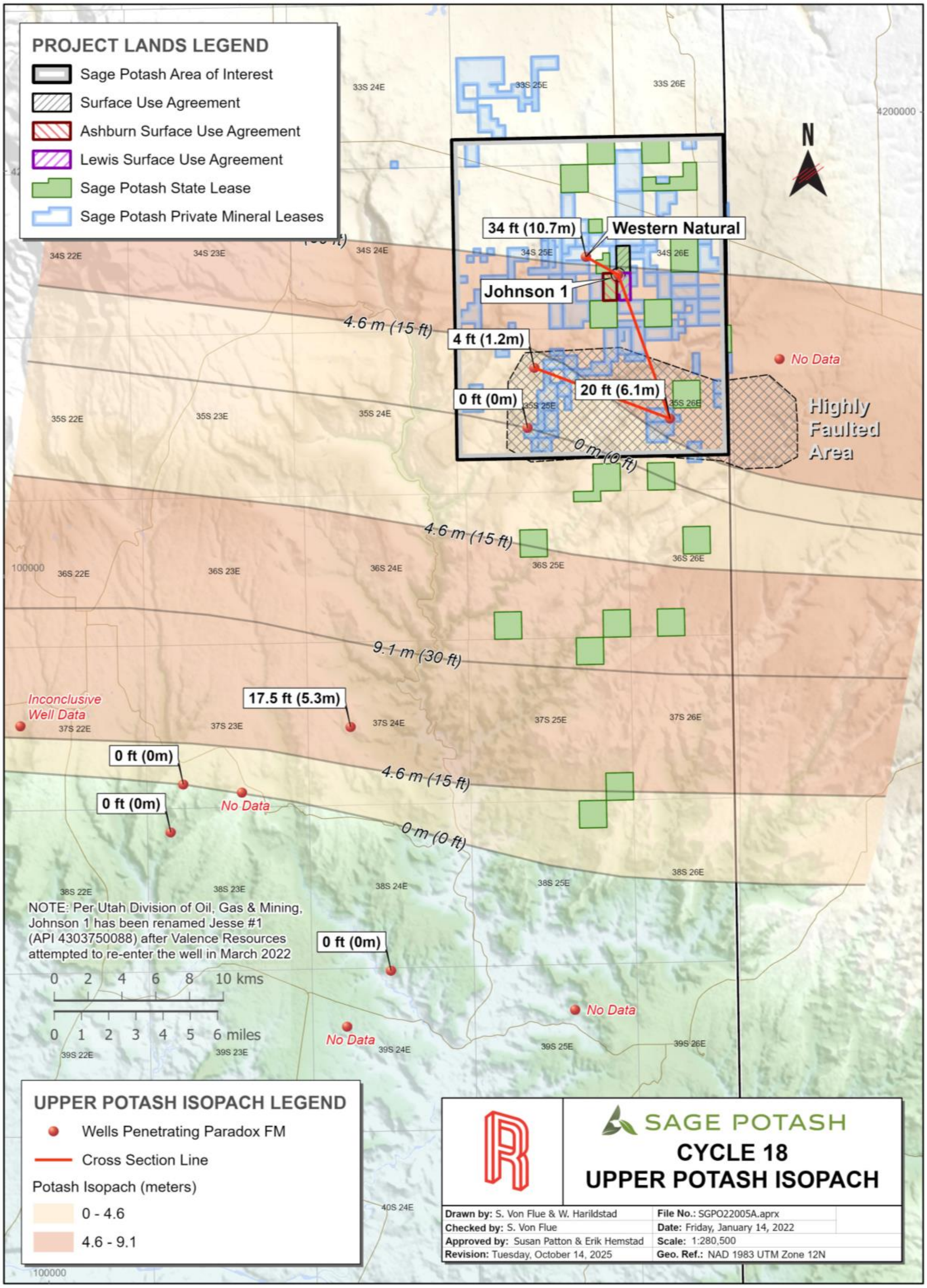

Figure 7-8. Base of Paradox Formation – Depth Structure Map [Flynn, 2013].

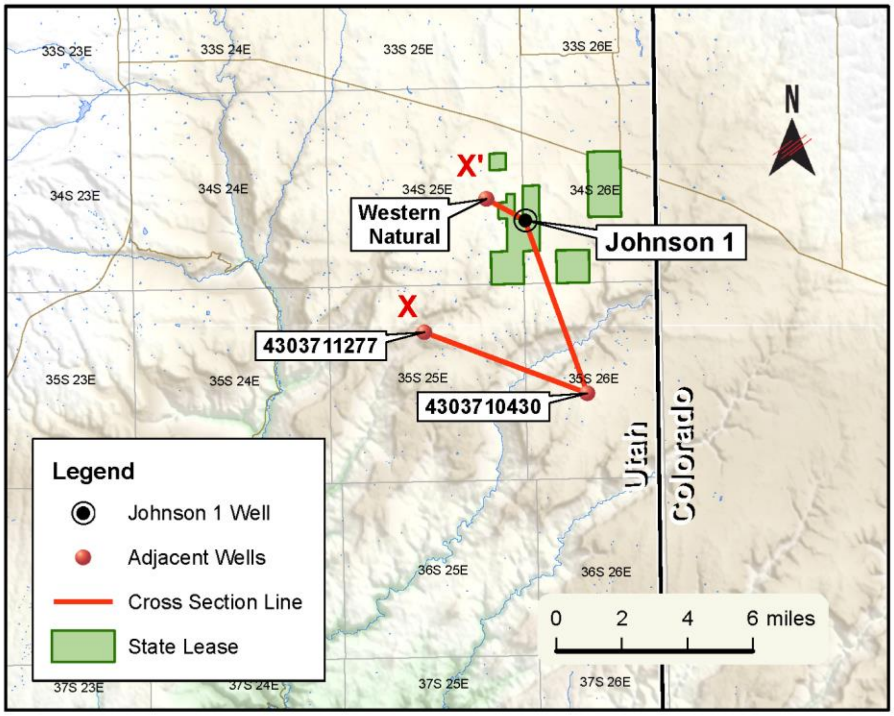

Figure 7-9. Plan View of Geologic Cross Section (Full Cross Section Shown in Appendix D).

7.6 GEOLOGICAL ANOMALIES

A disturbance that affects the normal characteristics of the potash-bearing beds in the Paradox Formation is considered to be an anomaly and may represent an area that is unfavorable for mining. In general, potash zones can be affected by a number of geological anomalies, such as dissolution or collapse anomalies, leach anomalies, or washout anomalies.

The dissolution and/or collapse anomaly describes an area where dissolution of salt by meteoric water has occurred. In some instances, the void created by dissolved minerals is large enough to induce subsidence of overlying layers, resulting in a collapse anomaly. This type of disturbance may be local (i.e., less than a square kilometer) or regional (i.e., extending over several square kilometers) and may affect part of or the entire salt sequence.

The leach anomaly occurs where the sylvinite bed has been altered such that the sylvite mineral has been removed and the bedding proportionately thinned. Often surrounded by enriched halos, such anomalies are also termed “salt horsts” or “salt horses.” If the altered zone crosses any stratigraphic boundaries (e.g., clay markers), these boundaries are commonly unaffected. Workers in the field interpret this type of disturbance as post-depositional. This anomaly can occur as a partial or complete absence of sylvite in what is otherwise considered a continuous stratigraphic sequence.

The third type of anomaly is the washout anomaly, which occurs when the sylvinite bed has been replaced by a halite mass. This type of disturbance is interpreted as a penecontemporaneous occurrence (i.e., taking place at the same time as deposition of the primary sylvinite, or shortly thereafter) that takes place from the top down and, thus, is local in nature.

Anomalous areas can impact mining operations because the grade of the potash ore sent to the mill decreases as anomalous ground is encountered or because a portion of the potash ore is not mined. Generally, a combination of 2D and 3D surface reflection seismic studies and careful examination of drillholes is sufficient to identify potentially problematic ground.

An important aspect of estimating the potash potential of an area is to identify portions of the subsurface that may contain disturbances affecting the Paradox Formation. If a drillhole penetrates a disturbance, it may offer a vertical profile of an anomaly but will not provide any information as to its lateral extent. Reflection seismic surveys offer the possibility to map the lateral extent of anomalies related to large-scale alteration of the Paradox Formation. Seismic interpretations may capture the dissolution of the main mass of the Paradox Formation with subsequent collapse of the overlying beds into the dissolution cavern; however, seismic surveys may not necessarily define the lateral extent of more subtle anomalies, such as washout or leach anomalies. Seismic surveys typically can detect anomalies of various sizes to a minimum of 15 m (49 ft) in 2D and may not accurately depict anomalies below that cut-off.

No anomalous areas were evident on the Property during the 2D seismic interpretation completed by RPS; however, a highly faulted area to the south of the current land holdings is noted, as interpreted from seismic data and indicated in Figures 7-5 and 7-6 Deductions from the Mineral Resource estimate have been made to account for the assumed presence of currently undetected anomalies over the Property, such as collapsing, steep bedding dip, high carnallite concentrations, or low grade.

8.0 DEPOSIT TYPE

Potash encompasses several potassium-containing compounds. Multiple types of compounds exist but the two most common types are Muriate of Potash (MOP), also known as potassium chloride (KCl), and Sulfate of Potash (SOP), also known as potassium sulfate (K_2SO_4). Although several salt species are classified as potash minerals, sylvite is the natural form of the principal ore mineral. The term sylvinite, referring to a mixture of halite and potash, is therefore applied to most sylvite-dominated potash beds. One tonne of chemically pure KCl contains an equivalent of 0.63 tonnes of potassium oxide (K_2O), a chemical conversion typically employed to compare the nutrient levels in potash deposits of various mineralogical composition as well as various potash products. Reporting potash content as K_2O is commonly considered the industry standard. Other, less common types of potash include potassium nitrate (KNO_3), potassium magnesium sulfate ($K_2SO_4 \cdot 2MgSO_4$, also known as langbeinite or SOPM), and polyhalite [$K_2Ca_2Mg(SO_4)_4 \cdot 2H_2O$], which is often marketed as an SOP.

Potash has historically been used in the manufacturing of many industrial and commercial materials including soaps, glass, and textiles; however, potash is most commonly used as a primary ingredient in the production of crop fertilizers.

Potash deposits are a type of industrial mineral deposit that occurs primarily within sequences of salt-bearing evaporite sediments, with the potash mineral accumulations themselves being hosted within the bedded halite layers of these evaporitic sequences. The extreme solubility of potash salts results from their formation in highly restricted settings (e.g., semi-isolated intracratonic seas or evaporative lakes) where they precipitate from solution [Warren, 2006]. These highly soluble salts are commonly referred to as the bittern series. The potash salts are precipitated from these concentrated evaporating potassic brines as chemical sediments that are deposited at, or very near, the depositional surface as the basin approaches desiccation. Their geologic provenance, therefore, dictates that they are typically confined to relatively narrow stratiform intervals and, excluding deformation, erosion, and other post-depositional destructive processes, nearly all bedded potash deposits will exhibit some degree of lateral continuity.

Most of the world's salt and potash resources are extracted from these types of deposits. In situations where the deposit cannot be conventionally mined, solution mining may instead be employed. Solution mining for potash is performed by injecting near-saturated sodium brine into the deposit to preferentially dissolve potash minerals. After some time, the potash-bearing liquor is recovered from the solution cavern and subsequently crystallized on the surface into potassium salts, which are then refined into the desired end-product. The immense size of many potash deposits worldwide means that a potash processing facility may exploit a single deposit for decades.

The authors of this TR propose that potash deposits can be of either simple or complex mineralogical character. For the purposes of this TR, a simple potash is considered to be any deposit characterized by a sylvinite-dominated potash type with variable concentrations of impurities, including halite, carnallite ($KMgCl_3 \cdot 6H_2O$), and clay. The potash deposits of the Paradox Basin can be considered a mineralogically simple potash deposit. Other deposits worldwide, such as several European salt deposits, may bear a more variegated bittern salt mixture and other exotic contaminant species. These deposits are of a complex mineralogical nature.

The evaporite minerals present within the Paradox Basin are, according to Williams-Stroud [1994], a result of deposition in a closed evaporite basin where the volume of continental-derived inflow waters exceeds marine-derived inflow waters by 2:1. The depositional environment discussed by Williams-Stroud [1994] lists a "marine-influenced, penecontinental perennial saline lake which existed for thousands of years." Thus, the basin is proposed to have a mixed marine–continental origin. Figure 8-1 is a schematic of the stages of the depositional environment of the Paradox Basin: (A) open communication with the ocean; (B) regressive phase; (C) subsequent evaporative drawdown; (D) closed basin, saline lake stage; (E) transgressive phase, and (F) open ocean [Williams-Stroud, 1994].

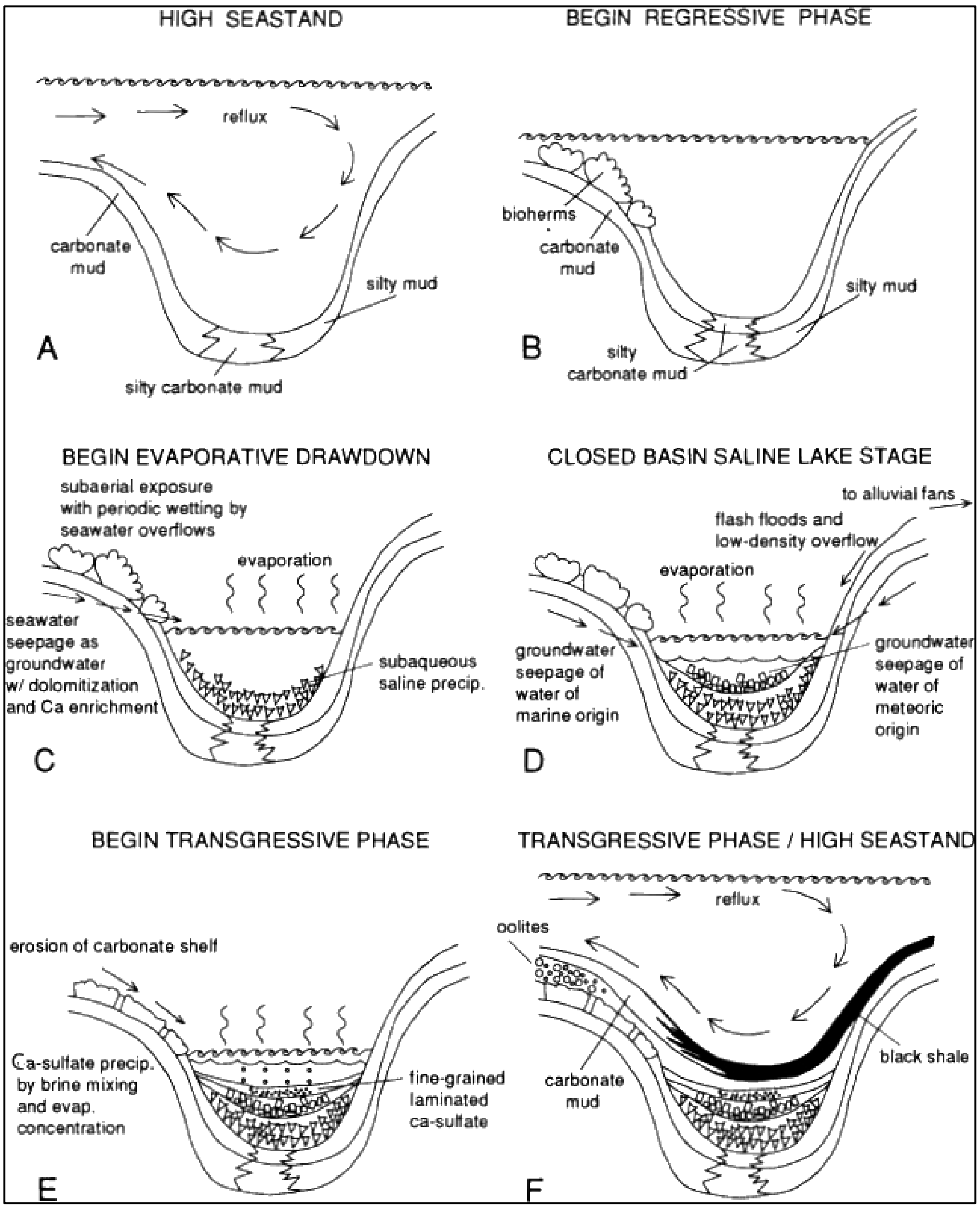

Figure 8-1. Stages of the Depositional Environment of the Paradox Basin [Williams-Stroud, 1994].

9.0 EXPLORATION

Sage Potash has not completed any exploration activities on the Property. 2D seismic data of the area was purchased and evaluated by Sennen in 2013. This analysis was used, in part, to delineate subsequent drilling by Sennen in 2014.

9.1 HISTORICAL POTASH EXPLORATION ON THE SAGE PLAIN PROPERTY

In 2013, 13 individual 2D seismic lines totaling approximately 275 linear km covering the Project Area were purchased and interpreted on behalf of Sennen by RPS. The seismic line locations used in the interpretation are shown in Figure 9-1. The 2D seismic data were tied to historical drillholes to correlate seismic horizons with the local Project Area stratigraphy. Seismic surveys are highly effective subsurface analytical tools for potash exploration and are used to identify and estimate the total salt thickness, degree of salt loss, and salt dissolution-induced collapse structures, and to identify other geological elements, such as faulting. No anomalous ground was identified in the Project Area; however, a highly faulted area south of the Project Area was identified, as shown in Figure 9-2.

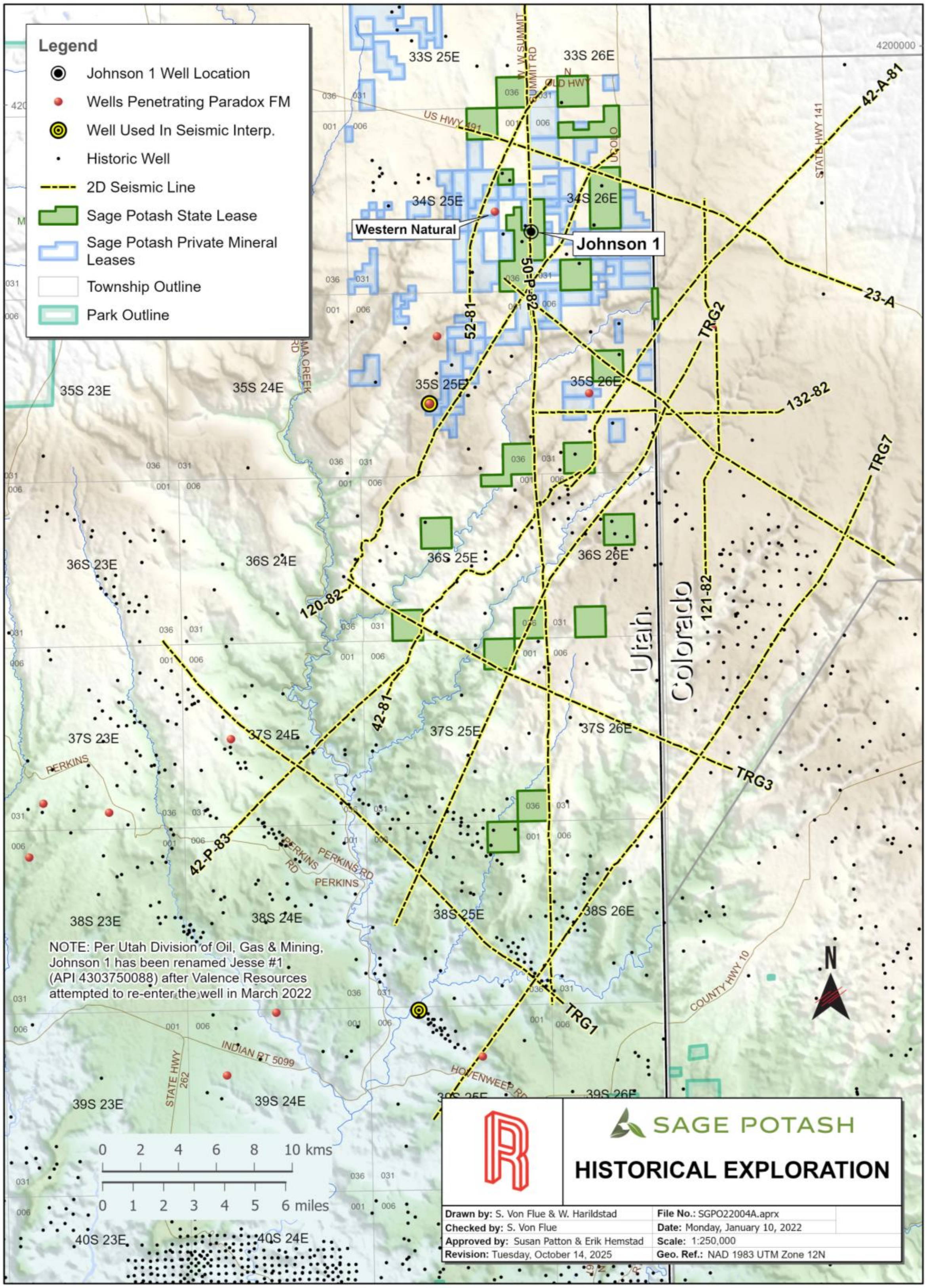

Figure 9-1. Historical Exploration Map.

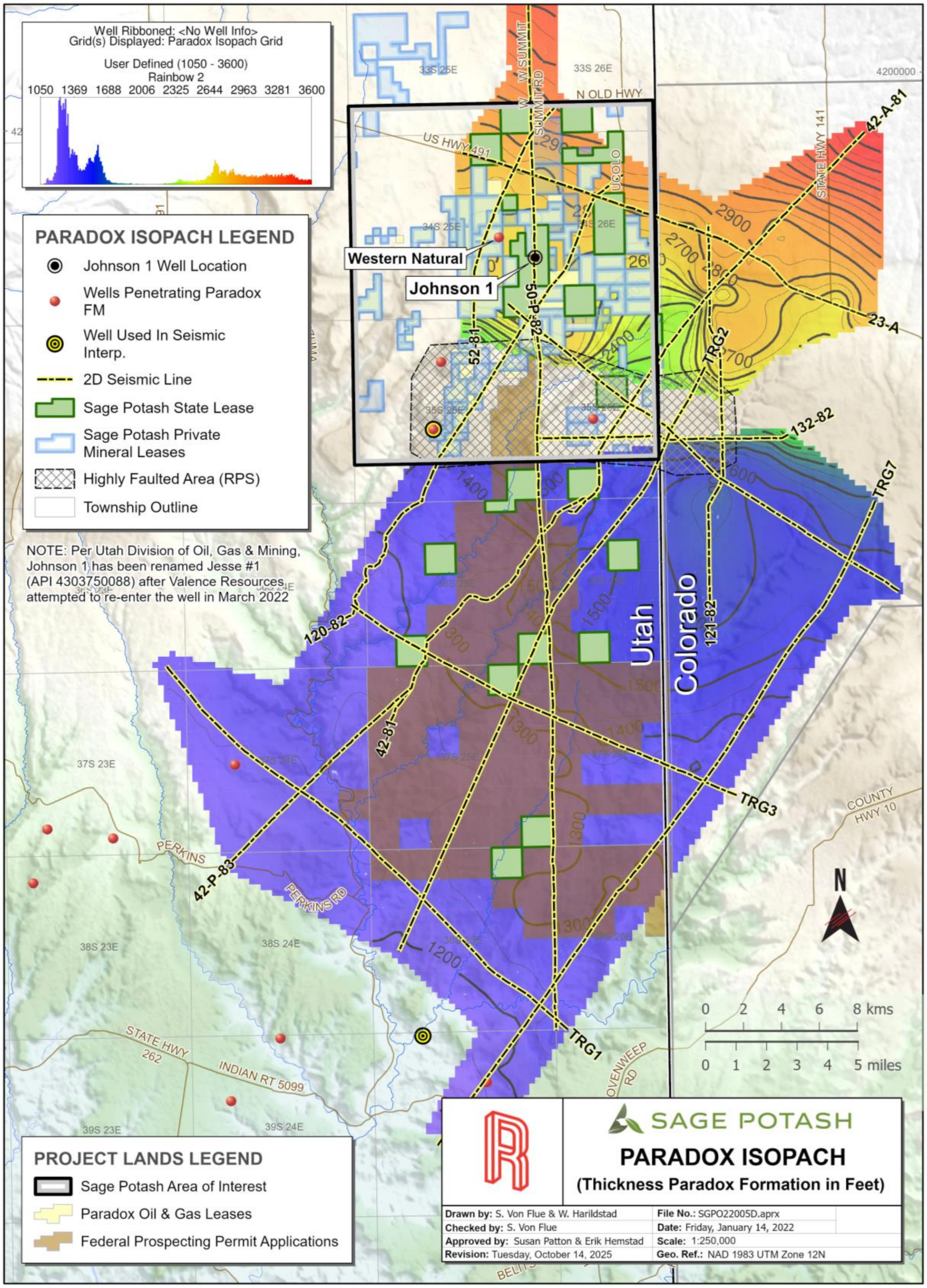

Figure 9-2. Paradox Formation Isopach Map as Determined, In Part, From 2D Seismic Data Gathered in 2013 [Flynn, 2013].

10.0 DRILLING

Sage Potash has not performed drilling on the Property. Previous drilling was completed for Sennen on the Property by North Rim.

One exploration drillhole (Johnson 1) was completed by Sennen on the Property in 2014. The purpose of the drillhole was to retrieve core from Cycle 18 to determine the quantity, continuity, and grade of the potash in the subsurface. This vertical exploratory well was drilled down to the Cycle 18 potash horizons, where five 3.5-inch-diameter cores were cut for a total of 33.2 m of drill core. The Johnson 1 Well was drilled in San Juan County on State Lease NW-NW, S30, T34S, R26E (see Figure 9-1). Geological seismic interpretations are discussed in Sections 7-4 through 7-6.

The drillhole was logged with geophysical wireline tools from Total Depth (TD) to surface casing by Baker Hughes. The 2014 wireline program is summarized in Table 10-1. The geophysical parameters measured with the wireline tools include the natural gamma, density, neutron, and photoelectric effect, and were referenced while completing the detailed core descriptions and depth corrections. The gamma log provides a depth-recorded dataset of the natural formation radioactivity and is displayed in American Petroleum Institute (API) units.

North Rim completed the sample preparation of drill cores obtained for Sennen using suitable quality assurance (QA)/quality control (QC) procedures. An example of the prepared core is illustrated in Figure 10-1. The core is approximately 3.5 inches (8.9 cm) in diameter; numerical markers are sample numbers for approximately foot-long assay intervals. SRC Geoanalytical Laboratories (SRC) performed the geochemical analysis. In the authors' opinions, the SRC Customer Quality Control Policy for sample preparation and analytical procedures meets the industry standards.

Table 10-1. 2014 Wireline Program

Tool	From	To
E-Log	Surface Casing Shoe	Surface
Induction/SP	Intermediate Casing Shoe	Surface Casing Shoe
Density	TD	Surface Casing Shoe
Neutron	TD	Surface Casing Shoe
Acoustilog	Intermediate Casing Shoe	Surface Casing Shoe
Multipole Array Acoustilog	TD	Intermediate Casing Shoe
Gamma Ray	Intermediate Casing Shoe	Surface Casing Shoe
Spectral Gamma Ray	TD	Intermediate Casing Shoe

Figure 10-1. Assay Core Photograph Example From the Johnson 1 Well. (Numerical markers are sample numbers for approximately foot-long assay intervals.)

The historical Western Natural Gas 1 Well, west of the Johnson 1 Well, was reviewed to understand the continuity of the geology in the area. The wireline logs from the well demonstrated that the Cycle 18 potash horizon was present. Several historical drillholes not applicable to the Sage Plain project are documented to have occurred within the area of interest are described in Table 10-2.

Table 10-2. Sage Plain Property and Surrounding Area Historical Drilling Activity

Exploration Program	Start Date	Completion Date	Number of Drillholes	Coring Interval	Meters Drilled
Other Historical Drillholes (oil-and-gas exploration)	1922	Before 2014	1,033	N/A	Not Compiled
Historical Drillholes Penetrating the Paradox Formation	1953	Before 2014	14	N/A	> 27,500

N/A = Not Applicable

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Geochemical testing for the Johnson 1 Well was conducted by North Rim for Sennen. Assay sampling was completed on December 11, 2014, with results returned by December 19, 2014.

11.1 GEOCHEMICAL SAMPLING PREPARATION

All geochemical samples were prepared at North Rim's Core Laboratory facility. The following steps were systematically completed before sampling:

1. Upon arrival at the laboratory, the core tubes were unloaded from the transport vehicle and laid out in sequential order.
2. The core was removed from the aluminum tubes and placed in boxes starting from the top of the core interval to the bottom.
3. The core was depth-corrected using the appropriate wireline logs and photographed before any other work commenced.

11.2 CONTROLS ON SAMPLE INTERVAL DETERMINATION

Steps taken by the North Rim geologists when choosing the geochemical sample intervals are summarized as follows:

1. A continuous sample interval was selected by the North Rim geologists before slabbing the drill core. The first sample was selected approximately 3.4 m above the top of the potash interval, and the last sample was selected approximately 3.7 m below the base of the potash interval.
2. After the sample interval was determined, the core was slabbed lengthwise into halves by North Rim geologists with a dry, 2-horsepower (hp) band saw equipped with a dust collection system. Once slabbed, the two core halves were placed back into their respective boxes in proper stratigraphic order with both cut surfaces facing up.
3. Once the entire assay interval was slabbed, the cut surfaces were wiped down with a damp cloth to remove any rock powder generated from cutting.
4. The upper core half was divided into individual samples by drawing straight lines across the core diameter in permanent black marker; natural core breaks were used where applicable. The determination of individual samples is based on stratigraphy and mineralogy changes. As the samples were chosen, they were labeled with continuous numbering.
5. The sample number was written on the top piece of the upper core half in permanent black marker. A sample tag bearing this number was prepared for use in identifying the core photograph.
6. Once the samples were reviewed by the North Rim QP, the core was photographed with a high-resolution digital camera.
7. Each sample within the assay interval was measured to the nearest 0.5 inch and the sample length was recorded in the appropriate assay and logging spreadsheets. The sample intervals and identification (ID) numbers were transposed onto the cut surface of the underlying second half of the core in the box.

8. The upper core half was crosscut with the band saw into the designated sample intervals by a North Rim geologist. Each sample and its corresponding sample tag were placed into a waterproof plastic sample bag and stapled to enclose the sample within the bag. The sample ID was written on the sample bag with permanent black marker.
9. Samples were placed in rice bags, and the sample numbers and bag numbers were labeled. Shipping sheets that included well information, bag numbers, sample numbers, and contact information accompanied the samples to SRC in Saskatoon.

The core recovery was excellent for the Johnson 1 Well, and the cutting and slabbing of the drill core did not result in any notable material loss. The accuracy and reliability of the assay samples were not compromised during the sampling procedure. The authors opine that the samples chosen for the geochemical analyses are representative of the intervals based on the parameters and guidelines discussed previously in section 7.

North Rim geologists delivered the samples to SRC for analysis. At the laboratory, the samples were crushed, split, and analyzed according to the parameters stated in SRC's Basic Potash Package analysis. QA/QC measures were strictly adhered to, including the use of standards and duplicates throughout the analysis period. North Rim was not involved in procedures performed at SRC once the samples were delivered, nor did North Rim supervise the analysis process. Assay results generated are reviewed and approved by SRC before release.

11.3 SAMPLE METHOD AND APPROACH

Individual samples within the sample interval were determined based on visual inspection of the core with consultation of the respective gamma curves for the Johnson 1 Well. The following geological parameters were used for individual sample selection:

1. Changes in lithology, mineralogy, K_2O grade, crystal size, or insoluble content warranted a new sample. Densely banded intervals were broken out as individual samples.
2. Samples were limited to 30 cm for the entire sampling interval.

11.4 SAMPLE SECURITY AND GEOANALYTICAL LABORATORY PROCEDURES

The following procedures were closely followed to ensure that the core was under the continuous supervision of qualified personnel:

1. From retrieving the core at the drill site to receiving the core at the North Rim Core Facility, the core was under the care and supervision of North Rim's on-site geologist, wellsite supervisor, or North Rim Core Facility geologists. Before transport, the tubes were taped shut and wrapped securely on the pallets. When the core was received in Saskatoon, no evidence showed that the shipment had been tampered with.
2. Following the core retrieval, the core was placed in aluminum tubes, capped, taped, and secured on pallets by North Rim's project geologist and wellsite supervisor. The core was picked up from the site by FedEx and delivered to the North Rim Core Facility within days.
3. As soon as the core arrived at the core facility, North Rim's laboratory staff inspected the shipment, signed the core packing slip, and unloaded the core. From this point forward, North Rim geologists were responsible for core supervision. The North Rim Core Facility is

equipped with an alarm system to ensure the security and integrity of the core when the laboratory is not under direct surveillance. North Rim's Core Facility is temperature and humidity controlled to prevent core deterioration.

4. Samples collected for geochemical assay sampling were secured in plastic bags to ensure that the samples were not exposed to moisture. To preserve the sample ID, the sample number was written on the sample in permanent ink, on a sample tag placed inside the bag, and on the bag that contained the core. The sample bags were sealed, packed into labeled rice bags, and remained sealed until they were opened for processing at SRC.
5. Samples were delivered by North Rim staff to the SRC. SRC is International Organization for Standardization (ISO) accredited, meeting ISO 17025 standards. Information sent along with the sample shipment included the client's name, distribution email list, type of geochemical analyses required, and a sample list clearly explaining which samples were stored in each bag.
6. When SRC received the core samples at its laboratory, SRC staff signed, dated, and returned the North Rim packing slip to the North Rim employee. After confirming that the sample list matched the samples delivered, a sample receipt report was emailed to the predetermined distribution list.

The following sample preparation procedures were performed by SRC employees:

1. Prepared an in-house sample list and group number for the shipment.
2. Labeled sample vials with the appropriate sample numbers.
3. Individually crushed all samples in the group.
4. Evenly distributed each sample in the splitter to avoid sample bias. Cleaned the crusher and splitter equipment between each sample using compressed air.
5. Split the crushed sample and inserted one portion into the appropriate sample vial.
6. Resealed all material that was not analyzed (marked as "reject") in their original labeled plastic bags and stored in plastic pails with the appropriate group number marked on the pail.
7. Prepared vials of material for grinding.
    a. The material was placed in a pot, ground for 1 minute, then returned to the vial.
    b. Vials were visually inspected to ensure fineness of material.
    c. Grinding pots were cleaned with compressed air between each sample and cleaned with silica sand and rinsed with water between each group.
8. Placed the pulverized samples in a tray and sample paperwork was submitted to the main office.
    a. Worksheets were created detailing the samples to be analyzed, the type of analyses requested, and the standards, blanks, and split replicates to be completed.
9. Sent the samples and paperwork to SRC. Samples were analyzed using SRC's Basic Potash Package (Soluble Inductively Coupled Plasma, percent insolubles, and percent moisture).

After completing the assays and QA/QC procedures outlined in Section 11.5, the geochemical results were emailed to the client contact list.

11.5 QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

QC was an integral part of the sampling process at the North Rim Core Laboratory Facility and SRC. At the North Rim facility, assay samples were chosen by a North Rim geologist, peer reviewed, and approved by the QP before the sample intervals were finalized. Once finalized, the samples were measured and recorded in the assay spreadsheet. Before being bagged and delivered to SRC, the samples were re-measured, and the sample intervals were confirmed.

When the samples arrived at SRC, the number of sample bags and samples within each bag were confirmed with the sample list provided by North Rim. During the sampling process, standards and replicate samples were inserted, per proper QA/QC practices. After processing the entire group of samples, a split sample replicate was completed. The splitter and crusher were cleaned between each sample to prevent contamination. Once the results were complete, a password-protected zip file was emailed to the distribution list based on the information sheet provided by North Rim. According to the SRC Customer Quality Control Policy, the sample preparation and analytical procedures are of the highest quality and meet NI 43-101 standards.

11.6 OPINION OF THE QUALIFIED PERSON ON THE ADEQUACY OF SAMPLE PREPARATION

The author is of the opinion that the sample preparation, analytical procedures, QC checks, and security measures that were conducted by North Rim for Sennen are adequate for the purposes of the Mineral Resource estimation and this PEA.

12.0 DATA VERIFICATION

All geological data have been reviewed and verified by the author as being accurate. Erik Hemstad visually examined the cores from the Johnson 1 Well in 2021 before the dissolution testing program and confirmed the depths and mineralization with the geophysical logs and core assays. The cores were stored in the Saskatoon laboratory from 2015 to 2020, and then were sent to secure storage in Ontario. In 2021, the cores were shipped to RESPEC's laboratory for dissolution testing. At that time, the core was deemed to still be intact, and no material changes were noted that would affect the data.

12.1 DATA VERIFICATION PROCEDURES

The data verification procedures used during the Sennen [Stirrett and Shewfelt, 2015] exploration are summarized as follows:

- **Sample preparation and security.** Individuals under the direct supervision of the QP managed the core handling from the drill site to the courier and then again upon arrival in Saskatoon. The QP oversaw the assay sampling and chain of custody to the SRC facility in Saskatoon that conducted the geochemical testing.
- **Geochemical data verification.** The assays were checked using a comparative assay-to-gamma ray correlation study that was completed for the Johnson 1 Well. The purpose of this exercise was to ensure that the depth corrections were completed correctly and that the percent K_2O values correlated with the gamma-ray signature.
- **Resource estimation.** The QP was responsible for the criteria used in estimating the resource, and the same intervals were used in this TR. The only parameter that changed for the current estimation was the land package.
- **Data archival.** The 2014 data have been archived in a secure location, and the author verified that the files have been accurately transcribed from the original source and are suitable for use in this TR.

12.2 COMPARISON OF GAMMA-RAY EQUIVALENT CALCULATION METHOD TO ASSAY DATA

A comparative assay-to-gamma-ray correlation study was completed for the Johnson 1 Well. The purpose of this exercise was to ensure that the depth corrections were completed correctly and the percent K_2O values correlated with the gamma-ray signature. The spectral gamma-ray tool was used for the bottom section of the Johnson 1 Well because gamma ray measures the three most common components of naturally occurring radiation: potassium (K), uranium (U), and thorium (Th).

Figure 12-1 shows the correlation of the API values for the total gamma-ray and potassium values (Potassium API, or KAPI), the Bannatyne [1983] GREC K_2O equivalent, and the actual assay results for the Johnson 1 Well. The plot shows both the KAPI and percent K_2O trending similarly, which indicates that the geochemical assays and potassium gamma-ray curve correlate quite well, and the depth correction and assay values appear to be correct. The differences in the curve signatures are most likely caused by other radioactive elements that the gamma-ray tool has sensed. Note that the percent K_2O curve has a missing section because 152.4 mm (6 inches) of core was missing between core runs.

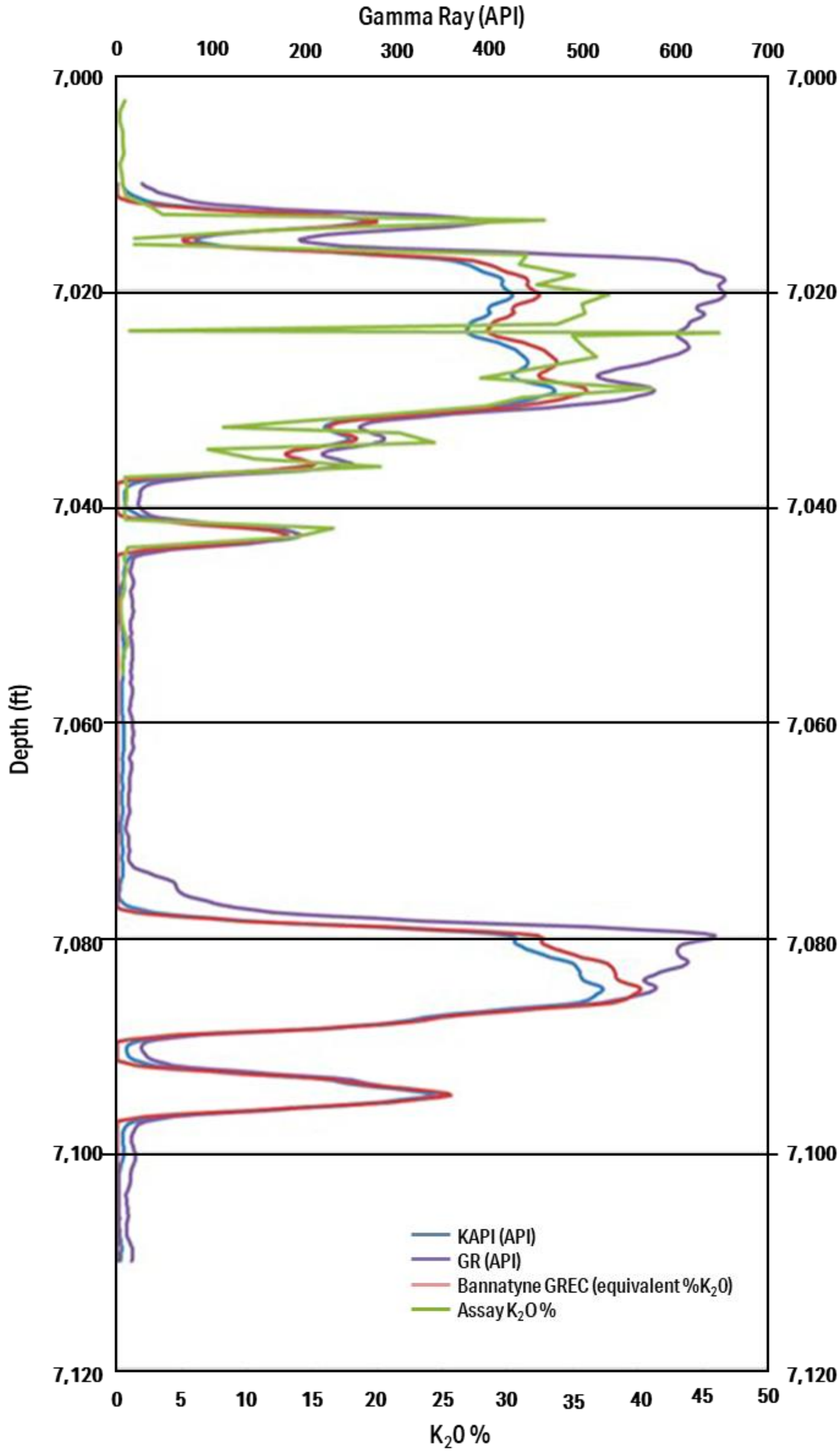

Figure 12-1. Comparison of Gamma-Ray Equivalent Calculation to Assay Data.

The plot in Figure 12-1 also illustrates that the salts in Cycle 18 are slightly more radioactive, displaying a higher total gamma-ray signature, gamma-ray API, than the potassium gamma ray, KAPI. This observation of a higher gamma-ray signature is significant when doing GREC calculations because the total gamma-ray API should not be used as an input into the K_2O calculation—doing so would result in an overstated K_2O estimate.

12.3 OPINION OF THE INDEPENDENT QUALIFIED PERSON

No limitations on or failures to conduct data verification were observed or encountered by the author. The opinion of the author is that the field procedures and sampling protocols implemented previously are reasonable. The quality of completed laboratory testing during the exploration program on the Property appears to be reasonable in the opinion of the author. In the author's opinion, the samples and associated laboratory datasets used in this TR are accurate and adequate for the purposes of Mineral Resource estimation and this TR.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 INTRODUCTION

Sylvite will be dissolved and extracted from the wellfield by pumping an elevated temperature leach brine, saturated in NaCl, through the cavern. The return brine, containing potassium, will be fed to a process plant consisting of a series of evaporators and crystallizers that will concentrate the potassium content and produce a high-purity MOP product.

13.2 DISSOLUTION TESTING

Dissolution testing of select core samples was conducted by RESPEC's Materials Testing Laboratory in 2022. The samples represented core recovered from the Johnson 1 Well, which is located within the region of interest for sylvite extraction. The dissolution tests were performed to obtain initial sylvite dissolution rates.

A total of 25 sections of the Johnson 1 core samples were cut to produce 5-cm-thick disks. Each disk was assayed, photographed, and weighed. The top and bottom of the disks were then coated in epoxy to standardize the surface area exposed to the dissolution brine.

The disks were submerged in synthetic, elevated temperature (60°C) brine solutions, which were saturated in NaCl, and varying concentrations of KCl (100–180 grams per liter [gpL]) for a period of 5 minutes. The disks were then removed from the brine, dried, and wiped free of dried brine residues before further assaying by XRD. Dissolution rates and XRD results are included in Table 13-1 and Figure 13-1.

The dissolution factor for each specimen was calculated via:

$$k = \frac{(m_b - m_a)}{A \Delta t} \quad (0\text{-}1)$$

where:

k = dissolution factor (grams per square centimeters per second [g/cm²/s])

m_b = mass of specimen before testing (grams)

m_a = mass of specimen after testing (grams)

A = vertical dissolution surface area of specimen (square centimeters [cm²])

Δt = dissolution time (seconds).

Sylvite dissolution rates are projected to be maximized when the leach brine is saturated in NaCl and contains 120 gpL KCl, at 60°C. The dissolution of sylvite may be negatively impacted by reducing the brine temperature or recycling elevated levels of potassium back to the leach brine.

The evaluation of other solutes in the brine was not conducted.

Table 13-1. Dissolution Testing Results

Specimen ID	Mass Before (g)	Mass After (g)	Surface Area (cm^2)	Solvent Concentration[(a)] (g KCl/L)	Molarity	XRD Specimen Assay (KCl mass %)	Dissolution Factor ($g/cm^2/s$)
Sage/Potash/2138.87/2674/1	147.4561	145.9421	75.9137	100.0	1.34	59.63	6.6×10^{-5}
Sage/Potash/2144.20/2692/1	140.9934	140.0426	75.4668	100.0	1.34	55.34	4.2×10^{-5}
Sage/Potash/2142.47/2685/1	146.2737	144.9426	76.5459	100.0	1.34	49.96	5.8×10^{-5}
Sage/Potash/2142.22/2684/1	80.0446	79.4742	42.2597	100.0	1.34	48.64	4.5×10^{-5}
Sage/Potash/2143.28/2688/1	134.8181	134.1382	75.1773	100.0	1.34	44.55	3.0×10^{-5}
Sage/Potash/2138.87/2674/2	148.8184	146.0239	75.5678	120.0	1.61	63.76	1.2×10^{-4}
Sage/Potash/2142.26/2684/2	140.1875	137.5124	74.8660	120.0	1.61	56.37	1.2×10^{-4}
Sage/Potash/2142.47/2685/2	145.9645	143.6825	75.8773	120.0	1.61	54.97	1.0×10^{-4}
Sage/Potash/2143.38/2688/2	149.4639	148.2421	78.0065	120.0	1.61	21.66	5.2×10^{-5}
Sage/Potash/2144.31/2692/2	154.7732	154.3726	76.6058	120.0	1.61	1.22	1.7×10^{-5}
Sage/Potash/2142.55/2685/3	136.0408	134.1135	73.4472	140.0	1.88	67.41	8.7×10^{-5}
Sage/Potash/2142.35/2684/3	139.9864	138.4168	76.8487	140.0	1.88	52.70	6.8×10^{-5}
Sage/Potash/2139.92/2674/3	149.7086	148.5221	75.0206	140.0	1.88	47.21	5.3×10^{-5}
Sage/Potash/2143.38/2688/3	140.7691	139.6788	75.6021	140.0	1.88	17.60	4.8×10^{-5}
Sage/Potash/2144.31/2692/3	155.1225	154.9512	75.7690	140.0	1.88	1.80	7.5×10^{-6}
Sage/Potash/2142.55/2685/4	130.4499	129.0642	71.9762	160.0	2.14	66.71	6.4×10^{-5}
Sage/Potash/2142.35/2684/4	157.5579	156.2213	81.7902	160.0	2.14	53.79	5.4×10^{-5}
Sage/Potash/2139.97/2674/4	138.0630	137.7706	72.2339	160.0	2.14	46.83	1.3×10^{-5}
Sage/Potash/2144.40/2692/4	155.9105	155.4247	79.7766	160.0	2.14	17.32	2.0×10^{-5}
Sage/Potash/2143.43/2688/4	138.4564	137.9578	74.6138	160.0	2.14	8.82	2.2×10^{-5}
Sage/Potash/2142.60/2685/5	132.5523	132.3827	70.7965	180.0	2.41	51.41	8.0×10^{-6}
Sage/Potash/2139.97/2674/5	144.4902	144.0661	76.4465	180.0	2.41	47.90	1.8×10^{-5}
Sage/Potash/2142.22/2684/5	86.1865	86.2663	43.5514	180.0	2.41	38.55	-6.1×10^{-6}
Sage/Potash/2143.43/2688/5	147.0218	147.4664	76.0953	180.0	2.41	25.09	-1.9×10^{-5}
Sage/Potash/2144.40/2692/5	158.5290	158.6047	78.8531	180.0	2.41	5.09	-3.2×10^{-6}

g = grams
g KCl/L = grams of potassium chloride per liter

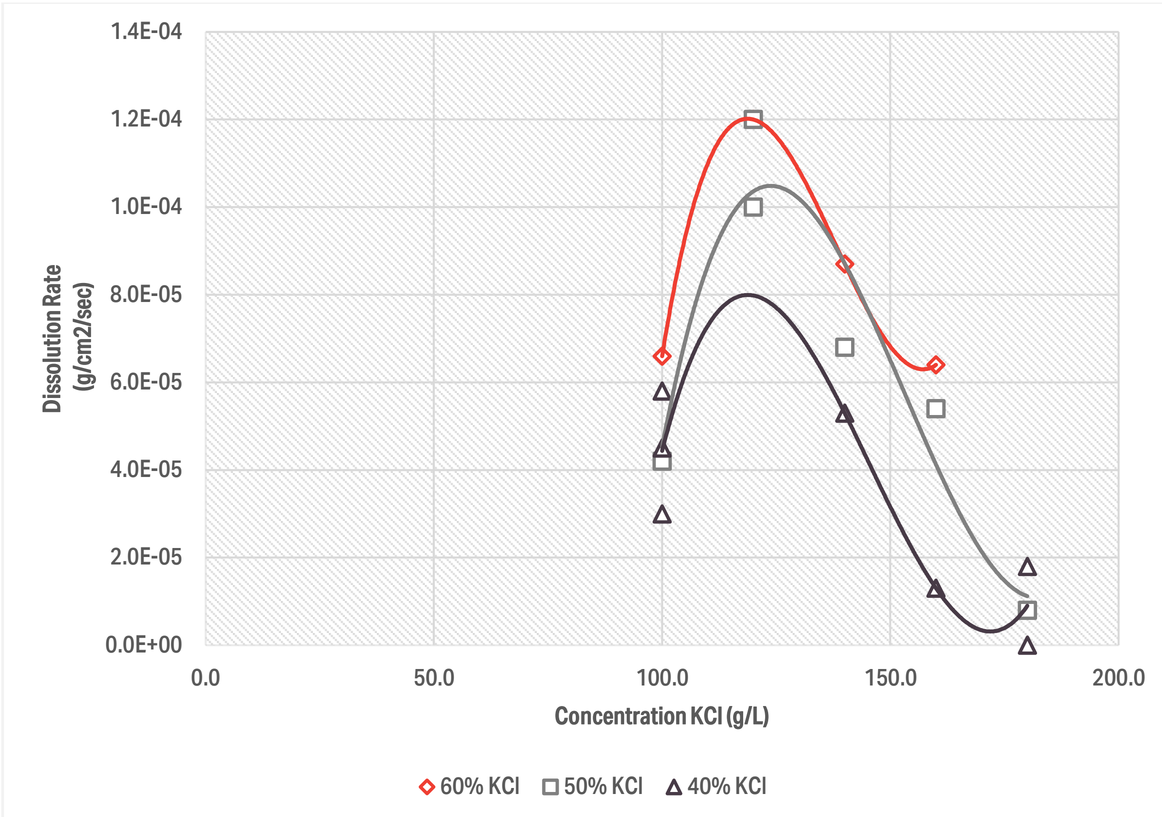

Figure 13-1. Dissolution Rate by Brine Potassium Chloride Concentration.

13.3 SUMMARY

The dissolution study is adequate to support the potash production rates at a PEA level. The efficiencies of the evaporation and crystallizers are assumed at this stage; however, additional metallurgical testing will be needed to define the product characteristics and the various brine components.

14.0 MINERAL RESOURCE ESTIMATES

For the purposes of this report, the Mineral Resource assumes that the recovery of the potash will be by solution mining methods. The depth of the deposit is such that mining using mechanical methods is not practical.

14.1 ASSUMPTIONS AND METHODOLOGY

CIM recognizes that a cut-off may be stratigraphic rather than grade cut-off with the contacts between rock types defining the mining limits. This is particularly true of conventional potash mines, where rock mechanics and safety constraints contribute to what part of a mineralized section is mined. Solution mining operations are less constrained by the occurrence of mud seams or limited by mining machine dimensions to zones of highest grade and stability. Insolubles will largely be left behind as they settle out in the cavern, and the KCl concentration in the return brines will depend on operation practices, such as the introduced brine temperatures and flow rate. Published data on mining methods, room-and-pillar sizes, and extraction rates exist for conventional mines that have had a long, successful operating life and can be referenced when suggesting a conventional mining operation. No such data exist for an operating potash solution mine, and solution mining methods are unique to the site-specific geology, deposit, and resource. Several Technical Reports are available that describe mining methods, cavern sizes, and extraction rates based on rock mechanics modeling; however, whether such designs are appropriate for this project is uncertain.

All cut-off parameters are applied to distinct potash beds. Each of the two potash beds is evaluated as a single unit for each drillhole location. The determinations of parameters are summarized as follows:

- A geological interval was defined based on a review of the core to identify the top and bottom of the mineralized contacts. Further refinements of these intervals were done after the assay results were returned. A 5 percent K_2O grade cut-off was used to delineate the geological boundaries (top and base) of the mineralized section of the potash bed.
- The Potential Quantity Tonnage is defined using a 5 percent K_2O grade cut-off to delineate the geological boundaries, and a thickness range between 10. 5 m (as measured in Western Natural Gas 1 Well) and 7.0 m (as measured in Johnson 1 Well). The grade range is defined as the maximum K_2O grade calculated by GREC in the Western Natural Gas 1 drillhole and a minimum of 5 percent K_2O.
- For estimation of the Mineral Resource and Potential Quantity, the areal extent surrounding a drillhole for which it is reasonable to infer geological continuity is the ROI. For the Johnson 1 Well, an ROI of 0 to 2,400 m was used for the Inferred tonnage, and an ROI of 2,400 to 5,000 m was used for the Potential Quantity Tonnage. No Inferred tonnage was assigned to the Western Natural Gas 1 drillhole; instead, an ROI of 0 to 5,000 m was used for the Potential Quantity Tonnage.
- A 25 percent deduction was applied for undetectable seismic anomalies. ROIs and deductions for unknown geological anomalies were determined by the QPs based on their experience and confidence in the geological continuity of the mineralized horizon.

- At present, carnallite and insolubles from the Johnson 1 Well are very low, and similar values are assumed to be expected at the Western Natural Gas 1 Well location as well.

A Mineral Resource estimate is a volume of rock at a specific grade. The volume (tonnage) calculation uses the density of the rock, thickness, and area. Density used for this project is the density of sylvinite (2.08 t/m^3). Thickness is determined from the geologic model, and areas are determined in a phased deduction process. The following is a summary of assumptions and methodologies used to estimate the thickness and area of the Mineral Resource estimate. The Polygon Method of Resource estimation method was used.

14.1.1 STEP 1: DEFINE BEDS

The following data were used to compile the geological model:

- Data for bed thickness and orientation:
  - Drillhole collar locations
  - Downhole geophysical surveys (directional surveys) to confirm a vertical borehole
  - Detailed geological interpretations for the definition of bed boundaries used in the geological model (core descriptions were already corrected to wireline log depths and confirmed with assay results)
- Drillhole assay data, which are the source of all grade values stated in the Mineral Resource estimate.

14.1.2 STEP 2: DETERMINE AREA USED IN THE MINERAL RESOURCE ESTIMATE

The area used in the Mineral Resource estimate is developed in the following manner, as illustrated in Figure 14-1:

- Draw ROI around each drillhole.
  - Inferred Resource: 0 to 2,400 m for the Upper and Lower Potash Bed in the Johnson 1 Well
  - Potential Quantity: 0 to 5,000 m for the Upper Potash Bed in the Western Natural Gas 1 Well drillhole; 2,400 to 5,000 m for the Upper Potash Bed in the Johnson 1 Well
- Deduct lands not included in the Property.
- Deduct known anomalies.
- Apply a 25 percent deduction for unknown seismic anomalies.

14.2 MINERAL RESOURCE

At this time, Inferred Resources are reported for the Cycle 18 Upper and Lower Potash Beds for the Johnson 1 Well, and a Potential Quantity Tonnage is reported for the Cycle 18 Upper Potash Bed for the Western Natural Gas 1 and Johnson 1 Wells, as listed in Table 14-1. The main parameters and deductions included in the Mineral Resource estimate are listed as footnotes to the Resource summary in Table 14-1.

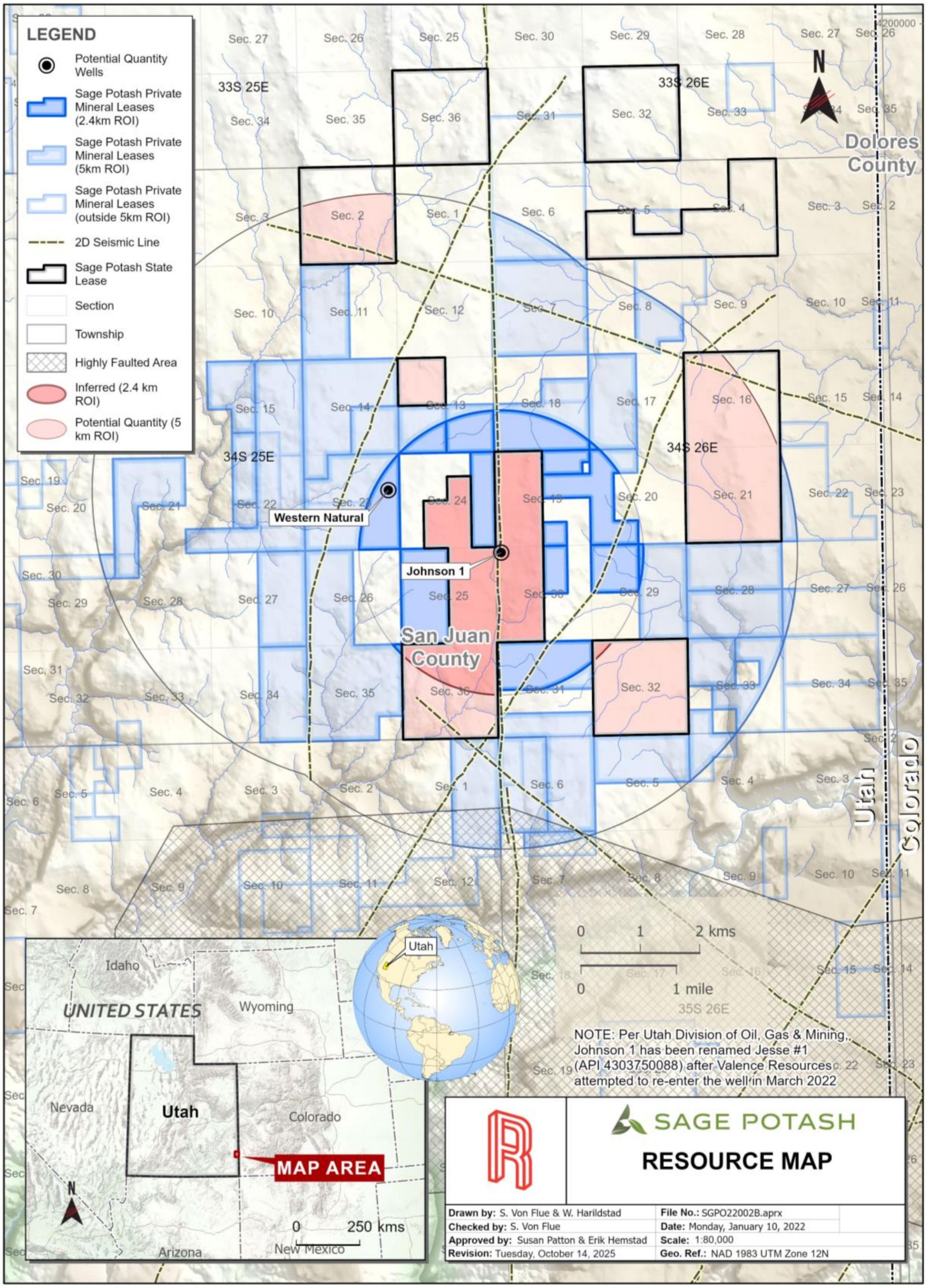

Figure 14-1. Resource and Potential Quantity Estimation Area.

Table 14-1. Resource Estimation Summary (Effective Date September 8, 2025)

Cycle 18 Member	Area With Exclusions (km^2)	Thickness (m)	Weighted Average K_2O Grade (percent)	Weighted Average KCl Grade (percent)	Weighted Average Carnallite Content (percent)	Weighted Average Insoluble Content (percent)	In-Place Sylvinite Tonnage (MMT)[a,b,c]	Gross K_2O Tonnage (MMT)[a,b,c]
Inferred Mineral Resources[d]								
Upper Potash Bed	11.25	7.26	29.11	46.07	0.01	0.56	169.9	45.8
Inferred Mineral Resources[e]								
Lower Potash Bed[f]	11.25	5.48	22.60	35.77	N/A	N/A	128.2	29.0
Potential Quantities[g]								
Upper Potash Bed (Johnson 1 Well)	35.1	6.3–7.3	25.2–29.1	39.8–46.1	0.00–0.07	0.30–1.00	459.9–530.0	128.6–142.9
Upper Potash Bed (Western Natural Gas 1)[h]	7.47	6.3–10.7	5.0–17.0	7.9–26.9	N/A	N/A	97.9–166.3	4.9–28.3

(a) Density of sylvinite = 2,080 t/m^3
(b) In-place sylvinite is calculated based on area × thickness × density.
(c) Gross Resource is based on 100 percent extraction ratio and 0 percent plant loss with deduction for unknown seismic anomalies of 25 percent.
(d) Inferred Resource ROI is 0–2,400 m.
(e) Upper Potash Bed Inferred Resource uses a 5percent K_2O bed cut-off to define the upper and lower contacts.
(f) K_2O from wireline logs are from GREC.
(g) Potential Quantity ROI is 0–5,000 m for Western Natural Gas 1 Well and 2,400–5,000 m for Johnson 1 Well.
(h) Potential quantities for Cycle 18 Upper Potash Bed (Western Natural Gas 1 Well) were estimated from GREC using a range between a minimum thickness based on Johnson 1 Well and a maximum thickness as seen in the Western Natural Gas 1 Well.

Note: The reader is cautioned that the Mineral Resource Tonnage (not considering the addition of any new geological data) will decrease as the project progresses. There is no guarantee that Inferred Mineral Resources will be upgraded to indicated or measured categories. For example, mining parameters such as extraction ratio and refined economic cut-off grades (Modifying Factors) are expected outputs from future engineering studies at which time an updated Mineral Resource estimate will be completed. At this time no Modifying Factors have been applied to the Mineral Resource estimate.

14.3 MINERAL RESOURCES DISCUSSION

The reliability of drillhole data for this Project Area is evaluated in Sections 10 and 11. The authors of this TR believe the data collected from the Johnson 1 Well are of acceptable quality and reliability for use in a Mineral Resource estimation. The authors have confidence in the Resource classification using one recent well and one historical well because the Paradox Basin is very well explored with published maps of the high-grade potash beds and the 2D seismic showed bedding continuity. There may, however, be local disruptions of the deposit, either structural or mineralogical, which have been accounted for in the 25 percent reduction in the estimate.

Data from the Western Natural Gas 1 drillhole are not of sufficient quality to be used in the Mineral Resource estimation; therefore, a Potential Quantity Tonnage has been assigned to that well. Furthermore, the drillhole density in the Project Area is sparse and limits confidence in the geologic continuity across the area.

14.3.1 CYCLE 18 UPPER POTASH BED

The Cycle 18 Upper Potash Bed in the Project Area appears to be continuous. As shown in the Project Area cross section in Appendix D, the Upper Bed can be traced from the Coal Bed Canyon drillhole in the southeast to the Western Natural Gas 1 drillhole in the northwest. This bed is also present over 50 km away in the Evelyn Chambers drillhole.

After review and examination of the results from the individual drillholes, the Upper Potash Bed at the Johnson 1 Well was to determined to have sufficient evidence for continuity of thickness and grade to be classified as an Inferred Resource with an ROI from the drillhole center to a radius of 2,400 m. The cored section assays within the Upper Potash Bed reveal the absence of carnallite and insolubles, which is positive when planning a potash project.

14.3.2 CYCLE 18 LOWER POTASH BED

The continuity of the Cycle 18 Lower Potash Bed needs to be further investigated in the Project Area with additional exploration drillholes. The Cycle 18 Lower Potash Bed was present in Johnson 1 Well but is not seen in the Western Natural Gas 1 Well drillhole just over 2 km away. At this time, this bed has been classified as an Inferred Resource with an ROI from the Johnson 1 Well drillhole center to a radius of 2,400 m.

14.3.3 WESTERN NATURAL GAS 1 WELL DISCUSSION

The Western Natural Gas 1 Well was drilled in 1948 and is the only historical well within the Project Area for which public data are available. The wireline logs are of poor quality and do not have useful scales. The lack of scale on the gamma-ray curve is unfortunate because an accurate GREC cannot be completed for this well.

For the authors to have confidence in using this well in the Resource estimation as a Potential Quantity Tonnage, the wireline gamma signature from this drillhole was compared to several other drillholes of the same vintage in the surrounding area. From this review, the scale for the gamma ray was determined to likely be 0–10 radium equivalent per ton (Ra-eq/ton). Based on this assumption and the conversion used by Chapman [1983], a percent K_2O was calculated as follows: Where the gamma-ray log was presented in Micrograms Ra-eq/ton, it is converted to API by multiplying the value by 16.5. The API was then converted to a percent K_2O by multiplying the API values by 0.0955 as used by Hite [1978b].

Note: The reader is cautioned that this is not a precise method and should not be considered an accurate estimation of the K_2O *content. See Chapter 12.0 for further discussion on the GREC.*

14.4 POTENTIAL RISKS OR MATERIAL CHANGES TO THE MINERAL RESOURCE

14.4.1 MINE PARAMETERS

Detailed mine design could negatively affect the Mineral Resources in that:

- Rock mechanical property testing is required to determine to what extent the depth to the deposit may or may not limit the cavern design.
- Dipping beds are not desirable for solution mining because it limits the cavern size. The Project Area appears to be relatively flat lying, but complex structures have been identified to the south.

14.4.2 OTHER RISKS

The following factors could influence the Mineral Resources:

- Fluctuations of price or market conditions for potash would change economic cut-offs.
- Further exploration efforts, such as drilling or seismic, would add confidence to the geologic model and may expand or reduce the Mineral Resources, depending on the results.

15.0 MINERAL RESERVE ESTIMATES

This section is not included at this time because of limited confirmation drilling.

16.0 MINING METHODS

16.1 DESIGN CRITERIA

The primary design consideration for solution mining is the contact surface area between the dissolution brine and the sylvinite. The parameters of interest in optimizing production by solution mining are flow rate, temperature, pressure, dissolution solvent and production-brine composition, cavern size, bed thickness, in situ grades, and mineral solubility. The production of potash product per year is managed by introducing caverns and managing the wellfield to provide the necessary feed to the surface plant for processing.

16.2 PRELIMINARY GEOTECHNICAL ASSESSMENT

Sage Potash plans to develop caverns to initiate solution mining of the sylvinite ore from the Upper and Lower Potash Bed 18. The core logging of the Johnson 1 Well identified the Upper Potash Bed 18 at a depth of 2,137 m below ground surface (bgs). The proposed plan for cavern development involves a 4-m-high sump with a 2-m-high undercut to serve as a repository for insoluble materials. Caverns of 137- to 150-m diameter are planned to develop over successive vertical lifts of 1.8 m in height every year, cumulating to a total height of 13 m.

To assess the geomechanical stability of the proposed caverns and surrounding rock and identify potential factors influencing its long-term stability, RESPEC performed a preliminary geomechanical study and numerically simulated the sump and pilot cavern using the 3D finite difference program FLAC3D. Numerical modeling has proven to be an effective and efficient tool; however, the key to success in these high-quality numerical modeling studies is to accurately represent the field conditions because the accuracy of the predicted behavior upon which future decisions are made will only be as good as the available data, such as key stratigraphic layers, in situ conditions, in situ rock mass properties, and material behavior models of key rock layers.

RESPEC developed the simplified stratigraphy of the modeling domain using the core logging data, sonic density logs from the Johnson 1 Well, and publicly available information about the stratigraphy in the region [Massoth and Tripp, 2011]. From the surface to a depth of approximately 1,798 m, predominant rock layers are sandstone, shale, limestone, and siltstone, followed by the alternating cycle of salt and shale in the Paradox Formation up to the top of the Upper Potash Bed. The site-specific data for the rock mass properties were unavailable at the current stage of the project; therefore, RESPEC performed an extensive review of publicly available literature to determine the elastic properties, and strength parameters of hard rocks (e.g., sandstone, shale, limestone) and evaporites (e.g., salt, sylvinite) [Pfeifle et al., 1983; Vining and Nopola, 2014]. In this study, hard rocks are simulated as elastic-plastic material, which undergoes elastic deformation until the applied stress exceeds the strength, and hard rocks experience brittle failure. Deformation in the evaporites consists of thermal expansion, elastic deformation, and inelastic deformation; therefore, evaporites are simulated as visco-plastic material. Evaporites cannot resist the shear stress and, therefore, respond in two time-dependent deformation processes: creep and dilation. Creep is a damage-free process in which evaporites deform under stress while maintaining a constant volume. In dilation, evaporites progressively lose strength as microfractures form, grow, and coalesce within the crystalline structure

[Allen et al., 1998]. Unlike brittle failure in hard rock, dilation does not result in the immediate loss of load-bearing capacity; rather, the damage progresses at a rate dependent upon the magnitude of shear stress. Because site-specific data were unavailable to define the deformation characteristics of the evaporites, the current study relied on publicly available data. The salt creep rate and stress-and-temperature dependency were assumed to be an order of magnitude smaller than Munson's "hard salt," and the potash was assigned a stress-and-temperature dependency similar to Munson's "soft salt" [Munson, 1998].

To represent the sequencing of the proposed solution mining process, the numerical simulation included the sequential excavation of the sump and cavern, presuming the operating wellhead pressure of 0.7 megapascal (MPa) with a freshwater gradient of 3.45 kilopascals at the casing seat depth. The numerical model predicted stresses and displacements were assessed based on the conditions that RESPEC believes to be the most impactful to the geomechanical stability of the cavern, such as (1) stability of the overlying hard rocks, (2) stability of the salt and potash, (3) potential for tensile fracturing, (4) displacement of the cavern roof and volumetric cavern closure, and (5) surface subsidence. To analyze the stability of the hard rocks, RESPEC used the Mohr-Coulomb failure criterion. For evaporites, RESPEC Dilation criterion [DeVries et al., 2005] was used to define the potential for salt and potash dilation. The laboratory data were unavailable to develop a site-specific failure envelope for hard rocks and determine the dilation boundary of salt and potash. Because the study relied on the publicly available literature for these parameters, RESPEC performed a sensitivity analysis on the strength properties of surrounding rocks to analyze the geomechanical stability of the pilot cavern [Pfeifle et al., 1983; Goodman, 1980; Roberts et al., 2015]. The major findings of the study were:

- In the hard rocks near the cavern roof, the predicted stress conditions are approaching the rock strength but are less than the assumed strengths, which implies that failure is unlikely if the site-specific strength properties do not significantly deviate from the properties assumed in this study.
- At the mean values of the dilation boundary of the bedded salt, the predicted stress conditions in salt and potash are smaller than the dilation strength and indicate the competency of salt and potash to support the overburden load after solution mining. However, at the minimum values of the dilation boundary, significant dilatant conditions are predicted in the Upper Potash Bed and salt bed between the Upper and Lower Potash Bed. In the roof salt, dilatant conditions extend up to a height of 250 ft. The predicted dilatant conditions in the evaporites also pose a risk to the predicted stability of the hard rocks (e.g., shale).
- Depending on the wellhead pressure, in 50 years, the differential vertical displacement across the immediate salt back was approximately 0.84 m. The largest displacement is predicted at the center of the cavern with an overall cavern closure of approximately 50 percent by volume, which is a significant reduction in the cavern volume. Because of the predicted cavern closure, the surface subsidence is approximately 20 cm.
- The magnitude of least-compressive principal stress surrounding the cavern remained compressive, which does not indicate the potential of tensile fracturing in the immediate salt back, potash, or hard rocks. These results suggested that the potential for roof instabilities to develop from tensile stresses is limited.

This study relied heavily on the publicly available geotechnical data, sump and cavern geometry, and the assumed operating conditions. Some uncertainty exists regarding the assumed material properties for hard rocks and evaporites, which is typical for projects at this stage.

RESPEC believes that the assumed properties result in conservative behavior with respect to potential instabilities. RESPEC envisions that developing site-specific properties based on the laboratory testing results will increase confidence in the numerical modeling of the initial cavern and may also help identify the feasible upside opportunities. The current study focused on the geomechanical stability of a single cavern solution mining sylvinite from the Upper Potash Bed only. In the future, Sage Potash plans to develop a cavern field with dual-well caverns solution mining the sylvinite from the Upper and Lower Potash Bed; therefore, RESPEC also recommends an additional geomechanical study to analyze the stability of the dual caverns and the separation pillars when site-specific geomechanical data are available.

16.3 CAVERN GROWTH MODELING

Cavern growth modeling will occur after geomechanical data collection, testing, and modeling is complete.

16.4 PRELIMINARY HYDROGEOLOGICAL INJECTION WELL ASSESSMENT

The processing system will occasionally need to be purged to eliminate the buildup of compounds such as magnesium chloride (MgCl) that interfere with recovery. The purge is expected to be disposed of by injection at depth into the Leadville Formation.

As a preliminary evaluation of the injection horizon disposal pressure regime, an aquifer test analysis model was built using AQTESOLV Aquifer Test Analysis with publicly available data. Detailed site-specific data are needed to design the injection well, which can only be gathered through an exploration and testing program.

16.4.1 DISPOSAL WELL INTO THE LEADVILLE FORMATION

The following input parameters were utilized in the initial model; as exploration continues, assumed values are to be updated:

- An injection rate of 0.17 m^3/min was selected.
- Average permeabilities sourced from the Utah Geological Survey [2009] document are 22 millidarcies and 13 millidarcies.
  - The permeability was converted to a hydraulic conductivity equivalent (6.55 × 10-6 cm/s and 3.87 × 10-6 cm/s) with the assumption that brackish formation water was used in the determination of the permeability values.
  - Hydraulic conductivity was converted to transmissivity using the length of the perforated section of the proposed disposal well (91 m) as the saturated thickness.
  - The resulting transmissivity values are 0.060 cm^2/s and 0.035 cm^2/s.

- No storativity values were reported publicly, value range from AQTESOLV for confined aquifers of 5×10^{-5} to 5×10^{-3} (unitless).
- Drawdown relationship distance is time dependent, 5 years and 50 years points in time.

For each of the three unknown parameters (transmissivity, storativity, and time), the assumed values were used to bracket high and low (or short and long), and every combination of the bracketed extremes were run to evaluate the range of estimated outcomes.

16.4.2 MODEL FINDINGS SUMMARY

For each combination, the model calculated the displacement at the disposal well (which can be converted to a pressure), radial distances of a given pressure impact (i.e., <1 MPa, <0.1 MPa), and ROI, where theoretically the injection has no pressure impact beyond [Bear, 1979]. The results of the preliminary model findings are summarized in Table 16-1. Two additional checks were then conducted—displacements relative to the surface and the pressure gradient.

16.4.2.1 DISPLACEMENTS RELATIVE TO THE SURFACE

To verify the displacements relative to the surface, the top of formation depth, equating to 370 m, was added to the formation pressure head. At this level, pressurized fluid from the Leadville Formation would equilibrate in the disposal well tubing if no injection activity were to be conducted. This verification was followed up by adding the pressure head of 370 m bgs to the modeled displacements to check the pressure heads for each combination. This check found that the pressure heads for all combinations modeled would be from 355 m to 1,245 m above the surface. This indicates that gravity flow would not be possible for injection rate modeled. The disposal fluid gradient is 0.0123 MPa/m, as shown in Table 16-2.

16.4.2.2 PRESSURE GRADIENT

To further understand the pressure at the wellhead, the equivalent pressure required to lower the pressure head to the ground surface was found to be between 4.5 and 15.3 MPa, as shown in Table 16-3. This is less than the equivalent pressure column because the 370 m elevation difference below the surface decreases the fluid column height that needs to be pressured below the surface, as shown in Table 16-4.

To assess the pressure gradient, the total pressure, the sum of the formation pressure [26 MPa] and the maximum modeled disposal pressure [17 MPa], was divided by the depth to the top of the formation 2,484 m (8,150 ft). The resultant gradient is 0.77 pound per square inch (psi) per foot, which is less than the assumed fracture gradient of 1 psi/ft.

Table 16-1. Preliminary Model Results

Time (years)	Properties		At Disposal Well							
	Storativity[a]	Transmissivity[b] (cm^2/sec)	Displacement (m)	Equivalent Pressure Impact (MPa)	Radial Distance Impact <1.0 MPa (km)	Radial Distance Impact <0.1 MPa (km)	Radius of Influence[c] (km)	Time	Storativity	Transmissivity
5	5.00x10^{-3}	0.060	725	8	0.20	0.8	0.7	Short	High	High
	5.00x10^{-3}	0.035	1,190	13	0.26	0.8	0.5	Short	High	Low
	5.00x10^{-5}	0.060	900	10	2.0	8.4	6.5	Short	Low	High
	5.00x10^{-5}	0.035	1,480	16	2.6	7.5	5.0	Short	Low	Low
50	5.00x10^{-3}	0.060	810	9	0.62	2.7	2.1	Long	High	High
	5.00x10^{-3}	0.035	1,325	14	0.82	2.4	1.6	Long	High	Low
	5.00x10^{-5}	0.060	980	11	6.2	27	21	Long	Low	High
	5.00x10^{-5}	0.035	1,615	17	8.2	24	16	Long	Low	Low

Pressure gradient of 0.0108 MPa/meter

(a) Storativity: assumed range of AQTESOLV stated typical range for confined aquifers.

(b) Transmissivity: assumed from conversion of “average” permeability values stated in this document [Utah Geological Survey, 2009]

(c) ROI sourced from Bear [1979]

Table 16-2. Displacements Relative to Surface

Top of Formation		Formation		Disposal
Distance Below Surface (m)	Pressure (MPa)	Distance to Top of Formation (m)	Distance Below Surface (m)	Fluid Gradient (MPa/m)
2,484	26	2,114	370	0.0123

Table 16-3. Pressure Head Check

Modeled Displacement (m)	Combined Pressure Head Above Ground Surface (m)	Equivalent Pressure Above Surface (MPa)
725	355	4.4
1,615	1,245	15.3

Table 16-4. Pressure Gradient Verification

Total Pressure (MPa)	Total Length (m)	Pressure Gradient (MPa/m)	Total Pressure (psi)	Total Length (ft)	Pressure Gradient (psi/ft)
43.4	2,484	0.0175	6,295	8,150	0.772

16.5 SOLUTION MINING DESIGN

NaCl-saturated brine with minimal KCl is injected into the sylvinite bed. The NaCl-saturated brine preferentially dissolves the KCl and leaves the NaCl matrix in place. This NaCl- and KCl-saturated brine is pumped to the surface for the recovery of the KCl.

16.6 CAVERN AND WELLFIELD LAYOUT

During the first stage of production (80 ktpy), the project will test a single production well, denoted as "A01," and a single disposal well, along with six dual-well caverns. These seven caverns (six dual wells on Pad 1 and one single well on Pad A) are expected to meet the target production of 80 ktpy in Year 1.

These seven caverns will be drilled in Year 0 (2026) and will start producing at half capacity in Year 1 (2027). The wells will mature to meet a production target of 150 ktpy in Year 2. Additional caverns will need to be drilled from Year 2 onward to meet the annual production goal of 300 ktpy in Year 3 onward. Cavern scheduling will include some spares for operational flexibility. The cavern schedule was optimized to meet the production target while minimizing the number of caverns needed and limiting the size of the stockpile.

The cavern layout is based on current information about the geology (strike/dip of the potash) and will change once more exploration data are collected. The long axes of the caverns are placed as close as possible to the strike direction, perpendicular to the dip direction, while maximizing the cavern footprints on the leases. An east to west orientation was chosen initially, but this may change with new data.

Excluding the cavern that is serviced by the initial test production well, all caverns will have a dedicated injection well and a separate dedicated extraction well. Figure 16-1 provides an overview of a possible cavern and wellfield layout. Offsets from Property lines and pillars are determined from site-specific geotechnical testing. The well pad and cavern layouts are proposed at this time; actual field conditions may vary. Table 16-5 lists the preliminary cavern design criteria.

16.7 CAVERN PERFORMANCE AND PRODUCTION SCHEDULE

The target cavern production schedule is shown by pad in Figure 16-2 and is listed in Table 16-6.

16.8 WELL DRILLING

The wells are drilled to create the caverns in pairs, timed to align with the multiyear production plan. Wells are drilled and the cavern buildout process begins the year before the anticipated production of the product. The dual-well caverns are laid out with separation pillars to maintain geotechnical stability. The section view of the cavern-drilling profiles for typical well pads is shown in Figure 16-3.

16.8.1 PRODUCTION WELL

The initial production well, approved under the Class V Authorization by Rule, will be designed and constructed according to the standards and specifications of an Underground Injection Control (UIC) Class III production well. When the necessary data have been gathered, the well will be temporarily abandoned until a UIC Class III permit has been granted, at which point the well will be transitioned into a reinjection well for production of potash brine fluids in support of a potash production facility. The location will be approximately 20 km east of Monticello, Utah, at NAD83, UTM Zone 12N N 4186137.089, E 665718.827, Section 19, T34S, R26E, San Juan County, Utah.

Before moving in the drill rig, a bucket drill will drill a 30-inch-diameter conductor hole to 80 ft or until competent material is encountered. A 20-inch-diameter welded conductor casing will be installed and cemented to the surface with a Portland Type I/II Redi-Mix cement. A 72-inch-diameter corrugated galvanized steel cellar will be set from 4 ft to the surface and have a 4-inch-thick cement floor. A 17.5-inch hole will be drilled and logged from the surface to 1,400 ft, followed by a 13.375-inch surface casing and cement. A 12.25-inch hole will be drilled and logged from 1,400 to 5,900 ft, followed by a 9.625-inch intermediate casing. An 8.5-inch hole will be drilled and logged from 5,900 to 7,100 ft, followed by a 7.0-inch production casing. A 6.125-inch hole will be drilled from 7,100 to 7,120 ft TD, followed by a 5.5-inch leach string and sump development, as illustrated in Figure 16-4.

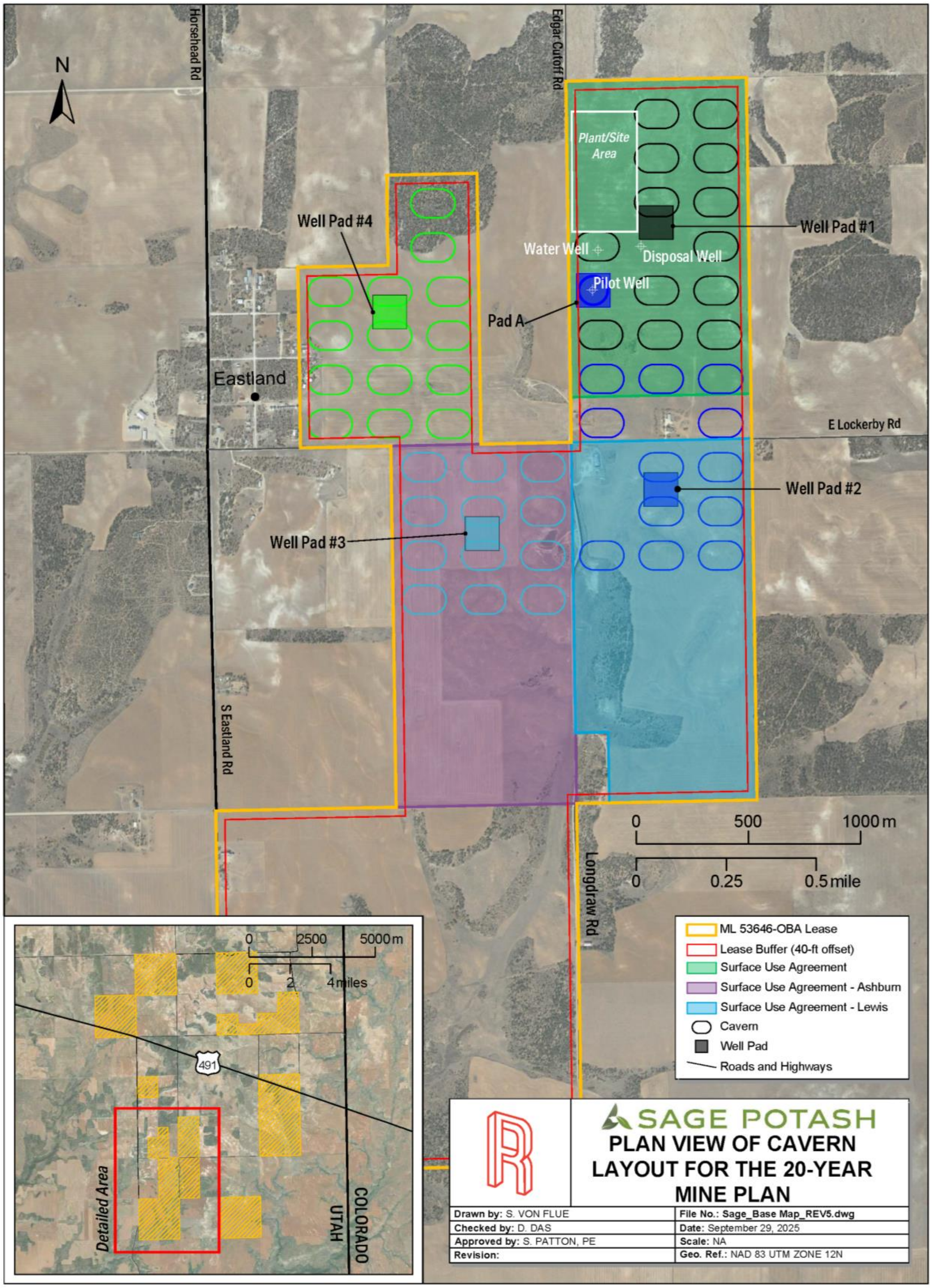

Figure 16-1. Proposed Well and Cavern Layout.

Table 16-5. Preliminary Vertical Solution Cavern Design Criteria

Geometry	Units	Large Dual (pair)
Cavern Radius/Half Width	m	75
Well Spacing/Cavern Length	m	80
Total Mining Height of Potash	m	13
Primary Mining Percentage	%	71
Diameter of Sump	m	30
Height of Sump	m	4
Maximum Height of Undercut	m	2
Cavern Roof Area	m^2	29,671
Cavern Wall Area	m^2	8,080
Total Contact Area	m^2	37,751
KCl Grade	%	36
NaCl Grade	%	61
Insoluble Content	%	3
Wellfield Operation Parameters		
Injection Solvent Temperature (primary mining)	°C	60
Cavern-Brine Temperature (primary mining)	°C	55
Production-Brine Temperature (primary mining)	°C	52
Cavern Recovery Ratio	%	77
MOP(K62) Production Per Year per Cavern	tonnes	26,991
Wellfield and Plant Annual Operation Hours	hr/yr	8,000
MOP(K62) Product KCl Content	%	98
Plant Recovery Ratio	%	90.5
Wellfield Operation Parameters		
Required Cavern KCl Production Per Year	tpy	325,193
Number of Caverns in Operation Per Year for Primary Mining		4
Number of Wells Replaced per Year for Primary Mining		4.2

m^2 = square meters

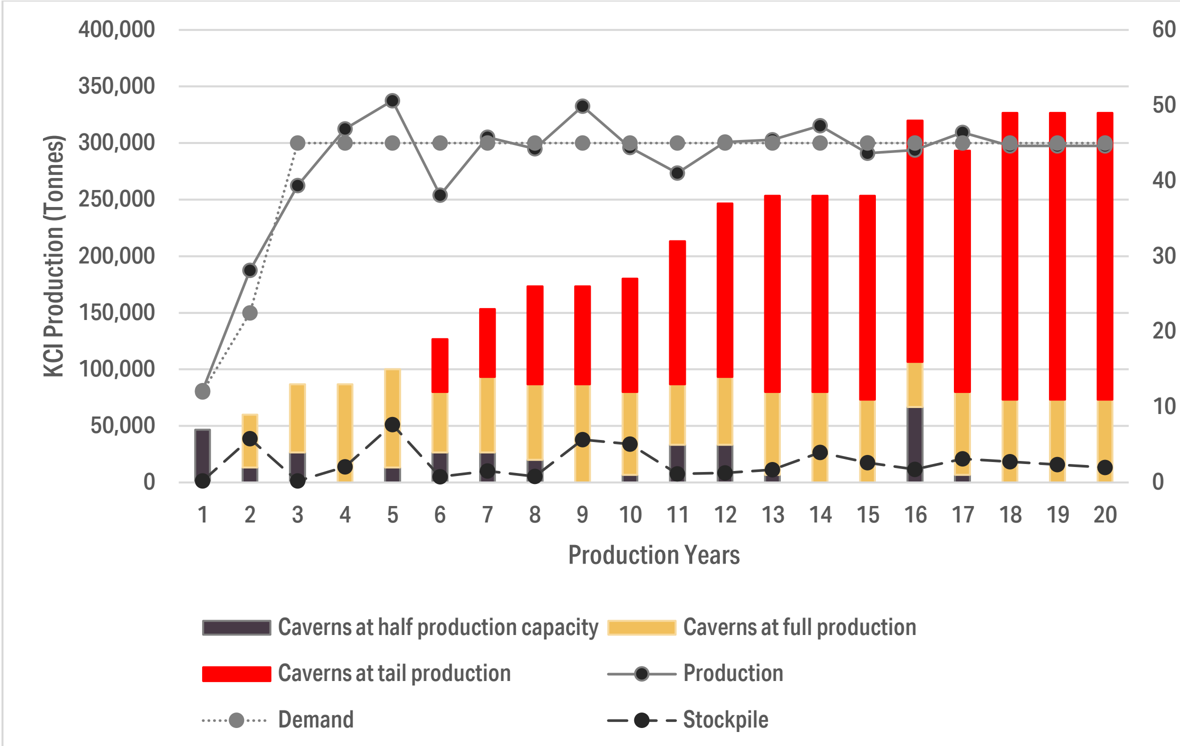

Figure 16-2. 20-Year Cavern Scheduling.

Table 16-6. Cavern Production Tonnage

Pad	Caverns	Size	KCl Tonnes	Total Tonnes
A	1	small	61,650	61,650
1	12	small	123,300	1,479,600
2	12	small	120,450	1,445,400
3	14	small	117,514	1,645,200
4	12	small	114,300	1,371,600
	51			6,003,450

16.8.2 DISPOSAL WELL

The initial disposal well, approved under the Class V Authorization by Rule, will be designed and constructed according to the standards and specifications of a UIC Class I disposal well. When the necessary data have been gathered, the well will be temporarily abandoned until a UIC Class I permit has been granted, at which point the well will be transitioned into a reinjection well for disposal of potash brine fluids in support of a potash production facility. The well will be drilled and completed using conventional drilling equipment to a depth that will be adequate to receive sufficient reinjection quantities from the solution mining process. Potential reinjection zones have been identified on historical resistivity and drillers' logs. Reinjection zones were observed within the Leadville Formation. The TD at the top of the Leadville Formation is approximately 2,492 m (8,150 ft) at the proposed well location. The design TD is approximately 2,584 m (8,450 ft). The location will be approximately 32 km

(20 mi) east of Monticello, Utah, at NAD83, UTM Zone 12N N 4186168.755, E 665714.699, Section 19, T34S, R26E, San Juan County, Utah. The proposed drilling pad will be 400 ft by 400 ft and accessed by maintained county roads. The ground level elevation is 6,821 ft above sea level.

Before moving in the drill rig, a bucket drill will drill a 30-inch-diameter conductor hole to 80 ft or until competent material is encountered. A 20-inch-diameter welded conductor casing will be installed and cemented to the surface with a Portland Type I/II Redi-Mix cement. A 72-inch-diameter corrugated galvanized steel cellar will be set from 4 ft to the surface and have a 4-inch-thick cement floor.

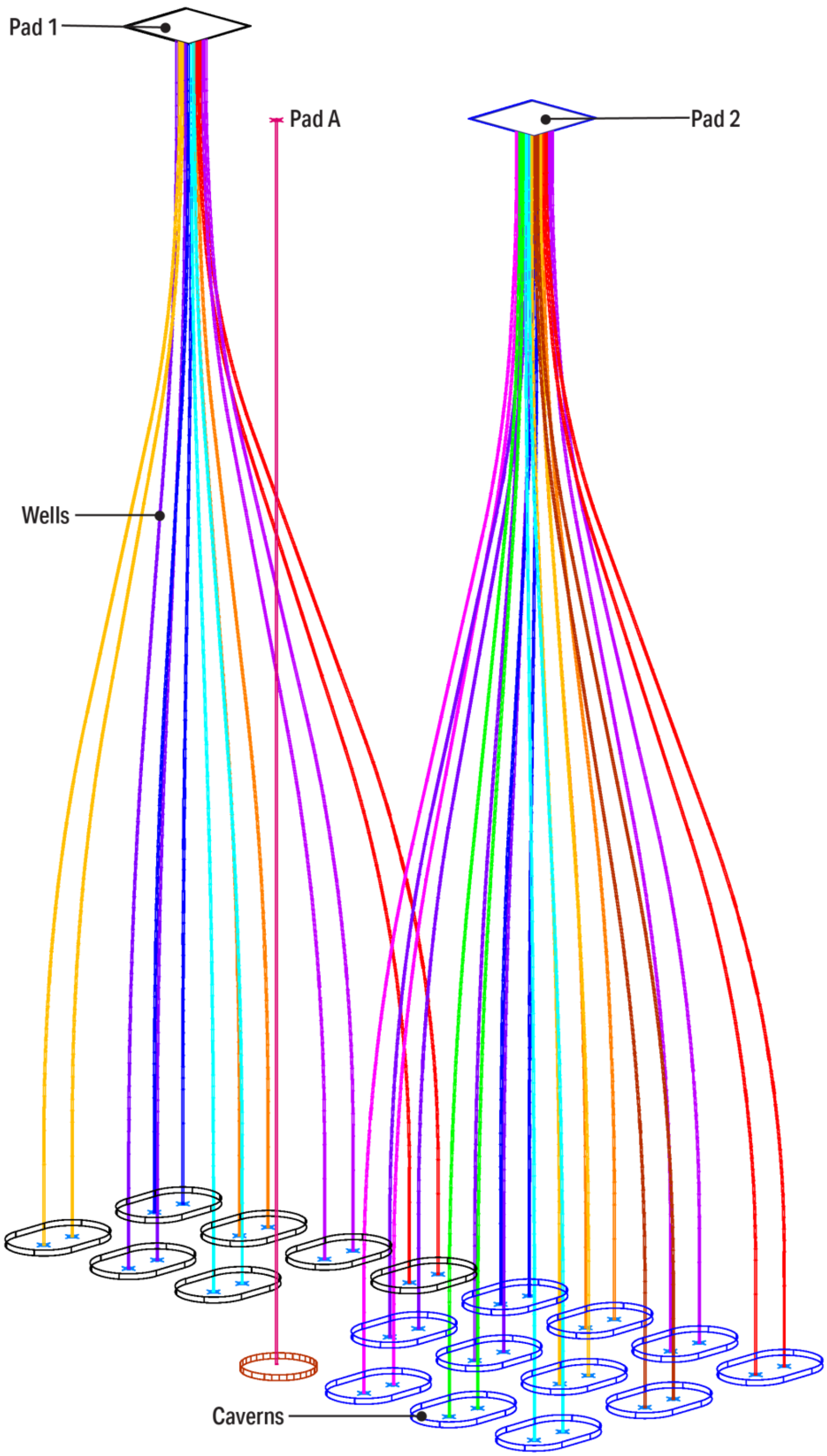

Figure 16-3. Well Pad Cavern Section Layout Showing Directional Drilling Profiles.

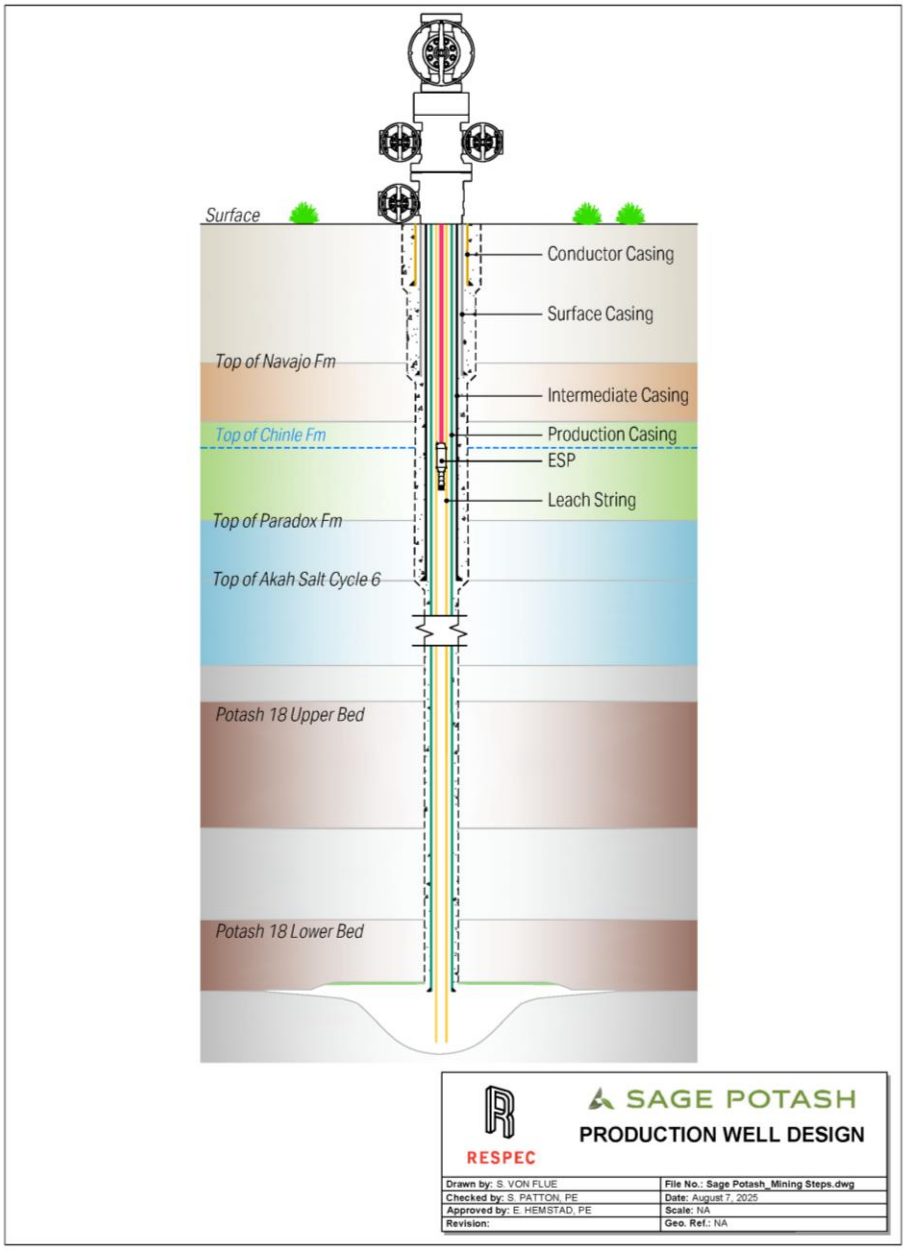

Figure 16-4. Single Production Well.

A 17.5-inch hole will be drilled and logged from the surface to 1,400 ft, followed by a 13.375-inch surface casing and cement. A 10.625-inch hole will be drilled and logged from 1,400 to 5,900 ft, followed by an 8.625-inch intermediate 1 casing. A 7.5-inch hole will be drilled and logged from 5,900 to 8,150 ft, followed by a 5.5-inch intermediate 2 casing. A 5.5-inch hole will be drilled from 7,100 to 8,450 ft TD, followed by 3.5-inch injection tubing, as illustrated in Figure 16-5.

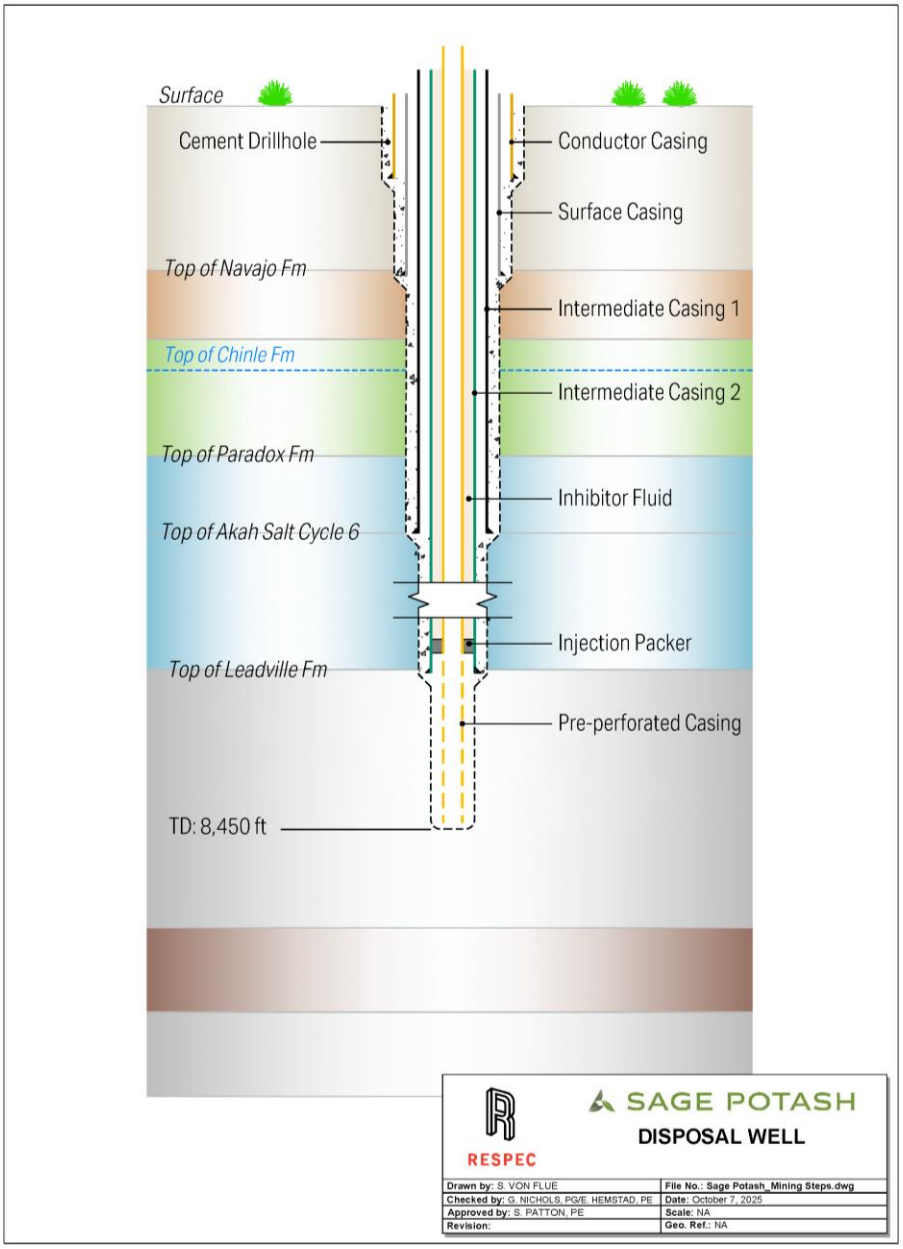

Figure 16-5. Disposal Well Diagram.

17.0 RECOVERY METHODS

Potash, like many industrial minerals, is sold on a chemical composition and size distribution specification. Mineral processing for the recovery of potash (KCl) from sylvinite ore (KCl and NaCl) is a well-established practice. The sylvinite ore is predominantly water-soluble NaCl and KCl with minimal insoluble or carnallite.

17.1 INTRODUCTION

The proposed potash processing plant is designed to produce up to 300,000 tonnes of potash annually, based on the overall wellfield development, and two different standard products—crystal granular and white standard. The processing plant is scheduled to operate at up to 8,000 hours per year. The general site layout is included in Figure 17-1.

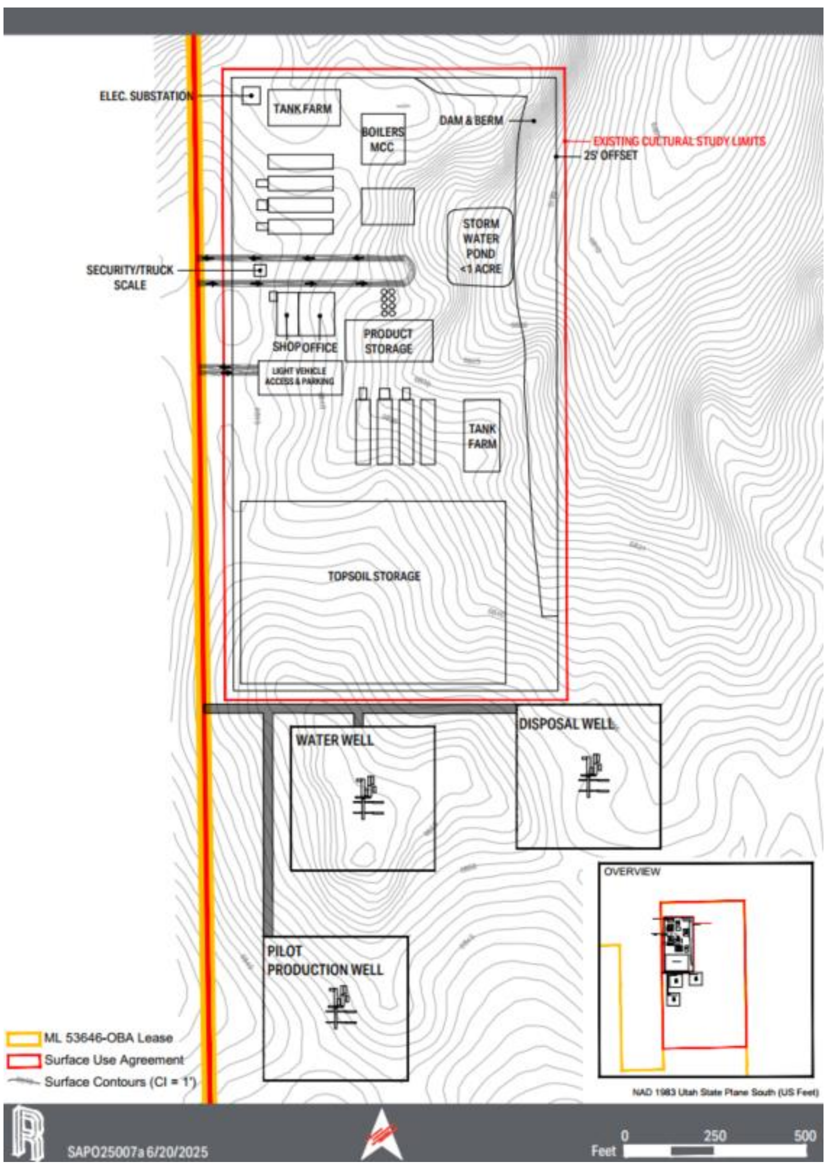

Figure 17-1. General Plant Layout.

17.2 PRELIMINARY PROCESS DESIGN CRITERIA

Mechanical evaporation is the recovery method that will be used to recover KCl for the Project. The recovery method was determined based on 300,000 mt/a (331,000 tons/a) of potash product. The basis of the mineral processing design is listed in Table 17-1.

Table 17-1. Basis of Processing Design

Product Criteria	Units	Nominal
General		
Annual KCl Capacity	mt/a	300,000
Product Grade	% KCl	98
Plant Recovery	%	95
Plant Availability	%	91
Plant Operating Hours	Hrs	8,000
Brine Feed Characteristics		
Feed Grade		
KCl	%	12.4%
NaCl	%	19.4%
H_2O	%	68.2%
Temperature	°C	50
Production Rates		
Crystal Granular	mt/a	150,000
White Standard	mt/a	150,000

17.3 PROCESS FLOW SHEET

The flowsheet is a conventional evaporation and crystallization design that will make use of fluid bed dryers to dry the final potash product. A NaCl-saturated brine is heated to a temperature of 50°C and then injected into the wellfield at a rate of up to 250 m^3/h. The brine, elevated in potassium, is returned through a production well, and then pumped to the triple-effect countercurrent evaporation system, where NaCl is selectively precipitated and used for the barren brine pumped to the caverns. The resulting concentrated brine is then pumped to a series of three crystallizers and a fluid bed dryer in order to produce the final potash product. A simplified block diagram is included in Figure 17-2.

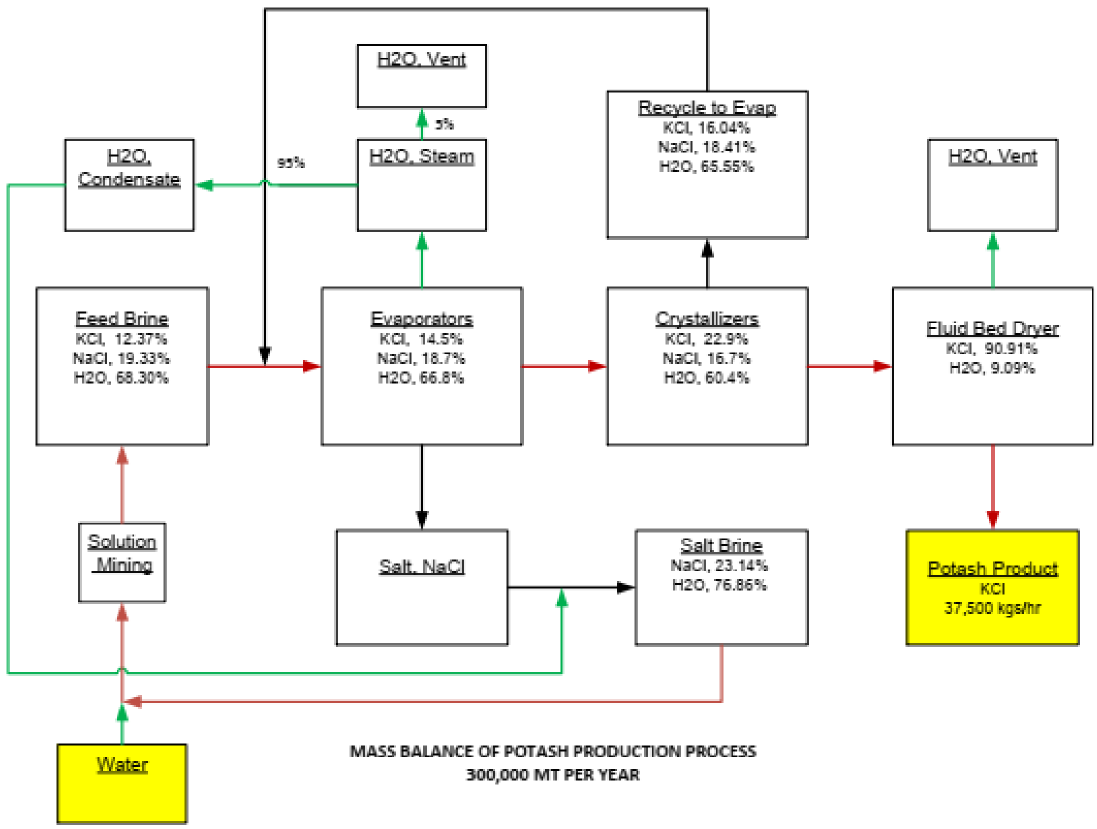

Figure 17-2. Potash Production of 300,000 Metric Tonnes per Year Block Flow Diagram.

17.3.1 TRIPLE-EFFECT EVAPORATION

Fresh wellfield brine and recycled brine from the crystallization stages are mixed and enter a train of eight triple-effect countercurrent evaporation systems (24 total units). Each individual evaporator (3 m [10 ft] diameter, 4.9 m [16 ft] high) is equipped with a 550 m^2 shell and tube heat exchanger. The system is capable of 203,600 kilograms per hour (kg/h) of water evaporation to meet the process requirements.

The brine is preheated by pumping through a primary steam condensate preheater, then sequentially enters the third effect evaporator, second effect evaporator, and first effect evaporator for concentration. Upon reaching target concentration (approximately 23 percent KCl, 17 percent NaCl), high-temperature material from the first evaporator is sent to a thickener, then to the 8 MT/h salt centrifuge for solid-liquid (concentrated brine) separation where NaCl solids are removed. The concentrated brine/mother liquor proceeds to cooling crystallization.

Steam for each of the eight evaporator circuits is produced in a 745 kilowatt (kw) (1,000 hp), 12,500 kilowatt-hour (kWh) (42 Million British Thermal Units per hour [MMBTU/hr]) steam boiler. Live steam enters the first evaporator shell side for heat exchange/condensation. The secondary steam from the first evaporator proceeds to the second evaporator's shell side and then the third evaporator's shell side. Secondary steam from the third evaporator is condensed in an indirect condenser and collected to mix with the precipitated NaCl solids from the solid-liquid separation to generate brine returning to the wellfield. Steam consumption through the circuit is estimated at 85,540 kg/h.

17.3.2 CRYSTALLIZATION

The concentrated brine enters the cooling crystallization circuit using three stages of crystallizers with external coolers. Each draft tube baffle crystallizer is 7.6 m (25 ft) in diameter and 7.9 m (26 ft) high, and is equipped with two 600 m^2 shell and tube heat exchangers. By controlling supersaturation, coarse KCl crystals accumulate at the bottom, and both halite and MOP are separated via two 28 MT/h pusher centrifuges to a target moisture content of 8 to 10 percent. Brine after the crystallization stage is returned to the feed tank to the evaporation stage to mix with the wellfield brine before being pumped to the evaporation stage.

Temperature and pressure are controlled to ensure a high-purity separation of NaCl and KCl solids and control the final product specification. The plant will produce three products based on different sizing standard constraints. The plant will also produce a granular product with a P50 of approximately 2.5 mm, a white standard MOP with a P50 of 0.5 mm, and then a fine product, which is the remaining potash that is 100 percent passing 0.3 mm. The fine product will be recirculated and recompacted to either the standard or granular products.

17.3.3 FLUIDIZED BED DRYER

Solid KCl separated from the centrifuges is delivered to the internal dust-removal fluidized bed dryer by a quantitative feeder to complete the drying process to a target 0.2 percent moisture for the dried KCl product. After, it enters the internal dust-removal and internal heat-exchange fluidized bed cooler for further cooling. The resulting KCl product is then screened and graded to one of two standard products—crystal granular and white standard.

The crystal granular product will have a mean particle size of 2.5 mm, with less than 0.5 percent passing 0.85 mm. The white standard will be the primary product and will have a mean particle size of 0.5 mm, and the fines will be 100 percent passing 0.3 mm.

17.3.4 COMPACTION, LOADOUT, AND PRODUCT STORAGE

Potash fines are compacted into flakes using high-pressure rolls, then granulated, screened, and polished to produce durable, dust-free granules suitable for use in fertilizer and other applications.

Potash products are conveyed to loadout for direct shipping or to product storage. An anti-caking agent (a mixture of anti-cake and de-dusting oil) is added before being dispatched into product storage. Any material sent directly to loadout is treated with an anti-caking agent in loadout only. The product is held in the storage building until it is ready for loading into railcars for shipping.

17.4 ENERGY, WATER, AND PROCESS MATERIALS

17.4.1 ENERGY

Thermal optimization has not been explored at this time. Energy requirements are estimated at 200 MBTU/h for natural gas, 40 MBTU/h for the boilers, and 160 MBTU/h for the dryers. Electric power for processing demand is expected to require an installed connected power of 15,900 kW, with a total site connected power demand of 24,000 kW.

17.4.2 PROCESS WATER

Steam evaporation and fluid bed dryer venting are the primary sources of water losses. These streams will be condensed and collected as much as possible for reuse in the injection brine. Any fresh makeup water will come from the deep well(s) on the Property.

17.4.3 PROCESS MATERIALS

Very limited reagents are necessary for the proposed type of mechanical evaporation processing. The only reagents necessary are those for product polishing (e.g., anti-caking).

18.0 PROJECT INFRASTRUCTURE

Project infrastructure encompasses the processing plant, product storage, stockpiles, temporary holding ponds, road access, purge disposal wells, water well, cavern wellfield, brine pipelines, and utilities. Utility provisions will need to be made for electrical power distribution, potable water supply and storage, sewage water treatment, natural gas, and communications. The site will operate remotely, with power generated on site, potable water trucked in, and communications established through satellite connectivity. The natural gas supply will be developed from nearby municipal utility corridors.

Expansion is expected over the mine operating life, and considerations for ease of adding capacity are considered within the design of the project infrastructure.

18.1 PLANT SITE

The proposed processing plant is located within Township 34, Range 26, Section 19, on land owned by Blake Petersen under a SUA with Sage Potash. A diagram of the plant layout is shown in Figure 18-1. The physical address is 197 S Long Draw, Monticello, Utah 84535.

18.1.1 ROADS AND ACCESS

Plant site access is by public roads via U.S. Highway 491 and the existing county gravel grid roads. An existing north to south gravel road connecting to U.S. Highway 491 is located on the east side of Section 25 and the west side of Sections 19 and 30. Upgrades may be necessary to the local grid roads to ensure safe access to and from the Property, and to support the increased project traffic including transport, heavy construction equipment, and materials delivery.

Crushed stone well pads will be constructed for the solution mining caverns. The well pads for the 20-year plan are shown in Figure 16-1. To minimize disturbance, multiple caverns are directionally drilled from a single pad. Access roads to the cavern wellfield will be required. These access roads will be constructed from the existing grid road network nearest to the well. Access roads will be routed using similar guiding principles to those for pipelines, and efforts will be made to consolidate infrastructure in a common right-of-way (ROW) wherever feasible.

18.1.2 PROCESS FACILITY

The process facility will be assembled on site and use metal skid foundations with an approximate footprint of 95,000 m^2 for the product storage, processing, Multistage Cooling Crystallizer (MCC), boilers, and tank structures. Plant flushing, surge volume storage, and brine cooling will all occur through the on-site tank farm.

18.1.3 POND

A small temporary pond is required for stormwater and sediment retention. The single-spillway pond is sized at 4,400 m^3 to contain the site runoff from a 10-year 24-hour storm.

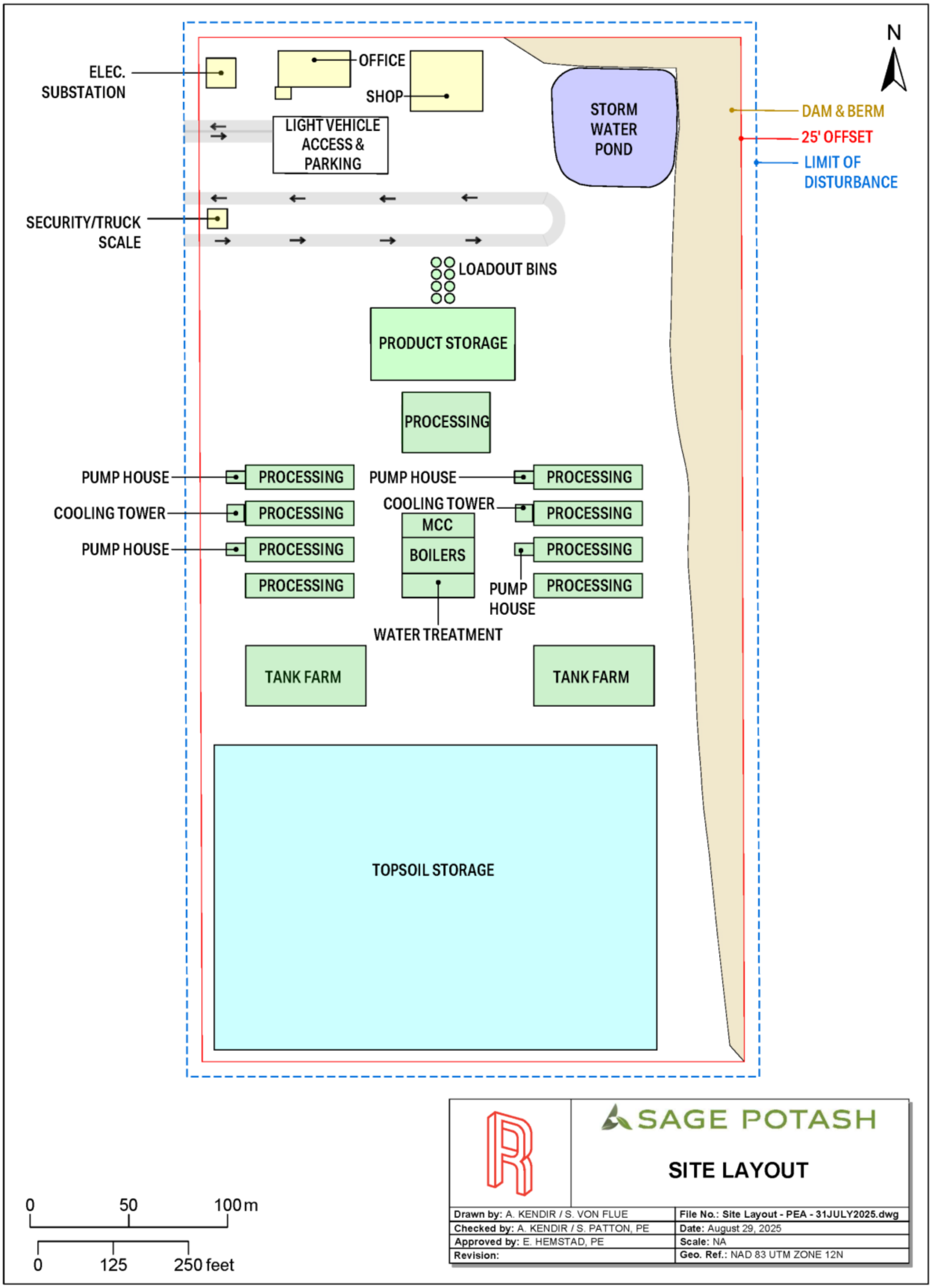

Figure 18-1. Site Layout for Mechanical Evaporation and Crystallization.

18.2 SITE UTILITIES

18.2.1 ELECTRICAL POWER

On-site power generation will occur through the use of multiple natural gas generators. Equipment sizing and quantity will incorporate redundancy for non-stop power generation and planned equipment downtime and maintenance. On-site power generation allows for immediate access to power while options to tie-in the regional power grid are developed. The regional power suppliers are Empire Electrical or Rocky Mountain Power. Connection to the regional grid would require a distribution line installed from the neighboring Pinto substation near Monticello and a substation installed on the site. Multi-effect vaporization and mechanical crystallization are anticipated to require 24 megawatts of power for the plant and pumping needs.

Within the plant, electricity will be distributed at the appropriate voltage for each application. For the buildings located at a distance from the main plant, as well as the brinefield valve houses, power will be distributed through underground lines that are routed along the access road ROWs or in conjunction with pipelines to avoid interference with other activities.

18.2.2 STEAM GENERATION

A small amount of steam is required for the operation of evaporators. A natural-gas-fired water-tube boiler will be used to generate steam. Requirements are estimated at 86,000 kg/h for the triple-effect evaporators. Steam will be used through a plate-and-frame heat exchanger for heating the injection brine.

18.2.3 RAW WATER SOURCE

Water was identified as a critical resource for which a reliable source is required to meet the quantity and quality requirements of the plant and the brinefield. Raw water for solution mining and processing can be sourced from brackish water that is classified as unsuitable for irrigation or consumption. The raw water needs depend on the choice of processing method and injection temperature. Triple-effect evaporation minimizes the demand for water to support the operations to approximately 156 m^3/h.

Surface water availability in the region is sparse and does not support the quantity demanded for solution mining. Existing groundwater conditions suggest that a deep well will need to be developed, and exploration drilling will be required to finalize the source. The target elevation is below 2,021 m (roughly 584 m bgs) within the Morrison aquifer, with a secondary target elevation of 1,759 m (322 m bgs) into the Entrada-Navajo aquifer. Exploration drilling will need to be paired with well yield testing to quantify the number of wells needed to support the solution mining operations. New water rights are restricted within the Project Area, and it is recommended to source ownership through the acquisition of existing water rights. The multi-step process of water rights applications indicated a timeframe between 6 and 12 months to complete the application process. Costs to implement raw water sourcing from a well mainly depends on the yield performance of an individual well. At this time, an estimated cost to develop one well is $500,000, but that is highly dependent on the depth of the formation targeted for completion and the proximity to the proposed solution mining operation.

Purchase of existing water rights is also an option to explore if a supplier or an existing contract can be transferred to support the water requirements for Sage Potash. This option may be more convenient for startup operations but would likely cost more over the long term, depending on the appropriation amount and contract. During cavern development, sourcing water not yet saturated with NaCl would reduce cavern sump development. The most optimal method may be to pursue both approaches, where the initial water is sourced via purchasing appropriations and the long-term solution is to source water from the sandstone formations above the Paradox Formation through water wells completed on the Property.

An Application to Appropriate water in the form of a Fixed Time Application has been submitted to the Utah Division of Water Rights (DWRi). The application requests 150 acre-feet (185,022 m^3) of brackish water per calendar year for a maximum allowable time of 20 years, after which a renewal request can be submitted. The application has undergone a 2-week advertising period and a 20-day protest period and is awaiting the decision by the State Engineer. A Request for Non-Production Water Well Construction will also be submitted, which will allow a well to be drilled to verify the water quality and quantity within the targeted depth(s). Once confirmed, the well will be temporarily capped, and a request will be submitted to convert to a production water well.

18.2.4 NATURAL GAS SUPPLY

Enbridge Gas is the local distributor for natural gas and has a pipeline running east to west on the ROW along County Road 339. Natural gas will be necessary to run the heaters for product drying, with an estimated guaranteed supply capacity of 350 MMBTU/hr and backup provisions of 180 MMBTU/hr if power is sourced through on-site generation. The Project Area does not have a natural gas distribution infrastructure beyond what is locally available for residential use. Optimization of brine heating and the use of heat exchangers could reduce the heating energy by about 40 percent. Thermal optimization, however, has not been explored at this time.

18.2.5 COMMUNICATIONS

Frontier Communications, a national corporation, will provide the necessary telecommunications services for the Project Area. A temporary cellular tower may need to be used during the construction phase. A landline telecommunications service will be provided to meet both voice and data communication requirements for the Project.

18.3 BRINEFIELD PIPING

Pipelines between the plant's tank farm and the brinefield will be routed above ground next to the access roads. The pipes will be grouped together to form a main pipeline corridor. An MCC building in the wellfield will contain the electrical, instrumentation, and communication facilities necessary for the mining operations of each well cluster.

18.4 POTABLE WATER

Potable water will be trucked to the site from nearby municipalities and stored in a concrete cistern. The water will be distributed throughout the plant for use in the emergency showers and eye wash stations, and to the ancillary buildings for drinking and for showers.

18.5 SEWAGE TREATMENT PLANT

Sanitary sewage is collected and transferred for treatment to an on-site packaged wastewater treatment plant. The treatment plant is sized for approximately 100 people. Treated sewage, once deemed safe for release, can be added to the brine reclaim circuit to be recycled into the process.

18.6 TRANSPORTATION

The site includes a truck loadout for customer transportation of the product. Use of rail is not anticipated at this time, although a rail transload is available in Gallup, New Mexico.

18.7 TEMPORARY FACILITIES

Temporary facilities required during the construction phase of the plant are expected to be mobile and removed after construction to minimize impact on the plant site. The following temporary facilities and infrastructure are anticipated to be required:

- Secure entrance/exit gates
- Engineering offices with a lunchroom and washrooms with safety gear and first aid
- Contractors' offices with a lunchroom and washrooms with safety gear and first aid
- Parking lot for construction workers
- Safety training trailer
- Equipment storage buildings
- Equipment maintenance area
- Material laydown area

19.0 MARKET STUDIES AND CONTRACTS

In agriculture, the term "potash" refers to potassium fertilizers, which are KCl, SOP or potassium sulfate, and SOPM or langbeinite. References to potash throughout this TR refer to MOP, an agriculturally approved mixture of KCl (95 percent purity or higher) and NaCl for use as a fertilizer. MOP is also commonly used when processing SOP to assist with recovery speed.

The U.S. MOP production comes from southeastern New Mexico and Utah, where Intrepid Potash operates solution mines. Intrepid Potash mines underground sylvinite ores using solution mining. Solar evaporation is used to crystallize the NaCl + KCl brine, and a flotation system separates the MOP from the NaCl byproduct. Intrepid Potash has also treated groundwater with solar evaporation and flotation to produce MOPs at its facility near Wendover, Utah. The existing production in New Mexico and Utah comprises 7 percent of the U.S. demand; the other 93 percent is sourced from Canada, Russia, and Israel [USGS, 2025].

The U.S. government has recognized the need to reduce import dependence, and in March 2025, an executive order designated potash as a critical mineral, facilitating streamlined permitting and prioritizing federal support for domestic production projects. In addition, the USDA launched the Fertilizer Production Expansion Program initiative in September 2022, which is aimed at increasing domestic fertilizer production, including potash, to enhance supply chain resilience, reduce dependency on imports, and lower costs for local farmers.

19.1 POTASH DEMAND AND PRICING

Potash demand is largely dependent on that of fertilizer, which is expected to grow in the years to come. Half of the potash used worldwide is destined for wheat, rice, corn, oilseed, and sugar crops. For a specific market, the demand will be based on total planted crop acreage, the fertilizer application rates, and the crop economics.

The world demand is driven by the developing economies in the Asian and Latin American markets, which currently engage in an underapplication of potash compared with the scientifically recommended levels, which is illustrated in Figure 19-1. The North American potash demand will remain steady at around 10.5 to 11.0 MMT by 2030, which can be attributed to steady acreage base and potential for regional growth to address declining soil test levels.

A general approach to define sales price over the 20 years of the cash flow model is to evaluate pricing from multiple relevant sources with a 3-, 5-, and 10-year moving average. This methodology considers pricing regionally and nationally. Pricing was reviewed for the previous 10 years. Table 19-1 lists the MOP price FOB Pacific Northwest (PNW) from Green Markets [Bloomberg, 2025], average realized sales price FOB mine for Intrepid [2025], and FOB all U.S. potash mines price from USGS [2025].

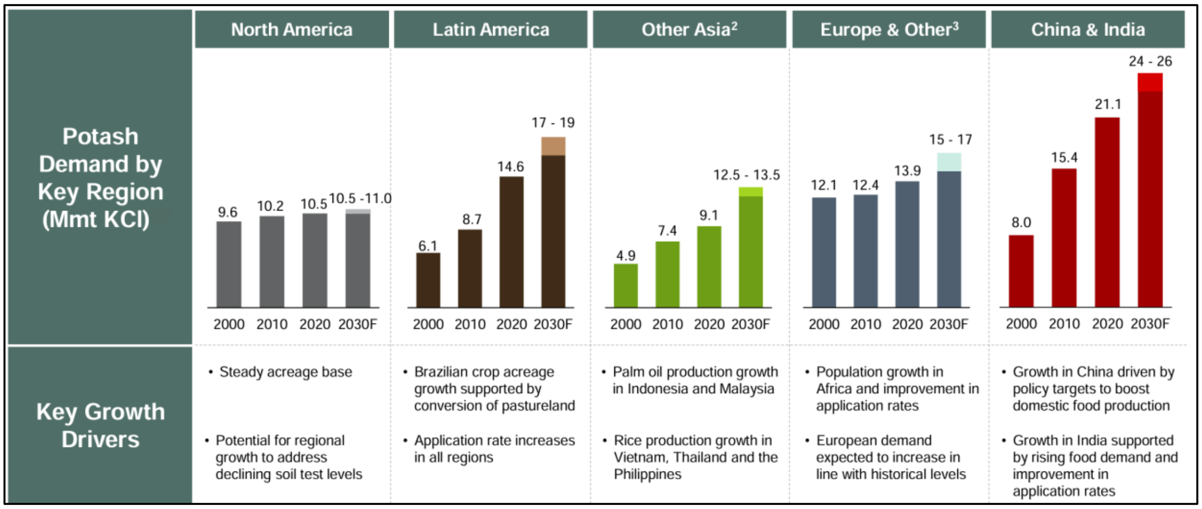

Figure 19-1. Potash Demand by Region and Key Growth Drivers [Nutrien, 2024].

Table 19-1. Muriate of Potash Price Evaluation

Average	Green Markets (FOB PNW)	Intrepid (FOB Mine)	USGS (FOB Mine)
10-year	$506	$383	$353
5-year	$600	$476	$421
3-Year	$664	$572	$470

Sage Potash's target market will be the regional market, mostly focusing on the PNW market. The PNW market is import dependent and is less competitive than the Midwest market. The current USDA farm prices [USDA, 2025] in the PNW region are around $800 per tonne, which is significantly more than farm prices of around $500 per tonne in the Midwest. Sage Potash can become a local supplier of MOP and thereby cut reliance on imports.

After review of the available information, a price of $450 per tonne was selected for the economic analysis. RESPEC believes that this MOP FOB mine price is realistic to achieve. The focus market will be the PNW, where comparatively less competition and heavy import reliance exist, which can be eliminated by Sage Potash's logistics advantage over Canadian producers.

19.2 SAGE POTASH MARKET AREA

Because of its strategic location in San Juan County, Utah, the Property is advantageously positioned to serve distributors within 480 km (300 mi) of the Property, as shown in Figure 19-2. The projected market area for Sage Potash is determined to be reasonable and reachable.

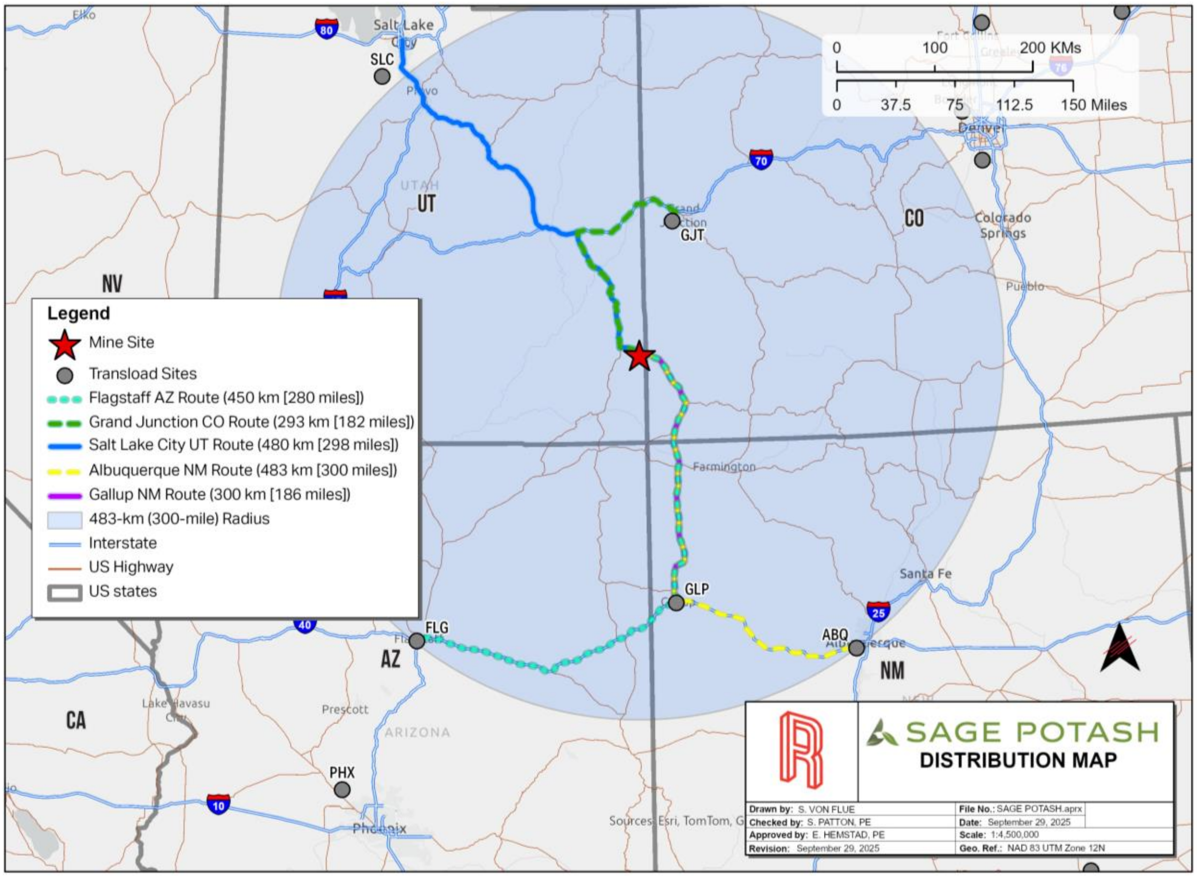

Figure 19-2. Market Radius of 480 Kilometers (300 Miles) With Transportation Routes.

19.3 MARKET SHARE DETERMINATION

The potash market in the United States was taken as the apparent consumption target of potash for 2024 as reported by the USGS Mineral Commodity Summaries [USGS, 2025]. The consumption is 9.7 MMT of potash products, of which 95 percent is imported.

The production target for the Sage Potash project is 300 ktpy. The project will need to capture around 4 percent of the market share in U.S. sales. This market share is reasonable for Sage Potash because of its significant transportation advantage in accessing the regional market.

19.4 TRANSPORTATION ANALYSIS

The market area in San Juan County for this operation consists of a 480-km truck route radius to distributors for use in the regional agriculture market. The market area can effectively be served via existing paved roads and highways, which are easily accessible from the Sage Potash site.

A rail transload is regionally available in Gallup, New Mexico, within a 305-km truck haul if the market demands. The origin transload is operated by Gallup Energy Logistics Park, LLC, located in Gallup, New Mexico. The transload serves the Burlington Northern Santa Fe Railway network.

19.5 COMPETITORS

The North American market contains five potash-producing companies that have a presence in New Mexico and Utah, and Saskatchewan, Canada, as shown in Figure 19-3.

19.5.1 INTREPID POTASH

Intrepid Potash produces MOP through operations of three solar evaporation mines in Wendover and Moab, Utah, and Carlsbad, New Mexico. The company was formed in January 2000 through the acquisition of the Moab Mine from the Potash Corporation of Saskatchewan. The Wendover facility was acquired from Reily Chemical, Inc. in 2004.

19.5.2 MOSAIC

The Mosaic company is an integrated producer of concentrated phosphate and potash. Its potash operations are located in the United States, Brazil, and Canada. Mosaic's production of MOP within the United States is from its Carlsbad, NM location; Canadian production is from its Belle Plaine, Colonsay, and Esterhazy Mines in Saskatchewan.

19.5.3 NUTRIEN

Nutrien is a fertilizer company that distributes more than 25 million tons of potash, nitrogen, and phosphate products for the agricultural and industrial market. Currently, Nutrien owns six potash mines in Saskatchewan.

19.5.4 K+S

K+S Potash Canada is part of the K+S Group, a German-based company with experience in the mining and processing of potash and salt. K+S owns the Bethune Mine in Saskatchewan.

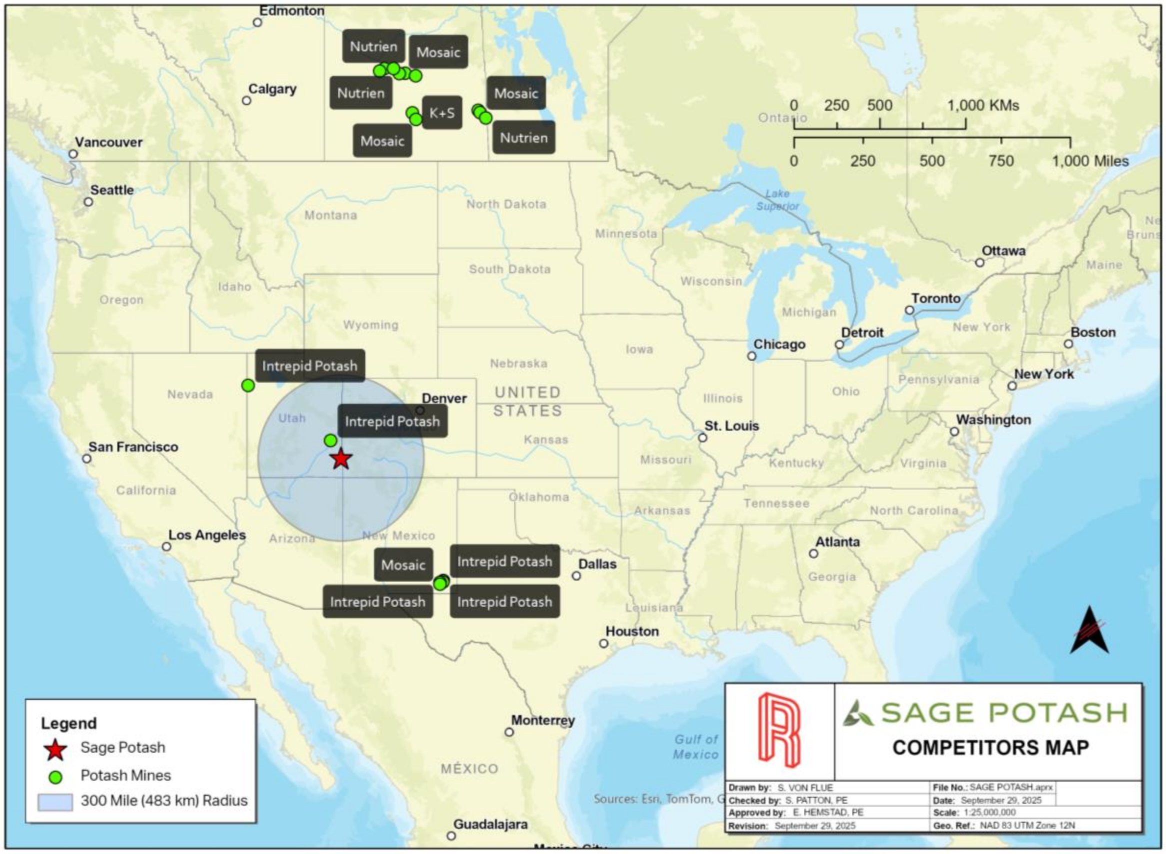

Figure 19-3. Sage Potash Competitors Map.

19.6 CONCLUSIONS

Conclusions for the Sage Potash market study are as follows:

- The project is strategically located in an area with only two local competitors.
- U.S. markets dominated by Canadian imports would welcome a local producer that could offer a quality product at a lower price because of the significantly lower transportation costs.
- The advantage of the lower transportation costs may provide a certain tolerance to relatively increased production costs, which are typical for greenfield operations.
- The target market can be the PNW in the initial years, where comparatively less competition and heavy import reliance exist, which can be eliminated by Sage Potash's logistics advantage over Canadian producers. After establishing itself as a major U.S. potash producer, Sage Potash can also target the Midwest market, which has more demand and is more competitive.

No marketing, sales or transportation contracts are in place at the time of writing this report.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 ENVIRONMENTAL

The full surface disturbance for this mine is expected to be 21 hectares. No tailings are associated with processing solution brine, and surface disturbance is limited to the wellheads, pipelines, and plant sites. Disposal of the limited waste brine that cannot be recycled in the caverns will occur in a single disposal well located near the surface plant by injection into the Leadville Formation, at a depth of approximately 3,420 m bgs. The disposal well must be state licensed. The formation water in these extensive deep aquifers is naturally saline. A simplified 3D layout is included in Figure 20-1.

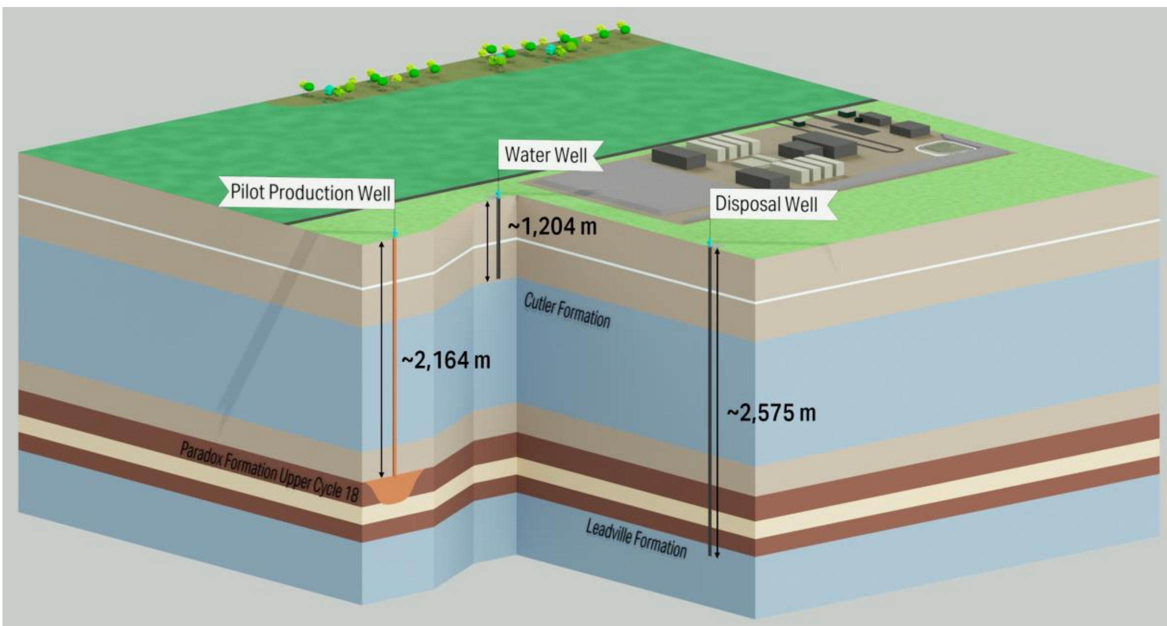

Figure 20-1. Simplified 3D Facility Layout.

Minimal (if any) subsidence is anticipated because of the depth of solution mining, cavern spacing, and layout. Geomechanical testing during the pilot demonstration will be used to further the cavern design to minimize subsidence.

Airborne emissions consisting primarily of particulate matter are kept below regulatory limits through various modern air pollution abatement systems (e.g., dust collection systems built into mill processing) that are state licensed.

The Sage Potash operation requires a sustained brackish water supply for the milling process, which will be sourced from the Cutler Formation well below the freshwater aquifers. This water supply must be state licensed and provide a sustainable source of process water for Sage Potash milling operations with no known perceptible impact on other users of water drawn from these aquifers.

In Utah, all mining operations are regulated by the Utah Department of Natural Resources – Division of Oil, Gas, and Mining (DOGM). DOGM staff verified that mine operators follow their plans for mining and reclamation, including mining within permit boundaries and protecting public safety and the environment. The DOGM holds reclamation bonds to ensure the future reclamation of mine sites.

DOGM environmental regulations require that all operating potash mines in Utah 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. In addition to the long-term decommissioning plan, DOGM regulations also require that every mining operation in Utah set up an Environmental Reclamation Surety bond, which must be held in trust for the decommissioning, restoration, and rehabilitation of the mine site after mining is complete.

20.1.1 ENVIRONMENTAL STUDIES

Cultural and biological studies were completed on site in June 2023. A preliminary environmental information survey was conducted at the plant site and the first 20-year solution mining area, collectively referred to as the Initial Production Area (IPA).

The Biological Assessment evaluates the effects of the proposed IPA and determines whether the IPA may affect any federally threatened, endangered, proposed, or candidate species. The survey identified the following endangered species in the region:

- Colorado pikeminnow
- Razorback sucker
- Southwestern willow flycatcher
- Gunnison sage-grouse
- Monarch butterfly
- Silverspot

The survey identified the monarch butterfly as a candidate for endangered species status and the Gunnison sage-grouse as a threatened species. The Gunnison sage-grouse habitat covers the IPA, but no inhabited leks have been observed in the area, and the area is not actively managed by the Utah wildlife officials. The pikeminnow, sucker, silverspot, and flycatcher are not expected to be found in the IPA because their habitat is not present in the IPA. The IPA is not expected to have a significant impact because it is in an active dry land farming area. Disturbance is a temporary use with minimal ground disturbance and reclamation and closure designed to return the IPA to the pre-development state.

No migratory birds are anticipated to be affected by this project. No invasive plant species were detected during the survey, and the project is not expected to bring any to the area.

The IPA is zoned Agriculture by San Juan County. Of the approximate 129 hectares (320 acres) that make up the IPA, 290 are designated as not prime farmland, with 11 hectares (28 acres) considered of statewide importance.

20.1.2 PRELIMINARY EVALUATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The project's Environmental Assessment with supporting surveys has undergone an Environmental Impact Analysis, which resulted in a finding of no significant impact (FONSI), effective April 28, 2025.

20.1.3 CURRENT PERMITTING EFFORTS

The permitting efforts to date have largely been focused on the injection wells and water rights.

UIC Wells

Sage Potash intends to use multiple production UIC wells and one disposal UIC well for the initial 20 years of mine life. At this time, additional exploration and testing is required to pursue the Class I and Class III UIC permits for disposal and production, respectively.

Through coordination with DOGM and the Utah Department of Environmental Quality – Division of Water Quality (DWQ), Sage Potash submitted a UIC Class V Request for Authorization by Rule for each of the wells, allowing them to be initially permitted as exploration wells to obtain the information necessary for the UIC Class I and Class III permits. Though they will initially be permitted as Class V UIC wells, they are designed and will be implemented to the standards of a Class I and Class III well. Once the drilling is complete, the wells will be temporarily plugged and abandoned until the Class I and Class III permits are submitted and approved, at which point the wells will be re-entered as full UIC Class I and Class III wells. The DOGM and the DWQ recommended this process and are supporting the process of converting the Class V wells to Class I and Class III. All permitting documentation to date reflects this intention and procedure.

The Class V permits for both wells were submitted in March 2023 and tentatively approved in January 2024, pending bond payment for final approval. The bond will be paid prior to the initiation of the drilling program, and then the process of converting the two Class V wells to a Class I and Class III well will commence.

Notice of Intent for Exploration

The UIC Class V permits apply to the underground component of the wells; the surface disturbance associated with the wells are permitted through DOGM with Notices of Intent (NOI) to Explore. Both NOIs were submitted to DOGM in July 2023.

The DOGM and DWQ are working closely together on this permitting effort to ensure both regulatory bodies are in agreement with the process. As a result, both NOIs were tentatively approved in January 2024 alongside the UIC Class V well tentative approvals. The NOIs are tentatively approved, pending payment of the associated bond for full approval.

Fixed Time Application

A Fixed Time Application was approved in July 2023 by the Utah DWRi and grants water rights for underground brackish water until July 31, 2043.

Request for Non-Production Water Well Construction

A Request for Non-Production Water Well Construction will be submitted to the Utah DWRi upon approval of the UIC Class V permits. Upon the approval of this request, Sage Potash will be granted the ability to drill a brackish water supply well as an exploration well to verify water quality and quantity. Once the well has been drilled and the necessary data collected, the well will be temporarily capped and abandoned until a Production Water Well permit is issued.

20.1.4 PERMIT REQUIREMENTS

Numerous permits are necessary for initiation of production; the permits and bonds are listed in Table 20-1.

Table 20-1. Permitting Requirements

Permit/Plan Name	Issuing Agency
New Source Air Permit	Utah DNR – Division of Air Quality
Fugitive Dust Control Plan	Utah DNR – Division of Air Quality
Fixed Time Application	Utah DNR – DWRi
UIC Class V Permits	Utah DWQ
UIC Class I Permit	Utah DWQ
UIC Class III Permit	Utah DWQ
Construction General Storm Water Permit (CGP)	Utah DWQ
Storm Water Pollution Prevention Plan (SWPPP)	Self-Issued
Spill Prevention, Control, Countermeasure Plan (SPCC)	Self-Issued
Solid and Hazardous Waste Management Plan	Self-Issued
Large Mine Operation (LMO)	Utah DNR – DOGM
Radioactive Devices	Utah DNR – Division of Waste Management and Radiation Control
Wellfield Plan of Development	State of Utah School and Institutional TLA
Conditional Use Permit	San Juan County
Building Permit	San Juan County

20.1.5 SOCIAL OR COMMUNITY

Although no specific agreements were made with local individuals or groups, the workforce is expected to be regionally sourced.

20.1.6 AGREEMENTS WITH LOCAL INDIVIDUALS

The only specific agreements with local individuals or groups at this time are the private mineral leases and SUAs.

20.1.7 WETLANDS

The project is not located in and is not likely to affect a wetland. The project is located within an impaired waterbody and within 0.8 km (0.5 mi) of a National Wetlands Inventory wetland.

20.1.8 WATER RESOURCES

The project is not expected to affect any water resources. Rain and water that has crossed disturbed land will be collected in a small on-site pond and, once sediment settles, released per the Storm Water

Management Plan. The operation will require a sustained brine water supply to initiate cavern development and minimal water consumption because of the vapor recompression method for recycling water. In the proposed solution mining process, the system is closed, and water recirculates. Any disposal of brine waters will be in a permitted injection well into the Leadville Formation at a depth below the caverns.

This water supply for the solution mining process is not the traditional water well type source used for consumptive purposes but is instead a fixed-time water rights well licensed through the state. The brine water is a sustainable source of process water for milling operations with no known perceptible impact on other users of water drawn from these aquifers.

Water used for drilling operations, construction activity, and dust suppression would be purchased from adjudicated sources and trucked to the location. No operations would be performed within 330 ft of springs. Wetland or riparian vegetation would not be removed. Any sources of downhole water encountered during drilling would be protected with the setting of appropriate drill casing, per the downhole specifications identified in the Drilling Plan section of the Exploration Permits, and cemented back to surface.

One drinking water protection zone exists in the region and is located west of the project and outside of the SUA area, as shown in Figure 20-2.

20.1.9 HISTORY AND CULTURE

A Class III Cultural Resource Survey was conducted by Montgomery Archaeological Consultants, Inc. in May and June of 2023 in the intended location for the processing plant. Two isolated finds were identified, including a prehistoric hoe and slab metate fragment. No archaeological sites were identified within the Property.

20.1.10 AIR QUALITY AND FUGITIVE DUST

The project will require a fleet of diesel equipment for the processing plant construction. Preliminary equipment and emissions are listed in Table 20-2.

The processing plant requires natural gas to operate the steam boilers and fluid bed dryer and generate electricity. Preliminary estimates of gas quantities and emissions are listed in Table 20-3.

The Fugitive Dust Control Plan is a self-issued document regarding Sage Potash's plans to minimize and mitigate airborne contaminants. During the construction phase, travel ways and working areas will be sprayed with water to keep airborne contaminants to a minimum. This will take place throughout the entire construction phase, which is estimated at approximately 6 months. Following construction, the project is not anticipated to release sizable quantities of dust.

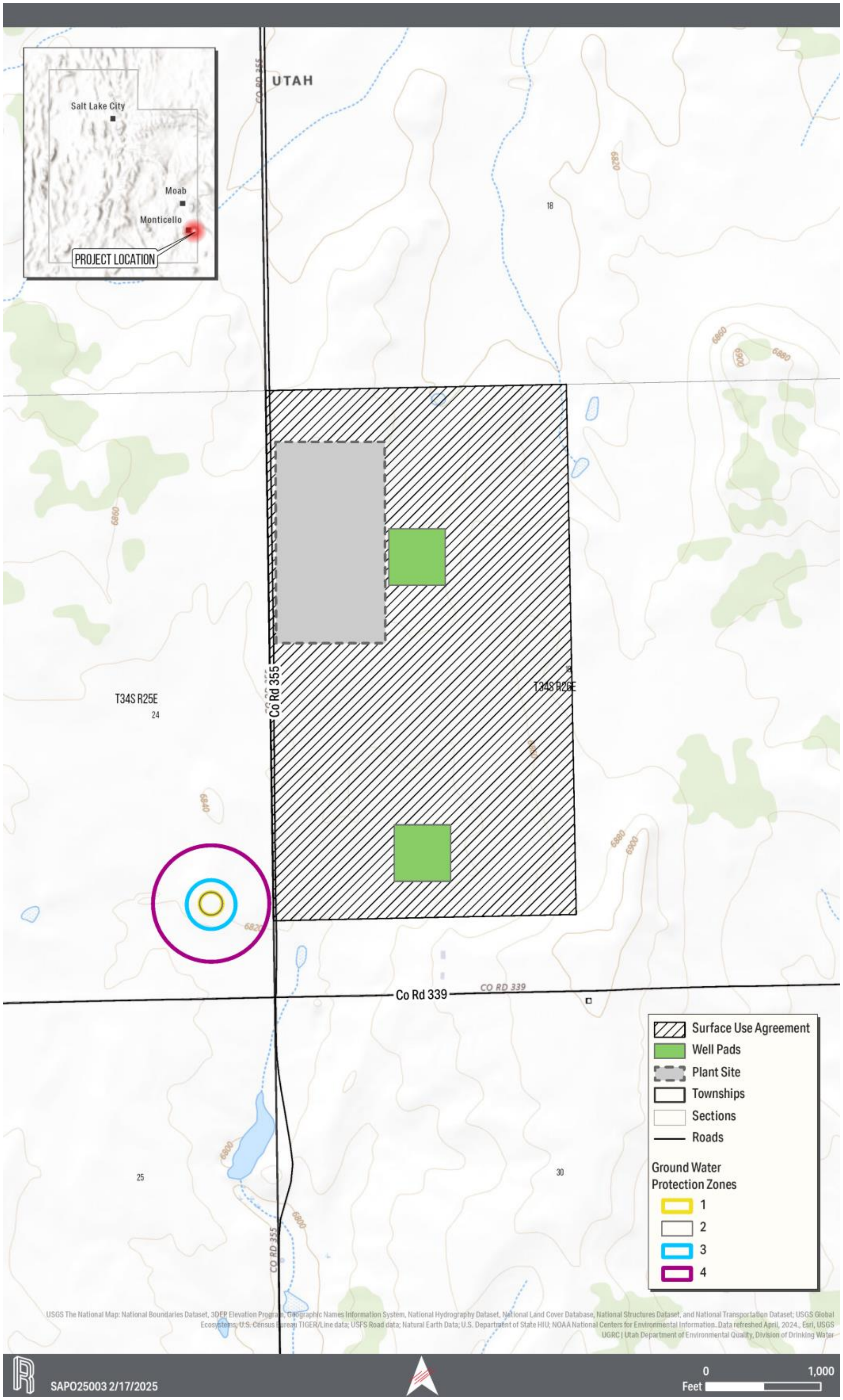

Figure 20-2. Drinking Water Protection.

Table 20-2. Emissions During Construction

Equipment	Horsepower	Diesel (gal/hr)	Nitrogen Oxide (tons/yr)	Carbon Monoxide (tons/yr)	Particulate Matter (tons/yr)	Sulfur Dioxide (tons/yr)	Volatile Organic Compound (tons/yr)
Generator	100	6.1	0.07460	0.93250	0.00373	0.00147	0.03544
Dozer D6	215	13.0	0.16039	1.40341	0.00802	0.00315	0.07619
60" Compactor, Cat C3.6	99	6.0	0.07385	0.64622	0.00369	0.00145	0.03508
Small Excavator, Cat C2.4	58	3.5	0.04319	0.53992	0.00216	0.00085	0.02052
Large Excavator, Cat C7.1 TTA	306	18.6	0.22828	1.99742	0.01141	0.00448	0.10843
Telehandlers, Cat C3.6L	134	8.1	0.09996	0.87469	0.00500	0.00196	0.04748
Small Wheel Loader, Cat C1.7	48	2.9	0.03581	0.44760	0.00179	0.00070	0.01701
Large Wheel Loader, Cat C7.1	168	10.2	0.12533	1.09662	0.00627	0.00246	0.05953
Rock Track, Cat C18	511	31.0	3.33555	3.33555	0.03812	0.00749	0.18107
Rock Track, Cat C18	511	31.0	3.33555	3.33555	0.03812	0.00749	0.18107
Boom Lift 450 AJ, Kubota DF	60	3.6	0.04476	0.55950	0.00224	0.00088	0.02126
Boom Lift 600 AJ, Ford MSG425	84	5.1	0.06266	0.78330	0.00313	0.00123	0.02977
Boom Lift 800 AJ, Ford MSG425	84	5.1	0.06266	0.78330	0.00313	0.00123	0.02977
Total	2378	144.3	7.68261	16.73558	0.12682	0.03485	0.84261

Table 20-3. Anticipated Emissions During Operation

Emission Parameter	Steam Boilers	Fluid Bed Dryer Scrubber Stack
Gas Input, MMBTU/hr	313.8	21.2
Nitrogen Oxide, tons/year	45.8	3.07
Carbon Monoxide, tons/year	103.37	6.98
Particulate Matter, tons/year	9.35	125
Sulfur Dioxide, tons/year	0.74	0.05
Volatile Organic Compound, tons/year	6.77	0.46
Lead, tons/year	0.00	0.00
Hazardous Air Pollutants, tons/year	2.32	0.16
Total Particulate Matter Emission rate from the fluidized bed dryer is 0.15 g/kg effluent		

20.1.11 NOISE

Anticipating noise levels from a facility of this type is complex. Expected noise levels from drilling during exploration and from the plant during operation are not known but are not expected to exceed allowable limits set forth by the National Institute for Occupational Safety and Health and enforced by the Occupational Safety and Health Administration (OSHA). OSHA has jurisdiction over the site. Drilling will take place 24 hours a day, 7 days a week during the construction phase, the plant is expected to operate 24 hours a day, 7 days a week during the operation phase, and trucks are expected to haul during daylight hours. Ongoing noise testing will be completed during both construction and operation phases to ensure limits are not exceeded.

Noise-sensitive receptors consist of, but are not limited to, schools, residences, libraries, hospitals, and other care facilities. The area is rural with no known sensitive receptors within a half-mile radius of the plant.

Noise mitigation measures include using high-quality mufflers on engine-powered equipment, regular maintenance to minimize vibration, and ongoing lubrication. Acoustic enclosures and barriers around generators can be erected if deemed necessary.

20.1.12 CLOSURE PLANS

The closure plan includes plugging and abandoning wells, utilizing the disposal well to dispose of brine-impacted waters, followed by complete structure demolition, and reseeding of disturbed areas. The post-mining site will be returned to pre-mine land use consideration. The final reclaimed site will contain no structural evidence of past mining operations and will be returned to farming practice.

21.0 CAPITAL AND OPERATING COSTS

RESPEC reviewed the CAPEX list and associated cost provided by Sage Potash. The major cost components are presented in tabular form within Table 21-1.

Table 21-1. Surface Plant CAPEX

Item	Cost ($)
Evaporator retrofit	6,000,000
300 ktpy plant	13,200,000
Freight (Netherlands and Other)	2,000,000
Tools purchased for plant construction	200,000
Pumps	380,333
Crystallizers	4,220,006
Cooling, dryers, blowers, air compressors	394,996
Boiler	100,000
Tanks	345,996
Bucket elevators	140,000
Conveyers	319,998
Agitators	26,000
Centrifuge	400,000
Crane work	443,462
Bagging	474,000
Trucking of materials to the site	499,968
Plant equipment rental	1,348,000
Electrical wiring material	2,654,534
Electrical contractors labor	1,166,662
Repair and maintenance for equipment	180,000
Part-time labor and contractors	330,000
Safety workwear	102,000
Subtotal	**$34,925,955**
Construction Contract Labor	**$3,036,000**
Administrative	**$1,178,692**
Total	**$39,140,647**

Note: These costs and the associated mining schedule are based on Inferred tonnage estimated at an accuracy of +/- 50 percent.

Note: The reader is cautioned that these capital and operating costs are preliminary in nature and include Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized.

21.1 CAPITAL COST ESTIMATE BY MAJOR CATEGORY

The CAPEX is categorized into processing plant with associated product storage and loadout, solution mining cavern wellfield, and infrastructure. Associated construction indirects, engineering procurement and construction management (EPCM), and reclamation cost, including contingency, are included in the CAPEX estimate. Costs were estimated using the purchase agreement for the major plant equipment and factored from engineering estimates.

Major capital items include the processing plant and the solution mining wellfield with associated pipelines. The PEA estimated initial capital expense ranging from $77M to $232M USD, when considering a +/-50 percent accuracy, to construct the mine and plant.

21.1.1 WELLFIELD CAPITAL COST

The wellfield capital estimate includes items from the target potash bed solution mine caverns to the wellhead. The water source well and injection well for purge from the processing plant are included in the wellfield capital cost estimation. Major components of the wellfield capital include the following:

- Well pads and well pad access roads
- Well drilling and construction of solution caverns built by drilling wells in sets of two

The initial wellfield CAPEX includes around $28.5M in Year 0 (2026), $7.2M in Year 1, and $14.5M in Year 2. It covers the construction of six dual-well caverns and a single pilot well in 2026 (Year 0), two caverns in Year 1, and four caverns in Year 2. An initial production of 80,000 tonnes is targeted in Year 0, which ramps up to 150,000 tonnes in Year 1, and further increases to the targeted annual production of 300,000 tonnes in Year 2. Wells are then drilled in different years to meet the production requirement, while minimizing the stockpile.

21.1.2 PROCESSING PLANT AND PRODUCT STORAGE WITH LOADOUT CAPITAL COSTS

The processing plant capital cost was provided by Sage Potash and developed by TerraRock, the EPCM contractor for the project. Sage Potash entered into an agreement with a subsidiary of IPP to purchase processing equipment for $13 million. This equipment can process up to 300 ktpy of potash. The majority of the equipment being purchased has never been assembled or used and was fabricated in 2012. The balance of the equipment to be acquired by Sage Potash will come from IPP's inventory of second-hand machinery. Major equipment items include the following:

- Crystallizers
- Triple-effect evaporator units
- Process plant- mechanical scope
- Pumps
- Product dryers
- Product storage

21.1.3 INFRASTRUCTURE AND SITE DEVELOPMENT CAPITAL COSTS

Infrastructure supports the operating caverns and processing plant. The infrastructure and site development capital investment includes:

- Electricity access and distribution
- Waterworks
- Road upgrades
- Site preparation and earthwork
- Buildings (other than the processing and product storage)

21.1.4 PREPRODUCTION AND ENVIRONMENTAL CAPITAL COSTS

Before any site disturbance occurs on site, all operating permits must be acquired. Preproduction capital costs include the following:

- Surveying
- Permitting
- Well testing

21.2 SUSTAINING CAPITAL

Sustaining capital includes the cost associated with maintaining production level over the life of the project. Examples of sustaining capital costs are the construction of new solution caverns and the associated pipeline extensions as the footprint of the brine field grows. Major repairs or replacements of critical processing plant items and wellfield items are also included in the sustaining capital estimate of $173M USD. Sustaining capital can be expensed under the 29 CFR, Treasury Regulations Section 1.612-2(a) Receding Face Deduction if the expenditures are required to maintain the normal output of a mine. If a Receding Face Deduction is not allotted, the sustaining capital must be capitalized and depreciated over the useful life of the capitalized item.

21.3 CAPEX SUMMARY

A summary of the early-stage projected capital cost is shown in Table 21-2.

Table 21-2. Initial CAPEX (Millions of Dollars)

Category	2026 ($)	2027 ($)	2028 ($)
Processing Plant	20	20	—
Construction Indirect	5	5	—
EPCM	5	5	—
Site Infrastructure	13	—	—
Solution Mining	29	7	14
Reclamation Bond/Reclamation	5	1	—
Contingency	15	8	3

Total CAPEX	$92	$46	$17

21.4 OPERATING COST ESTIMATE

Table 21-3 includes operating expenses, which are divided into major categories such as labor, utilities, repairs, and maintenance, among others. The table also includes property tax, royalty, and selling, general, and administrative (SG&A) expenses.

Table 21-3. Operating Cost Summary

Cost Item	$/MT
Utilities	
Gas	49.92
Power (Self-Generated Power)	25.68
Diesel	4.00
Subtotal	$79.60
Labor	14.78
Repairs and Maintenance	11.80
Tools and Plant Supplies	7.40
Chemicals	1.80
Others	2.92
Property Tax	1.76
Royalty	22.50
SG&A	0.68
Total	$143.24

22.0 ECONOMIC ANALYSIS

Note: The reader is cautioned that this PEA is preliminary in nature, including Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized.

22.1 INTRODUCTION

The Sage Project has been assessed using a discounted cash flow approach. This method projects yearly cash revenues and subtracts yearly cash outflows, including operating costs, capital costs, royalties, and taxes. The resulting net annual cash flows are discounted back to the first quarter of 2026 and totaled to determine NPVs at the selected discounted rates. The IRR is calculated as the discount rate that yields a zero NPV. The capital payback period is calculated as the years required to recover the initial capital. All amounts are presented in USD, unless otherwise specified. The cash flow model considered production rates, revenues, capital costs, operating costs, and taxes.

The results of the economic analysis represent forward-looking information that is subject to known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those presented here.

This PEA is preliminary in nature and includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized. Inferred Resources have been included in the current mine plan, and as such are included in the economic analysis presented herein.

A solution mining production scenario was evaluated in the cash flow model, and sensitivity analyses varying ±20 percent were carried out for potash selling price, capital costs, and operating expenses.

The economic analysis was completed to demonstrate reasonable prospects for economic extraction. Input for the model includes the capital and operating costs laid out in relation to the annual production of product revenue.

22.2 KEY ASSUMPTIONS

22.2.1 GENERAL ASSUMPTIONS

Assumptions used in the development of the economic model are shown in Table 22-1.

Table 22-1. Economic Model Assumptions

Parameter	Assumption
Units	Metric
Valuation Date	1/1/2026
Discount Rate	8%
Currency	USD
Royalty	5%
Property Taxes	0.74%
Depletion	14%
Federal Tax	21%
State Tax	4.55%
Severance Tax	2.60%
Potash Sale Price ($/tonne)	450.00
Annual Production at Steady State (tonnes)	300,000
Project Start Year	2026
Production Start Year	2027
Electricity Price ($/megawatt-hours)	56.2
Natural Gas Price $/kWh	7.75
Headcount	74

22.2.2 TAX CREDITS

22.2.2.1 HIGH-COST INFRASTRUCTURE TAX CREDIT

The High-Cost Infrastructure Tax Credit (HCITC) is a nonrefundable, post-performance tax credit aimed at incentivizing large infrastructure investments in Utah, including mining, energy delivery, water systems, pipelines, and underground mine infrastructure.

Standard incentive includes 30 percent of infrastructure-related state revenue per tax year, up to a maximum of 50 percent of total certified infrastructure costs (CICs).

Infrastructure revenue includes incremental state income and sales taxes tied to the project. Unused credit can be carried forward up to 7 years. The credit cannot be claimed beyond 20 years of the project life. The HCITC can be estimated using the following steps:

1. Certify CAPEX item eligibility before construction begins. To be included in the CIC, items must be future assets installed in Utah and the asset must be capitalized and directly related to qualifying infrastructure (i.e., process plants, rail spurs, pipelines, and utility infrastructure).
    a. The solution mining infrastructure and site infrastructure are considered eligible to be certified for the project, which will amount to around $42 million in Year 1. The total HCITC credit over 20 years of the project is around $15 million, which is less than 50 percent of CIC.

2. Forecast incremental state tax revenues. The Utah state corporate income tax equates to the taxable income multiplied by the state's corporate rate (4.55 percent). The Utah state sales/use tax equates to the taxable sales multiplied by the state's sales tax rate (4.85 percent).
    a. The project economics assumes all potential CICs items are sourced within Utah.
3. Finalize the value of the HCITC credit. The total credit is limited to 30 percent of the state tax revenues and not to exceed 50 percent of CIC.
    a. The credit is added as a separate line item ("Other income") in the discounted cash flow model.

22.2.2.2 ECONOMIC DEVELOPMENT TAX INCREMENT FINANCING CREDIT

The Economic Development Tax Increment Financing (EDTIF) credit is a post-performance, refundable tax credit of new state revenues limited to sales, corporate, and withholding taxes paid to the state over the life of the project. San Juan County is in the "Most Rural" category under the EDTIF program; therefore, 50 percent of the new state revenue can be credited.

The rural EDTIF (REDTIF) program, a modification to the EDTIF program, offers tax incentives to companies investing in rural Utah. Unlike the EDTIF program, restrictions regarding targeted industries do not apply, wage requirements are easier to fulfill, and the maximum possible tax incentive is much higher than that of the EDTIF. The Sage Potash project, which is in San Juan County, will come under the REDTIF program.

The REDTIF program is administered by the Governor's Office of Economic Opportunity (GOEO). The GOEO negotiates the actual percentage, term, and maximum incentive amount in the incentive contract for the project. RESPEC is considering a 40 percent REDTIF rate over 15 years of the project, assuming that favorable terms may be negotiated because the project is in rural San Juan County.

The REDTIF can be estimated using the following steps:

1. Estimate new state tax revenue each year:
    a. State corporate income tax
    b. State sales tax (from the purchase of solution mining and site infrastructure)
    c. State personal income tax (employee wages × 4.85 percent)
2. Apply the REDTIF rate (assumed 40 percent, will be negotiated with GOEO).
3. Add as a cash flow in the year it is earned (post-tax) under "Other income."

22.2.2.3 45X FEDERAL TAX CREDIT

Section 45X is a production-based tax credit meant to boost U.S. manufacturing of clean energy components, including critical minerals, batteries, and solar/wind components. Section 45X provides a per-unit tax credit for eligible components produced and sold domestically after January 1, 2023.

The credit applies per metric tonne of produced and sold critical mineral (potash). The credit is 10 percent of the production cost, starting from 2023. The production cost includes the cost of extracting, acquiring, processing, purifying, refining, and converting critical minerals.

Because potash is listed as a critical mineral, the credits will not phase out or expire. The credit is added as a cash flow in the year it is earned (post-tax) under "Other income."

22.2.3 PROJECT CASH FLOW

The cash flow has been forecasted on an annual production schedule basis for the first 20 years of mining.

22.2.4 ECONOMIC ANALYSIS

The cash flow is summarized in Table 22-2 and is based on estimates of project revenue, operating costs, and capital spending. The incremental and cumulative after-tax project cash flows are presented in Figure 22-1.

Table 22-2. Summarized Cash Flow

Items	Units	Startup Years	Steady State Production Years	All Years
Saleable Tonnes of MOP	Ktonnes	230	5,400	5,630
Sales Price	$/tonne	$450	$450	$450
Gross Revenue	$000	$103,500	$2,430,000	$2,533,500
Total Operating Cost	$000	$34,991	$771,507	$805,922
Depreciation	$000	$35,882	$267,006	$302,888
Depletion	$000	$13,766	$323,190	$336,956
EBIT	$000	$18,861	$1,068,297	$1,087,158
Taxes	$000	$5,731	$218,360	$224,091
NOPAT	$000	$13,129	$849,937	$863,067
OCF	$000	$62,777	$1,440,133	$1,502,910
Change in NWC	$000	$(6,750)	$(6,750)	$(13,500)
Capital Items	$000	$(154,615)	$(172,696)	$(327,311)
Other Income	$000	$5,834	$90,336	$96,170
FCFF	$000	$(92,753)	$1,351,023	$1,258,270

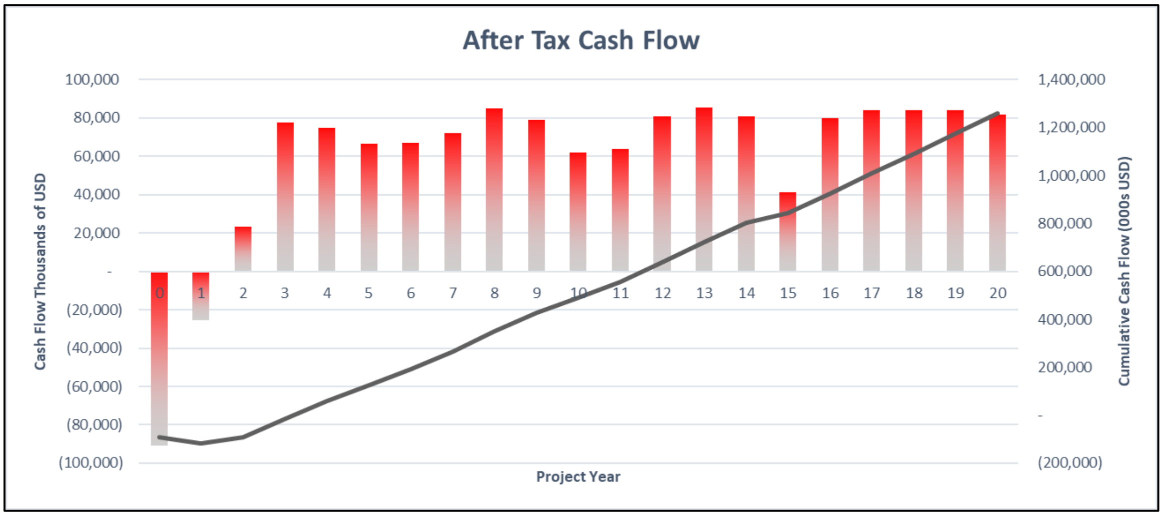

Figure 22-1. Sage Project After-Tax Cash Flow.

The After-tax NPV is $501.9M USD at 8 percent discount rate and an After-tax IRR of 39 percent. The undiscounted cash flow is $1,258.3M USD. Cumulative cash flow shows a payback period of 5 years for the Sage Potash project.

22.3 SENSITIVITY ANALYSIS

A sensitivity analysis was conducted to identify the key variables that have a significant impact on the project returns. The sensitivity analysis independently varied the following parameters:

1. Potash selling price
2. Operating cost
3. Initial capital cost

Each parameter was varied by ±20 percent, and the resulting NPV (thousands) was charted. The results of the sensitivity analysis are presented in Figure 22-2. The Sage Potash project NPV is most sensitive to potash sales price.

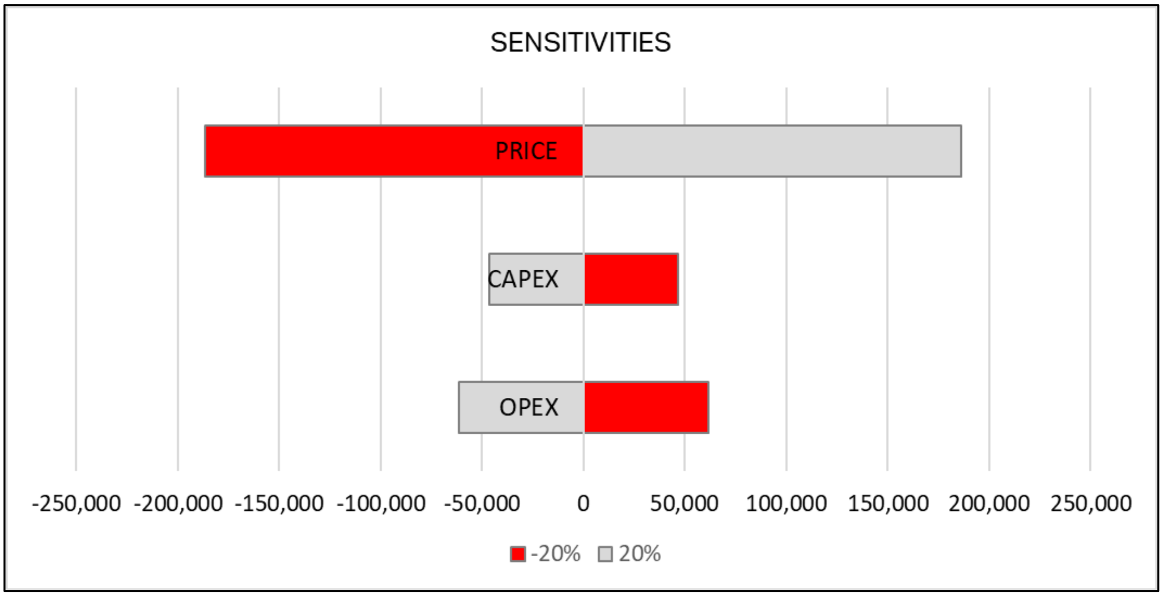

Figure 22-2. Sage Net Present Value Sensitivity Analysis.

23.0 ADJACENT PROPERTIES

There are no adjacent properties and, thus, no information is included in this section.

24.0 OTHER RELEVANT DATA AND INFORMATION

There are no other relevant data and information that have not been presented elsewhere.

25.0 INTERPRETATIONS AND CONCLUSIONS

The following interpretations and conclusions are made by the QPs.

25.1 INFRASTRUCTURE

Overall, access to the Property is good and is provided by several nearby paved highways and gravel roads. Truck transportation to regional markets is at a distinct advantage over rail and truck from Saskatchewan producers by $110 to $165 per tonne lower in transportation to the same market warehouses to Pocatello, Idaho; Provo, Utah; Grand Junction, Colorado; and Denver, Colorado.

25.2 DATA QUALITY AND DISTRIBUTION

A high-level of confidence in the Johnson 1 Well data has been established based on the 2014 Sennen exploration sampling program and measures to ensure the security and integrity of the core. Additional drilling is required to increase confidence in the geologic interpretations of the Project Area and to gather site-specific parameters for cavern design.

25.3 ECONOMIC ANALYSIS

The preliminary economic analysis indicates that the project has the potential to be profitable over the long term. Mechanical crystallization plants have long lives and have value at the end of this initial project life, as shown in the cash flow. Solution mining does not require extensive development when compared to a conventional underground mine, which enables the flexibility of a phased startup and the opportunity for increased capacity beyond this original target production.

25.4 GEOLOGY

The following key geological interpretations have been made for the Project Area:

1. Potash mineralization showing economic potential was identified from drillhole data within the Project Area, consisting of two principal zones—the Cycle 18 Upper Potash Bed and the Cycle 18 Lower Potash Bed.
2. The Cycle 18 Upper Potash Bed appears to be present and of sufficient grade (26.96 percent K_2O in the Johnson 1 Well) over the Project Area.
3. The Cycle 18 Lower Potash Bed distribution requires further drilling to fully define the distribution.
4. Carnallite and insoluble content are low—0.04 percent and 0.62 percent, respectively, in the Johnson 1 Well.
5. Project Area contours show that the mapped horizons are all relatively flat units dipping very gently in a south to southwest direction at an angle of 10° to 15°. Major structural irregularities and geological anomalies were not identified in the review of the 2D seismic data.
6. The estimated bottom hole temperature from the wireline tools is 68°C, which is favorable for solution mining.

25.5 POTENTIAL RISKS AND UNCERTAINTIES REQUIRING FURTHER INVESTIGATION

The following summarizes items of interest that the authors note could affect mine parameters and possibly negatively affect Potential Quantity Tonnage and Mineral Resources:

1. Mine parameter deductions for extraction ratios and cavern loss are expected outputs from future geological and engineering studies. These will have a negative effect on the Mineral Resource.
2. Project-specific economic grade cut-offs for all potash members are also expected outputs of an economic evaluation of the Project Area. These will have a direct impact on future resource calculations.
3. Dipping beds are not desirable for solution mining because it limits the cavern size. The Project Area is surrounded by complex structures that will need to be better delineated in subsequent exploration programs.
4. Fluctuations in price or market conditions for potash would change economic cut-offs.
5. Heritage or environmental issues, such as surface restrictions caused by wildlife or landowner negotiations, are not expected to have a material effect on the Mineral Resource because they can generally be overcome in time; however, if unresolved, surface restrictions that prevent drilling pad construction would likely reduce Reserves.
6. Further exploration efforts, such as drilling or seismic, will add confidence to the geologic model and may expand or reduce the Mineral Resources, depending on results.
7. The water supply has been identified but neither its quantity nor quality has been confirmed.

26.0 RECOMMENDATIONS

The authors recommend the following:

1. Conduct a 3D seismic survey to further delineate the geological structure and anomalies in the area (e.g., collapses, faulting, dip), determine well placement, and determine other considerations for future solution mining operations. The estimated cost to acquire the 3D seismic survey is $40,000 to $50,000 USD per square mile or section.
2. Complete one stratigraphic drillhole and use it to assess the full potential of the Cycle 18 Upper and Lower Potash Beds. If positive results are returned, this well could be converted to a pilot test well. The estimated cost for this well is between $3.5 and $3.7M USD.
3. Perform assaying and geotechnical testing during the stratigraphic drillhole program to assist with future mining studies. The required additional testing and engineering review would cost approximately $750,000 USD.
4. Continue gathering baseline environmental data for use in permitting.
5. Ensure future drillhole planning considers sufficient overlap of the Resource ROI and step-out data when possible.
6. As confidence in the Resource increases, continue to advance the engineering studies to refine the process and solution mining design and cost estimation.
7. Drill or acquire an additional well for water sourcing for use in solution mining and processing.
8. Drill an injection well for the disposal of processing plant purge.
9. Confirm the efficiency and recovery in the plant. The impact of this would be that the brine feed rate would need to increase slightly to maintain the targeted production rate of potash.

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APPENDIX A

UTAH STATE MINERAL POTASH LEASE AND LEASE TRANSFER AGREEMENT

Contract Details

Lease:	ML54315OBA	Lease Type:	MINERAL SALTS	Acres:	7391.65
Date Approved:	12/27/2022	Start Date:	01/01/2023	Royalty Rate:	
Date Cancelled:		End Date:	12/31/2032	Term:	10
Lessee:	SAGE POTASH (USA) CORP.			Status:	Active
Address:	447 N. 300 W., SUITE #3				
	KAYSVILLE, UT 84037				

Parcel Legal Description

TRS	County	Bene	Type	Layer	Acres
T35.0S R25.0E S36 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T35.0S R26.0E S2 SL	SANJ	SCH	Use	OthM	118.61
Legal Description: LOTS 1(29.62), 2(29.57), 3(29.67), 4(29.75) [ALL]					
T35.0S R26.0E S16 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T35.0S R26.0E S32 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T36.0S R25.0E S2 SL	SANJ	SCH	Use	OthM	240.36
Legal Description: LOTS 1(20.19), 2(20.12), 3(20.06), 4(19.99), S2S2 [ALL]					
T36.0S R25.0E S32 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					

Parcel Legal Description

T36.0S R26.0E S16	SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL						
T36.0S R26.0E S32	SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL						
T37.0S R25.0E S2	SL	SANJ	SCH	Use	OthM	633.08
Legal Description: LOTS 1(38.40), 2(38.31), 3(38.23), 4(38.14), S2N2, S2 [ALL]						
T37.0S R25.0E S36	SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL						
T38.0S R25.0E S2	SL	SANJ	SCH	Use	OthM	639.60
Legal Description: LOTS 1(39.69), 2(39.83), 3(39.97), 4(40.11), S2N2, S2 [ALL]						
T36.0S R25.0E S36	SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL						
T36.0S R25.0E S16	SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL						

Total Acres: 7391.65

Interests in Contract

Interest Type: 1 Record Title RECORD TITLE

COMPANY ID: 104314 SAGE POTASH (USA) CORP. 8015443421 Percent Interest: 100.000000

Address ID: 10006506 447 N. 300 W., SUITE #3 KAYSVILLE, UT, 84037

Total Interest for Type:1 100.00

Comments

12/27/2022 8734

APPROVAL OF ML 54315 OBA - POTASH & MINERAL SALTS

ML 54315 OBA, issued to Sage Potash (USA), was approved as a standard 10-year Potash & Minerals Salts (to include lithium) lease with an option to extend. The annual payment will be $2.00 per acre with a production royalty of 5% gross.

Payment History

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount
12/19/2022	Minerals, Other Rental			6 /2023	SL126387	14800.00

Record Type: Payment (Billed) Description: Payor Name: SAGE POTASH (USA) CORP.

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount
12/14/2022	Minerals, Other Rental			6 /2023		14800.00

Record Type: Billing Description: Payor Name: SAGE POTASH (USA) CORP.

Contract Details

Lease:	ML53646OBA	Lease Type:	POTASH	Acres:	6537.51
Date Approved:	10/30/2017	Start Date:	11/01/2017	Royalty Rate:	
Date Cancelled:		End Date:	10/31/2027	Term:	10
Lessee:	SAGE POTASH (USA) CORP.			Status:	Active
Address:	447 N. 300 W., SUITE #3				
	KAYSVILLE, UT 84037				

Parcel Legal Description

TRS	County	Bene	Type	Layer	Acres
T33.0S R25.0E S36 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T33.0S R26.0E S32 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T34.0S R25.0E S2 SL	SANJ	SCH	Use	OthM	651.96
Legal Description: LOTS 1(43.06), 2(43.01), 3(42.97), 4(42.92), S2N2, S2 [ALL]					
T34.0S R25.0E S13 SL	SANJ	SCH	Use	OthM	160.00
Legal Description: NW4					
T34.0S R25.0E S24 SL	SANJ	NS	Use	OthM	200.00
Legal Description: SW4NE4, E2SW4, W2SE4					
T34.0S R25.0E S25 SL	SANJ	SCH	Use	OthM	320.00
Legal Description: E2					

Parcel Legal Description

T34.0S R25.0E S36 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T34.0S R26.0E S4 SL	SANJ	USH	Use	OthM	160.00
Legal Description: SW4					
T34.0S R26.0E S4 SL	SANJ	SCH	Use	OthM	325.55
Legal Description: LOTS 1(42.79), 2(42.76), S2NE4, SE4 [LOTS AKA N2NE4]					
T34.0S R26.0E S5 SL	SANJ	SCH	Use	OthM	240.00
Legal Description: SW4, S2SE4					
T34.0S R26.0E S16 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T34.0S R26.0E S19 SL	SANJ	NS	Use	OthM	320.00
Legal Description: W2					
T34.0S R26.0E S30 SL	SANJ	NS	Use	OthM	320.00
Legal Description: W2					
T34.0S R26.0E S32 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					
T34.0S R26.0E S21 SL	SANJ	SCH	Use	OthM	640.00
Legal Description: ALL					

Total Acres: 6537.51

Interests in Contract

Interest Type: 1 Record Title RECORD TITLE

COMPANY ID: 104314 SAGE POTASH (USA) CORP. 8015443421 Percent Interest: 100.000000

Address ID: 10006506 447 N. 300 W., SUITE #3 KAYSVILLE, UT, 84037

Total Interest for Type:1 100.00

Comments

10/30/2017 650

APPROVAL OF ML 53646 OBA - POTASH
On October 19, 2017 the Utah School & Institutional Trust Lands Administration Board of Directors approved this "Other Business Arrangement" Potash Mineral Lease. The lease term is 10 years with an annual rental of $2.00 per acre or $7,760.00. The royalty is 5% of the gross value of the leased substances. A bonus payment of $19,400.00 was received that includes the first-year's rental.

02/22/2022 7770

ASSIGNMENT APPROVAL - ML 53646 OBA - POTASH
A Record Title assignment is approved for 100% interest in this lease to Sage Potash (USA) Corp., 881 Baxter Drive, Suite 100, South Jordan, UT 84095, by O. Jay Gatten. No override reserved.

06/21/2022 8134

AMENDMENT - ML 53646 OBA - POTASH
On April 21, 2022, the Board of Trustees approved an amendment to add an additional 2,657.51 acreage to ML 53646 OBA. A one-time bonus payment of $3.00 per additional acre along with a rental payment for the additional lands at $2.00 per acre will be paid by lessee. The lease terms remain the same.

Payment History

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount
10/31/2022	Minerals, Other Rental			4 /2023	EP002354	7760.00

Record Type: Payment (Billed) Description: 9220730286 Payor Name: Peter Hogendoorn

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount
10/31/2022	Convenience Fee			4 /2023	EP002354	195.00

Record Type: Fee Payment (Never billed) Description: 9220730286 Payor Name: Peter Hogendoorn

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount
10/05/2022	Minerals, Other Rental	11/01/2022	10/31/2023	0 /0		7760.00

Record Type: Billing Description: Minerals, Other Rental Payor Name:

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount	Record Type	Description	Payor Name
06/22/2022	Convenience Fee			12/2022	EP002130	0.26	Fee Payment (Never billed)		SAGE POTASH (USA) CORP.
06/22/2022	Minerals, Other Rental			12/2022	EP002130	8.55	Fee Payment (Never billed)		SAGE POTASH (USA) CORP.
05/25/2022	Minerals, Other Rental		11/01/2022	11/2022	SL124224	13279.00	Payment (Billed)	10312023	SAGE POTASH (USA) CORP.
01/20/2022	Minerals, Assignment Fee			7 /2022	SL123161	75.00	Fee Payment (Never billed)		O. JAY GATTEN
09/30/2021	Minerals, Other Rental	11/01/2021	10/31/2022	3 /2022	SL122157	7760.00	Payment (Billed)		O. JAY GATTEN
09/21/2021	Minerals, Other Rental	11/01/2021	10/31/2022	0 /0		7760.00	Billing	Minerals, Other Rental	
10/05/2020	Minerals, Other Rental	11/01/2020	10/31/2021	4 /2021	SL118417	7760.00	Payment (Billed)		O. JAY GATTEN
09/25/2020	Minerals, Other Rental	11/01/2020	10/31/2021	0 /0		7760.00	Billing	Minerals, Other Rental	

Doc Date	Revenue Type	Start Date	End Date	Acct Period	Receipt Number	Payment Amount
10/31/2019	Minerals, Other Rental	11/01/2019	10/31/2020	4 /2020	SL114923	7760.00
Record Type: Payment (Billed)	Description:				Payor Name: O. JAY GATTEN	
09/19/2019	Minerals, Other Rental	11/01/2019	10/31/2020	0 /0		7760.00
Record Type: Billing	Description: Minerals, Other Rental				Payor Name:	
10/04/2018	Minerals, Other Rental	11/01/2018	10/31/2019	4 /2019	SL110737	7760.00
Record Type: Payment (Billed)	Description:				Payor Name: O. JAY GATTEN	
09/25/2018	Minerals, Other Rental	11/01/2018	10/31/2019	0 /0		7760.00
Record Type: Billing	Description: Minerals, Other Rental				Payor Name:	
10/31/2017	Minerals, Other Rental			4 /2018	SL106778	7760.00
Record Type: Fee Payment (Never billed)	Description:				Payor Name: O. JAY GATTEN	

APPENDIX B
PRIVATE MINERAL LEASES

Agreement Number	Net Mineral Acres	Parties	Expiry Date
PLS 101	600.00	Howard Minerals, LLC	June 18, 2030
PLS 102 A	133.34	Tamara Redd Knubel	June 18, 2030
PLS 102 B	22.22	Lemuel Hardison Redd IV	June 18, 2030
PLS 102 C	22.22	JoAnne R. Peterson	June 18, 2030
PLS 102 D	66.67	White Land Co.	June 18, 2030
PLS 102 E	22.22	Merlene R. Lovejoy	June 18, 2030
PLS 102 F	66.67	Spring Creek Ranch, LLC	June 18, 2030
PLS 102 G	66.67	The Barbara Hammett Living Trust	June 18, 2030
PLS 102 H	66.67	Jameson Family, LLC	June 18, 2030
PLS 102 I	133.34	Purple Sage & Pinon	June 18, 2030
PLS 103 A	20.00	John H. and Mary A. Huffman	June 18, 2030
PLS 103 B / PLS 103 C	40.00	Carmen Miller	June 18, 2030
PLS 103 D	20.00	Constance Huffman	June 18, 2030
PLS 104 A	600.00	Purple Sage & Pinon, LLC	June 18, 2030
PLS 105 A	253.12	Russell Todd Calvert	June 18, 2030
PLS 105 B	253.12	Shelley Dawn Calvert	June 18, 2030
PLS 105 C	56.25	Cory Cosslett	June 18, 2030
PLS 105 D	186.24	Joan V. Frizell	June 18, 2030
PLS 106	260.00	The Reich Family Trust	June 18, 2030
PLS 107 A	64.00	Joseph Mark Nielson	June 18, 2030
PLS 107 B	64.00	Beth N. Sorenson	June 18, 2030
PLS 107 C	64.00	Elaine N. Coleman	June 18, 2030
PLS 107 D	64.00	Barbara Loi N. Walker	June 18, 2030
PLS 107 E	64.00	Ann N. and Thomas H. Gibbons	June 18, 2030
PLS 108 A	140.00	Joyce Elaine Crowl	June 18, 2030
PLS 108 B	140.00	Lisa Joy Sadler	June 18, 2030
PLS 109	160.00	LaJuan J. Shoemaker	June 18, 2030
PLS 112	320.00	Barton K. Johnson, Valerie Johnson	June 18, 2030
PLS 113	290.48	David L. Gruver, Marie J. Gruver	June 18, 2030
PLS 114	519.55	Pearl Maxine Johnson Family Living Trust	June 18, 2030
PLS 115 / PLS 116	315.00	Doyle Farm, LLC	June 18, 2030
PLS 117 A	13.32	Coleen G. Dalton	June 18, 2030
PLS 117 B	53.27	B.A. LLC	June 18, 2030
PLS 117 C	13.32	David F. and Janet L. Gage	June 18, 2030
PLS 117 D	53.27	Marva J. Butler	June 18, 2030
PLS 117 E	63.93	Kay R. and Michelle M. Johnson	June 18, 2030
PLS 117 F	13.32	Diane M. Gage	June 18, 2030
PLS 117 G	53.27	CAJ Heritage, LLC	June 18, 2030
PLS 117 H	53.27	Joseph R. Barton and Carol Lynn Barton Family Revocable Trust	June 18, 2030
PLS 119 A / B	114.80	Dalton Family Trust	June 18, 2030
PLS 120 A	186.67	Lemuel Hardison Redd IV	June 18, 2030
PLS 120 B	186.67	JoAnne R. Peterson	June 18, 2030
PLS 120 C	186.67	Merlene R. Lovejoy	June 18, 2030
PLS 121	320.00	Pierce Family Trust	June 18, 2030
PLS 122	160.00	Jarvis Family Trust	June 18, 2030
PLS 123 A	129.95	Barbara J. Bartell	June 18, 2030
PLS 123 B	129.95	F. Cooper Jones	June 18, 2030
PLS 124	20.00	John D. Lewis Family Revocable Trust	June 18, 2030
PLS 124 C	20.00	Karl R. and Edith K. Lyman Revocable Trust	June 18, 2030
PLS 125	40.00	Virginia Sievert	September 19, 2030
PLS 126 A	39.99	Richard Leland Wright and Joleen M. Wright	June 18, 2030
PLS 126 B	39.99	Della F. Wright	June 18, 2030
PLS 126 C	39.99	Oren Yant	July 24, 2030
PLS 127	272.00	Dorothy J. Whiting	June 18, 2030
PLS 128	40.00	Daisy M. Black	August 9, 2030

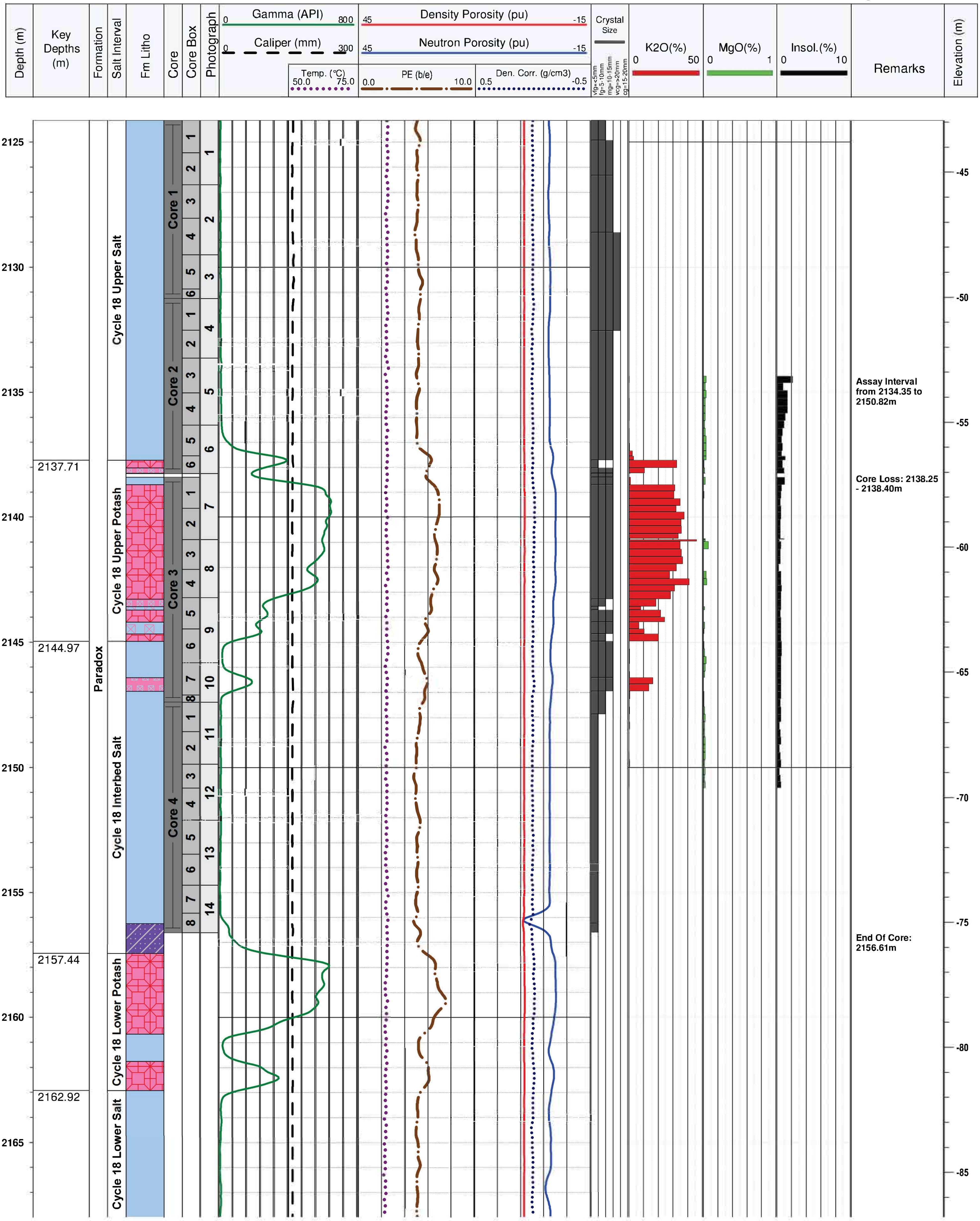
Agreement Number	Net Mineral Acres	Parties	Expiry Date
PLS 129	280.00	Marva J. Butler	June 18, 2030
PLS 130	440.48	Max Keele Johnson Jr as Power-of-Attorney for Charlene Ruth Johnson	June 18, 2030
PLS 131 / PLS 136	351.32	Scott Arile Johnson	June 18, 2030
PLS 132 B	80.00	Cherri G. Crittenden	June 18, 2030
PLS 132 C	168.75	Joann Crittenden	June 18, 2030
PLS 132 D	40.00	Fredda Angros	June 18, 2030
PLS 133	68.94	Sandy Lewis Johnson	June 18, 2030
PLS 134 A	101.60	Ronnie Sorenson, Stacy Mason, Stephanie Langford	June 18, 2030
PLS 134 B	101.60	Vickie Byers	June 18, 2030
PLS 134 C	101.60	Jane Manchester	June 18, 2030
PLS 135	795.43	Frost Minerals Company	June 18, 2030
PLS 137	99.08	The Suzanne A. Halliday Family Living Trust	June 18, 2030
PLS 138	160.00	Paradox Group, Inc.	June 18, 2030
PLS 139 / PLS 142	238.00	Gold Standard Trust	June 18, 2030
PLS 141	184.00	Diane Johnson Tracy	June 18, 2030
PLS 143	85.91	The Suzanne A. Halliday Family Living Trust	July 1, 2030
Six Shooter - 1	76.00	Susan Law	August 30, 2030
Six Shooter - 2	40.00	Jane Schaffner	September 16, 2030
Six Shooter - 3	80.00	Samuel Hankins	September 8, 2030
Six Shooter - 4	16.66	Michele Williams	September 16, 2030
Six Shooter - 5	17.78	Pamela Hammond	October 19, 2030
Six Shooter - 6	17.78	Kathleen Armbruster	November 1, 2030
Six Shooter - 7	31.08	Rodney Erik and Shari Dee Garcher	November 7, 2030
Six Shooter - 8	31.08	Paul Steven Garchar	November 8, 2030
Six Shooter - 9	62.16	Dean Sorensen	November 1, 2030
Six Shooter - 10	382.86	Cedar Root Holdings, LLC	November 10, 2030
Six Shooter - 11	66.32	The Semadini Family Trust	November 21, 2030
Six Shooter - 12	62.16	Irene Larson	November 1, 2030
Six Shooter - 13	62.16	Dahlia Dutson	November 1, 2030
Six Shooter - 14	160.00	4S Trust	March 7, 2031
Six Shooter - 15	231.65	W & O Snyder Trust	March 9, 2031

APPENDIX C
GEOLOGICAL SUMMARY

GL Elev (m): 2076.93

Division: Paradox Basin | Hole Name: Johnson 1 | T.D. (m): 2194.59 | Easting: 665,722.52038

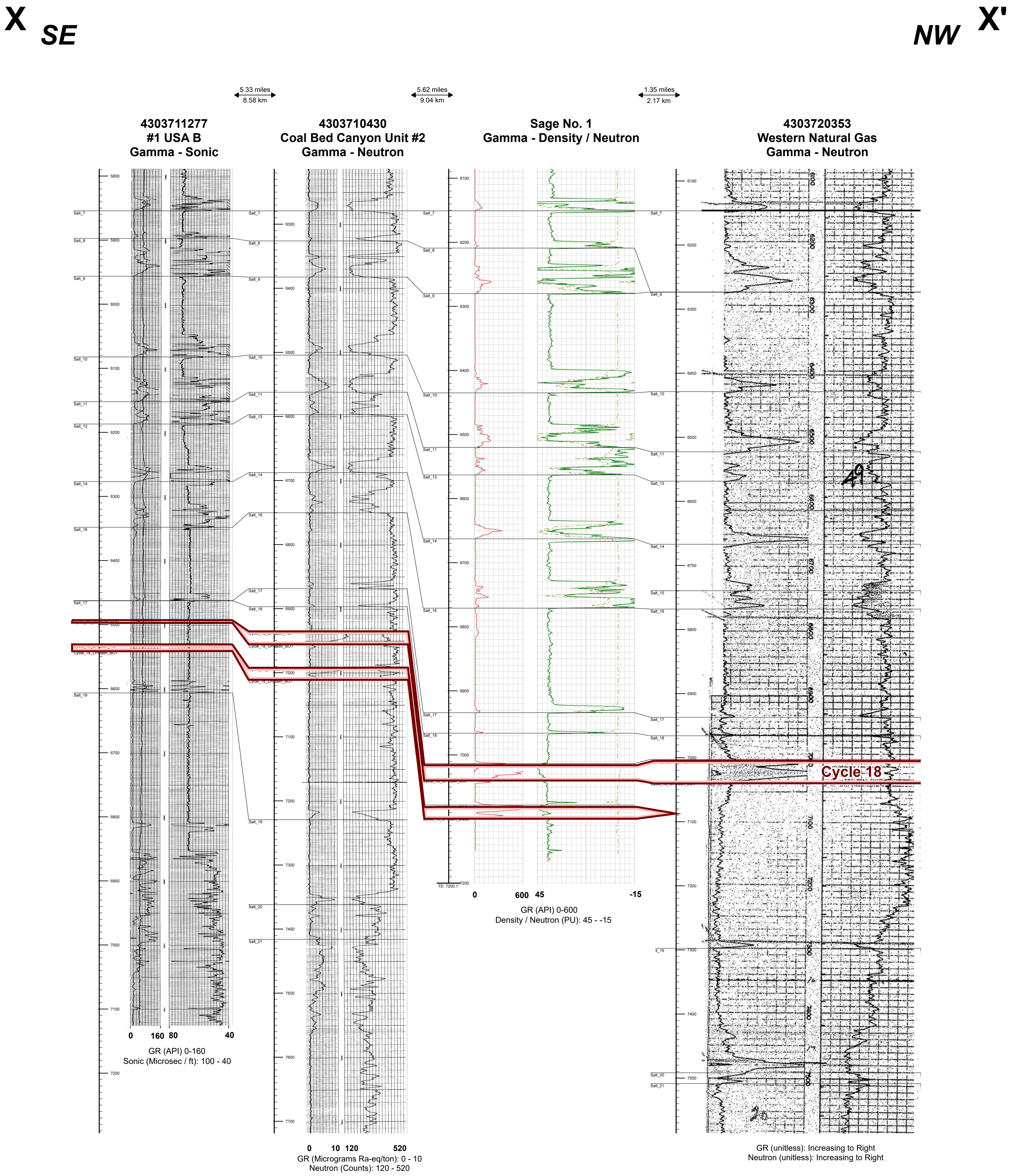
Licence: E-037-0191 | Location: NW NW Sec 30, T34S, R26E | KB Elev (m): 2081.20 | Northing: 4,185,233.38907



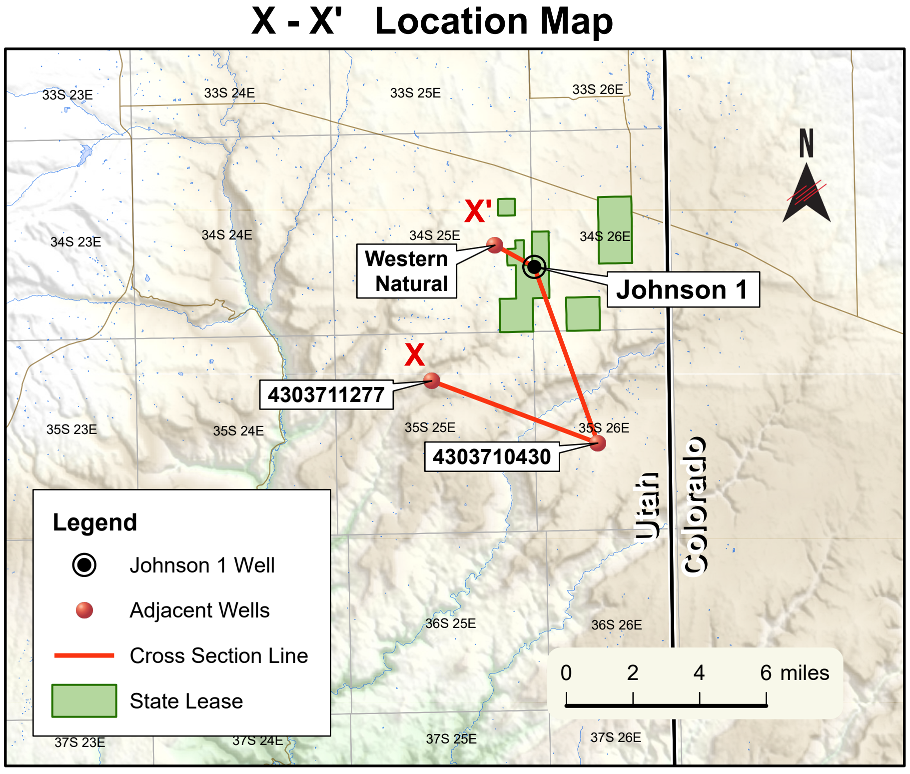
Shale	Argillaceous Dolostone	Halite	Sylvinite	Sylvite-Poor Halite
Sandstone	Dolomitic Limestone	Clay-Rich Halite	Carnallitite	Carnallitic Sylvite-Poor Halite
Limestone	Anhydrite	Mudstone w/ Halite	Sylvite-Rich Halite	Weakly Carnallitic Sylvite-Poor Halite
Argillaceous Limestone	Argillaceous Anhydrite	Clay Seam	Carnallitic Sylvite-Rich Halite	Carnallitic Halite
Dolostone	Red Bed Shale	Carnallitic Sylvinite	Weakly Carnallitic Sylvite-Rich Halite	Weakly Carnallitic Halite

Date Printed: June 23, 2015

APPENDIX D
GEOLOGIC CROSS SECTION



X - X' Location Map



NOTE: Per Utah Division of Oil, Gas & Mining, Johnson 1 has been renamed Jesse #1 (API 4303750088) after Valence Resources attempted to re-enter the well March 2022.

SAGE POTASH

GEOLOGICAL CROSS SECTION X - X'

Drawn by: Abi Martin P.Geo., Wally Harildstad	**File No.:** SGPO22006A.aprx
Checked by: Debbie Shewfelt P.Geo.	**Date:** Monday, January 17, 2022
Approved by: Debbie Shewfelt P.Geo.	**Scale:**
Revision: Monday, January 17, 2022	**Geo. Ref.:** NAD 1983 UTM Zone 12N