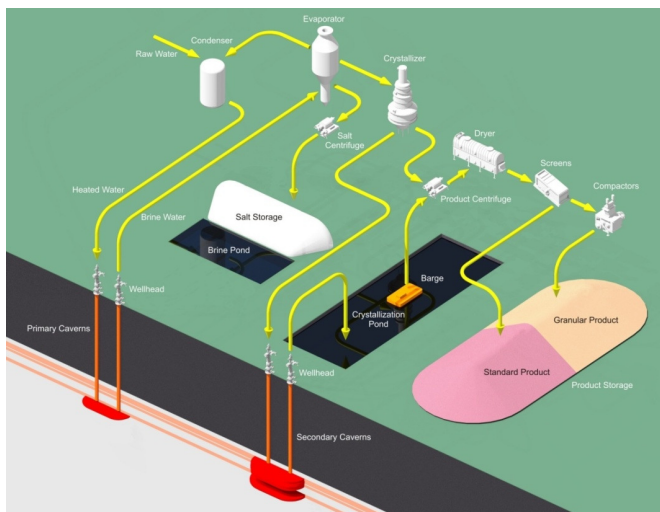




# Milestone Project Scoping Study Executive Summary



Western Potash Corp.

1/11/2010



## **INTRODUCTION AND NOTICE TO READER**

This document (“the Summary”) was prepared by Western Potash Corp. (“Western Potash”) as a summary of the work and results of the “Western Potash Corp. Milestone Project Scoping Study” (“the Study”) dated September 2010. The Study was prepared exclusively for Western Potash by AMEC Americas Limited (“AMEC”). The Study was based on, and supported by, the NI 43-101 Technical Report titled “Technical Report Concerning Mineral Resource Estimate, Subsurface Mineral Permit KP 408 and KP 409, Saskatchewan”, dated July 12, 2010 and filed on SEDAR on July 16, 2010 (the “Report”). The Report was prepared by Agapito Associates Inc. and reported via news release dated June 3, 2010. The Qualified persons for the Report were Dr. Michael P. Hardy, P.E, P.Eng., P.G., Dr. Douglas F. Hambley, P.E., P.Eng., P.G. and Dean Pekeski, P.Geo.. Western Potash cautions that mineral resources that are not mineral reserves do not have demonstrated economic viability. The Study does not include an assessment of the economic viability of any inferred mineral resources. There is no certainty that the results projected in the Study will be realized and actual results may vary substantially.

AMEC was chosen to carry out the Study because of:

- Their management of multiple potash expansion projects in Saskatchewan that together represent capital investments of several billion dollars.
- Their domain-specific technical expertise and their Engineering Procurement and Construction Management (“EPCM”) contractor experience
- Their experience in potash mine construction, potash processing and their expertise in producing potash feasibility studies.

The quality of information, conclusions and estimates contained within the Summary is consistent with the level of effort involved and based on:

- information available at the time of preparation
- data supplied by outside sources and
- the assumptions, conditions and qualifications set forth in the Study.

Western Potash has selected and condensed excerpts of the Study, which Western Potash believes are representative of the Study in its entirety, and presents them in this Summary.

## 1.0 PROJECT DESCRIPTION

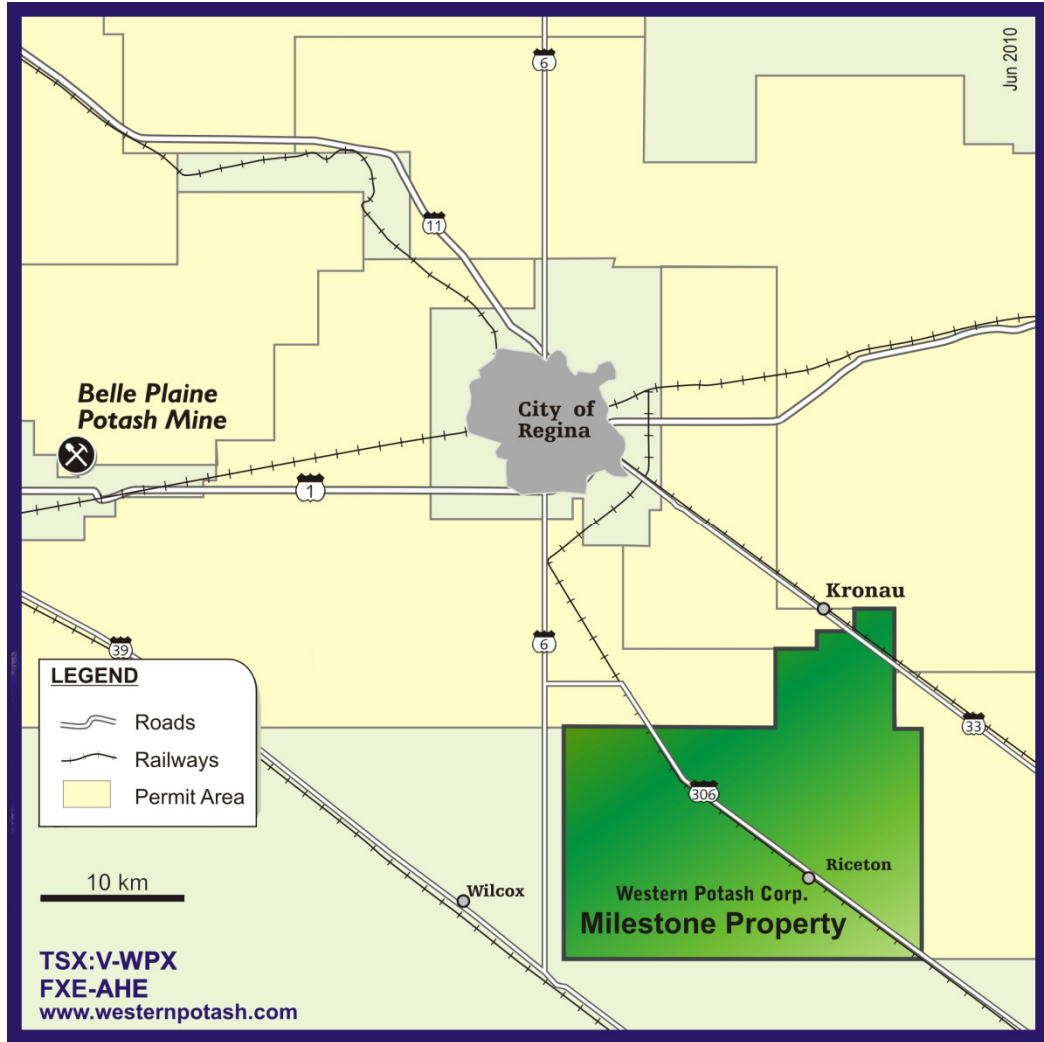
The Western Potash Corp. Milestone Potash Solution Mining Project is located in central Saskatchewan, approximately 35 kilometres (km) southeast of Regina, and southeast of Mosaic's Belle Plaine Mine, one of the largest producing potash solution mines in the world (see Figure 1). The project currently holds some 78,549 acres (not including road allowances) of Crown mineral lands by means of Subsurface Mineral Permits KP 408 and KP 409. The land included within the physical boundaries of the Permit Areas also includes 78,891 acres of freehold land. WPX has agreements in place for the mineral rights covering 18,484.12 acres of this freehold land as of May 14, 2010.

The potash resource at Milestone is hosted within the Prairie Evaporite Formation. The Prairie Evaporite Formation consists of essentially flat-lying sedimentary beds of interbedded halite, sylvite, carnallite, clay, and minor anhydrite and dolomite. The potash mineralization occurs within three beds within the Prairie Evaporite Formation, namely the Patience Lake, Belle Plaine and Esterhazy Members. A fourth zone, the White Bear Marker Beds which lie between the Belle Plaine and Esterhazy Members, is too thin to be considered as a potential resource. The potash-bearing beds are regular and flat-lying (apart from regional dip and local anticlinal and synclinal 'noses') except where the mineralization has been modified either by intra-formational erosion anomalies, wherein the sylvinitic has been removed and replaced by a mixture of halite and insolubles, or post-depositional replacement of the sylvite mineral by halite.

During the 2009-2010 exploration program nine cored exploration wells were completed on the KP 409 Permit Area, as shown in Figure 2. All nine wells penetrated the Prairie Evaporite Formation that is host to the potash deposits in Saskatchewan. In addition 474.5 line-km of two-dimensional (2D) and 98 square km of three-dimensional (3D) seismic surveys were run, processed, and interpreted.

The Milestone property hosts a potash resource consisting of 41 million tonnes of Measured Resource (contained KCl), 133 million tonnes of Indicated Resource, and 560 million tonnes of Inferred Resource. The Scoping Study was based on, and supported by, the NI43-101 Technical Report titled "Technical Report Concerning Mineral Resource Estimate, Subsurface Mineral Permit KP 408 and KP 409, Saskatchewan", dated July 12, 2010 and filed on SEDAR on July 16, 2010 (the "Report"). The Report was prepared by Agapito Associates Inc. and reported via news release dated June 3, 2010. The Qualified persons for the Report were Dr. Michael P. Hardy, P.E., P.Eng., P.G., Dr. Douglas F. Hambley, P.E., P.Eng., P.G. and Dean Pekeski, P.Geo.

Figure 1: Milestone Location Map

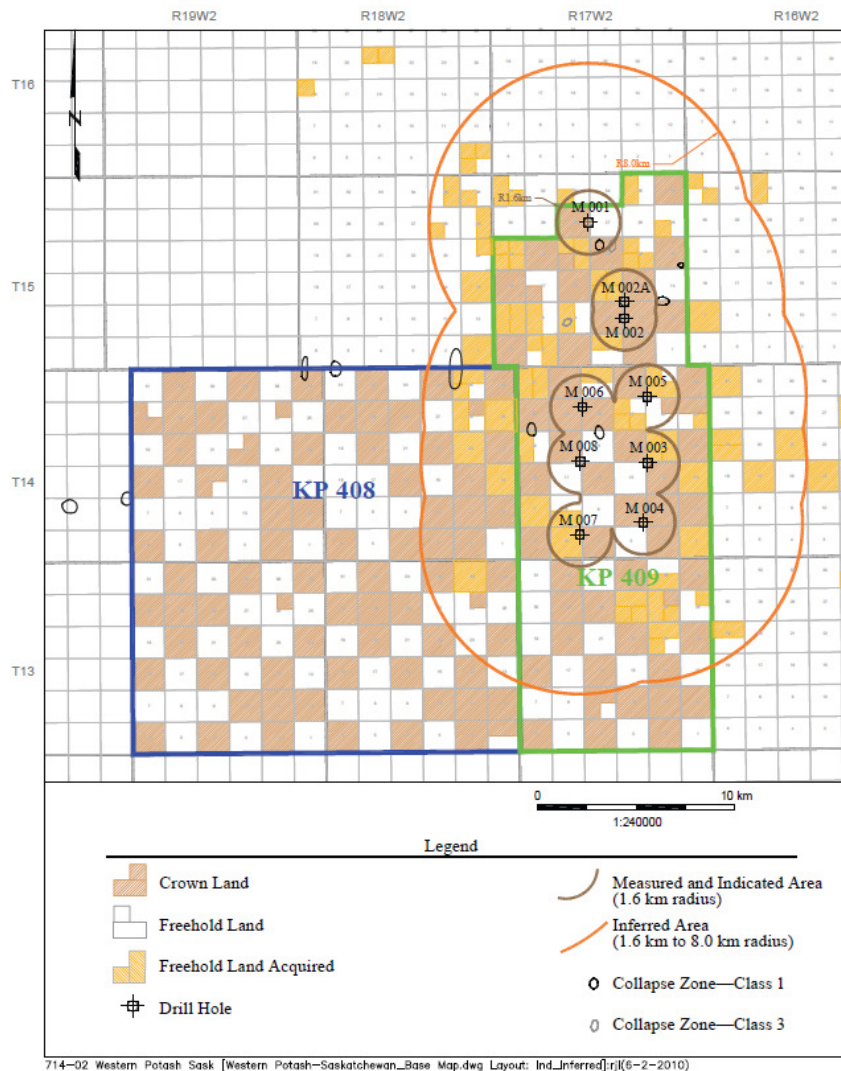


The identified resource is a significant and consistent deposit of bedded sylvinitic. The Measured and Indicated resource estimate provides sufficient potash (KCl) resource to potentially support a 2.5 million tonnes per annum solution mining operation for more than 40 years. Carnallite does not appear to be a serious concern for the Milestone project, although effective mine planning is required to avoid areas of higher carnallite. The average content of insoluble materials in the Milestone resource is quite low, in comparison with most existing Saskatchewan potash operations. The deposit appears to be quite flat, creating ideal conditions for solution mining. Salt cover or salt back” is considered to be adequate to support the development of caverns for solution mining.

The Milestone property has the advantage of having a higher formation temperature than many other properties being considered for solution mining. The higher

temperature increases the concentration of KCl in the saturated brine being brought to surface processing, which in turn reduces the energy required for evaporation and for brine circulation.

**Figure 2: Well locations, Measured, Indicated and Inferred Mineral Resource Areas.**



714-02 Western Potash Sask [Western Potash-Saskatchewan\_Base Map.dwg Layout: Ind\_Inferred]:r(6-2-2010)

This Study was intended to produce a preliminary economic assessment of the Milestone Project. Ultimate plant production capacity scenarios of 1.0, 1.25, 2.0 and 2.5 Mt/y were considered. The 1.25 and 2.5 Mt/y scenarios included secondary mining

in the solution mining methodology. The Study covers all aspects of the proposed solution mining operation, including:

- Solution Mining concepts and designs
- A complete description of the potash refinement process
- Site infrastructure
- Capital and operating cost estimates
- Discounted cash flow (DCF) and economic analysis for the project
- A market analysis and potash price forecast produced by CRU Strategies Ltd.
- Conclusions, recommendations and future work

This study did not take into consideration:

- Detailed cost breakdown of Taxation and royalties
- Detailed cost breakdown of infrastructure required for water demand

An independent market analysis study has been completed by CRU Strategies Ltd. for WPX. The report was completed prior to completion of the AMEC Study, and was made available to AMEC for reference. The CRU study includes a section on projected prices of potash, subject to certain production and market related assumptions.

## **2.0 SOLUTION MINING**

The Study evaluated the mining and economics of the Measured and Indicated resource defined by six of the nine wells drilled at Milestone. These six wells located in township 14-17-2 are known as the “Riceton Wells” due to their proximity to the community of Riceton (wells M-003 through M-008, see Figure 2). Around the Riceton wells, all three potash members contain significant potash resources to support mining at a rate of > 2.5 Mt/yr for over 40 years. . It is desirable to maximize potash resource utilization, while minimizing the complexity of the solution mining operation. For this study, it was assumed that all three potash members will be mined.

The Patience Lake and Belle Plaine members are separated by a bed of mixed halite, labelled Interbed 1, having an average thickness of only 2.1 m. Interbed 1 has a sylvite grade of 2.4%. Interbed 1 cannot feasibly be removed from the mining sequence, due to its low thickness. Also, the cost of interrupting the solution mining sequence to avoid Interbed 1 is likely to be greater than the additional cost of mining

and processing the low grade ore in Interbed 1. Therefore, the solution mining method considered in the Study will include the uninterrupted solution mining of the Patience Lake member, Interbed 1, and the Belle Plaine member.

The Esterhazy member is separated from the Belle Plaine member by a thick bed of halite, labelled Interbed 2. Interbed 2 has an average thickness of 17.4 m. Although the Esterhazy member contains a significant potash resource, Interbed 2 does not, and dissolving it would introduce unacceptable costs to the operation. The Study contemplates that once primary solution mining is completed in the Esterhazy member Interbed 2 will be mechanically isolated from the Esterhazy member and mining activities will resume in the Belle Plaine/Interbed 1/Patience Lake member(s). Interbed 2 will be left intact and as such is not included in mining plans.

For the purpose of the Study, the planned mining of the Milestone potash resource uses a dual-well cavern technique with successive mining 'cuts' taken from the mined members. A dual-well technique lends itself well to potash extraction since flow can be controlled for a more uniform cavern size. The dual-well cavern technique utilizes two directionally drilled wells approximately 1,700 m in depth, separated at depth by approximately 70 m. A series of 24 directionally drilled wells are drilled from a single centralized "pad", allowing for the development of twelve solution mining caverns from each pad.

#### 2.1.1 Sump Development - Esterhazy

The first stage of potash solution mining is the development of a sump beneath the Esterhazy member, at both wells. A sump is developed in the underlying halite by injecting cold water down the inner production tubing, and extracting brine through the annulus, as shown in Figure 3. The top of the cavern is controlled by a layer of insoluble fluid, called a "blanket". The level of the blanket is adjusted from surface as required. For this study, the blanket material is assumed to be oil, although diesel fuel is a common alternative.

#### 2.1.2 Sump Connection

Once sumps are developed to the appropriate depth, flow is reversed in each well system. The difference in density between the injected water and the saturated NaCl brine causes the water to remain at the top of the sump, resulting in horizontal growth of the cavern roof, as shown in Figure 3. The oil blanket is maintained to prevent growth of the cavern into the potash-bearing member. This continues until the two sumps become connected, forming a single cavern.

### 2.1.3 Roof Development

Once both wells are connected as a single cavern, the flow is again changed. Water is injected down one well, and brine is extracted up the other well. Flow is periodically reversed to keep the cavern symmetrical. The roof of the cavern is expanded horizontally, until the desired cavern span is reached (see Figure 4). The oil blanket is still maintained to prevent growth of the cavern into the potash-bearing member.

### 2.1.4 Primary Mining

Once the cavern roof is fully developed to the desired cavern span, primary mining of the potash member can begin. The blanket is elevated as shown in Figure 5. Hot water is injected down one well and brine is extracted through the other well. The oil blanket is carefully controlled and flow is reversed periodically to ensure symmetry. Multiple 'passes' are taken in the potash member until the member is completely mined to the designed specifications. Insolubles and undissolved halite are collected in the sump.

### 2.1.5 Isolation of Esterhazy Member

Once primary mining is completed in the Esterhazy member, tubing and casings are raised, and cement plugs are installed to isolate the existing cavern from both wells, as illustrated in Figure 6. The purpose of this interruption in solution mining is to bypass the large volume of low grade ore in Interbed 2.

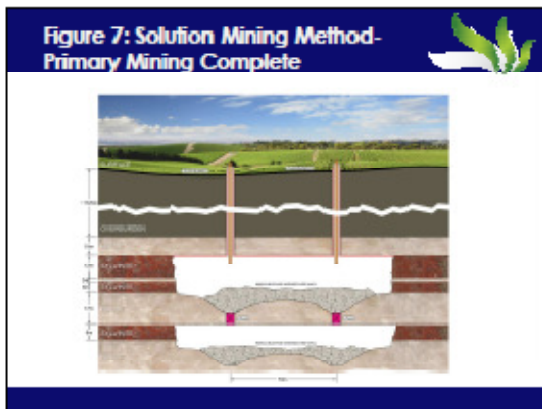
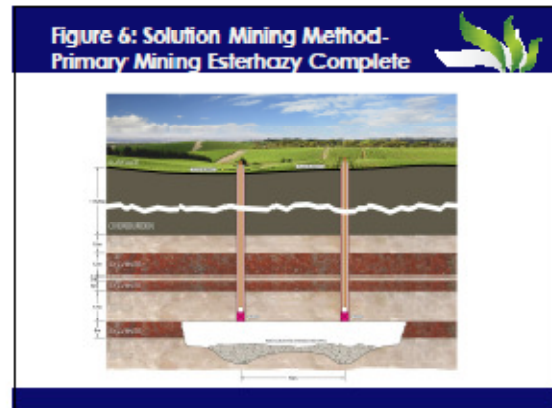
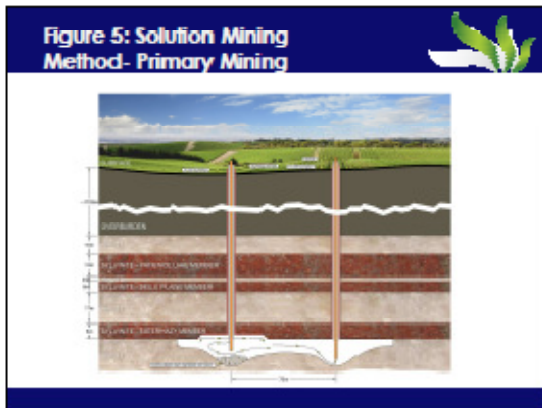
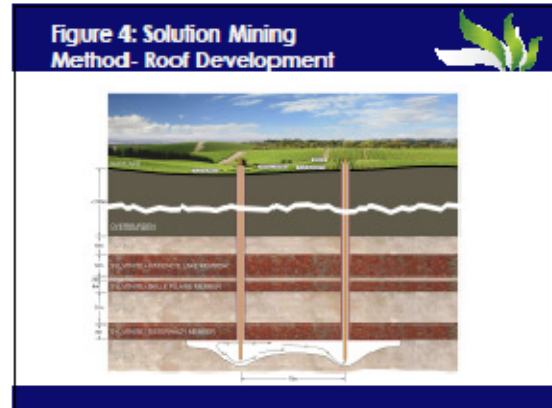
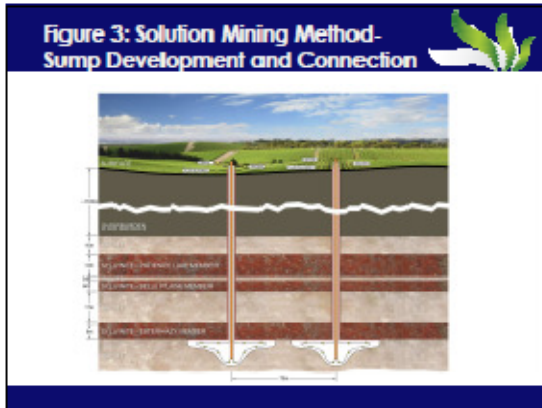
### 2.1.6 Primary Mining Complete

Once the existing Esterhazy cavern is isolated, the sump development process is initiated for the Belle Plaine member. Sump connection, roof development, and primary mining of the Belle Plaine member, Interbed 1 and the Patience Lake member are completed, as previously described for the Esterhazy member, and as illustrated in Figure 7. The Belle Plaine and Esterhazy members remain separated by Interbed 2.

### 2.1.7 Secondary Mining

Secondary mining involves the injection of NaCl-rich brine into the cavern, selectively dissolving potash from the walls of the cavern. Secondary mining reduces operating costs due to the relatively low energy requirement.

After all primary mining activities are completed; the cement plugs are drilled out, restoring access to the lower cavern. Brine is pumped into the cavern at a reduced rate, and allowed to leach the cavern walls. The roof will also need to be controlled with the insoluble oil blanket to prevent excessive cavern height. Figure 8 illustrates the completion of secondary mining and the final cavern shape when mining is completed. Undissolved halite and insolubles remain in both the upper and lower portions of the cavern.



### 2.1.8 Well Abandonment

It is likely that at least some NaCl can be re-slurried and returned to abandoned caverns. Salt backfilling of caverns could potentially provide the following benefits to the project:

- Reduction of surface salt disposal
- Reduction of abandoned cavern brine, resulting in less water and KCl lost to caverns
- Reduction of net cavern void, resulting in less ultimate surface subsidence

Salt backfilling could be a significant opportunity to improve the overall environmental impact and economics of the Milestone project. More study is required in future stages of the project to verify the method and extent of backfilling. No salt backfilling has been included for this study.

## 2.2 Cavern Dimensions

The following considerations were made in selecting the dimensions of the caverns:

- **Cavern Stability:** Due to the relative depth and temperature of the Milestone deposit, cavern stability is a first order consideration. Caverns must remain intact long enough to complete all primary and secondary mining activities.
- **Subsidence:** Subsidence is more dependent on cavern height than cavern dimensions.
- **Freehold Land:** Since there are unacquired freehold land parcels, it is desirable to select dimensions that would allow for those parcels of land to be easily bypassed.
- **Extraction Ratio:** The target extraction ratio was set at 35%; a common value used in conventional potash mines, and other solution mining projects.

A conservative approach was taken in selecting the cavern dimensions for this study. A dual-well cavern was selected, with dimensions shown in Figure 9.

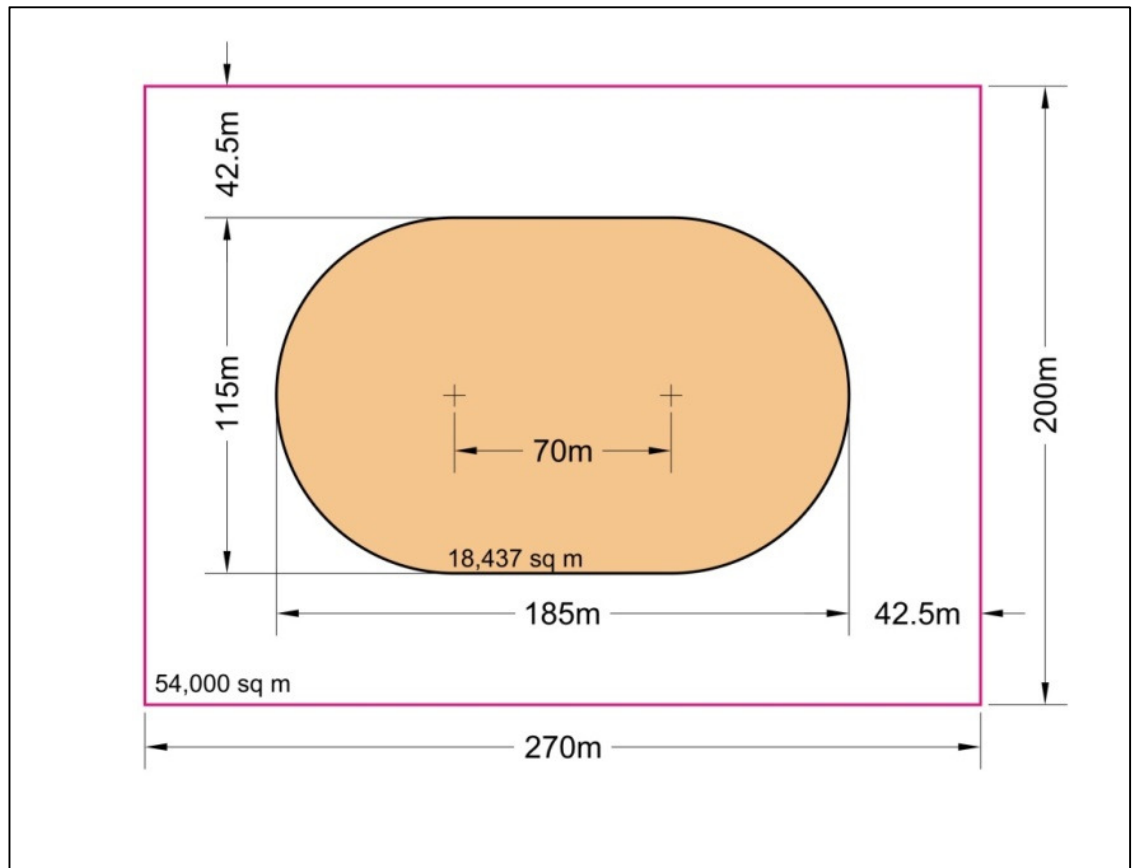
The selected cavern dimensions were modeled in Subsid\_3D by RESPEC for both cavern stability and ultimate surface subsidence. The cavern dimensions resulted in acceptable cavern stability over the duration of solution mining activities.

## 2.3 Cavern Field

The cavern field was designed using the Measured and Indicated resources as reported by, the NI43-101 Technical Report titled “Technical Report Concerning Mineral Resource Estimate, Subsurface Mineral Permit KP 408 and KP 409, Saskatchewan”, dated July 12, 2010. Cavern dimensions and combined member characteristics were also used as previously described. Since dip is very slight, and the strike is reasonably close to due east-west, it is assumed that the caverns can be arranged with their long axis in an east-west orientation.

A total of 604 caverns were fitted into the planned cavern field.

**Figure 9: Selected Cavern Dimensions**

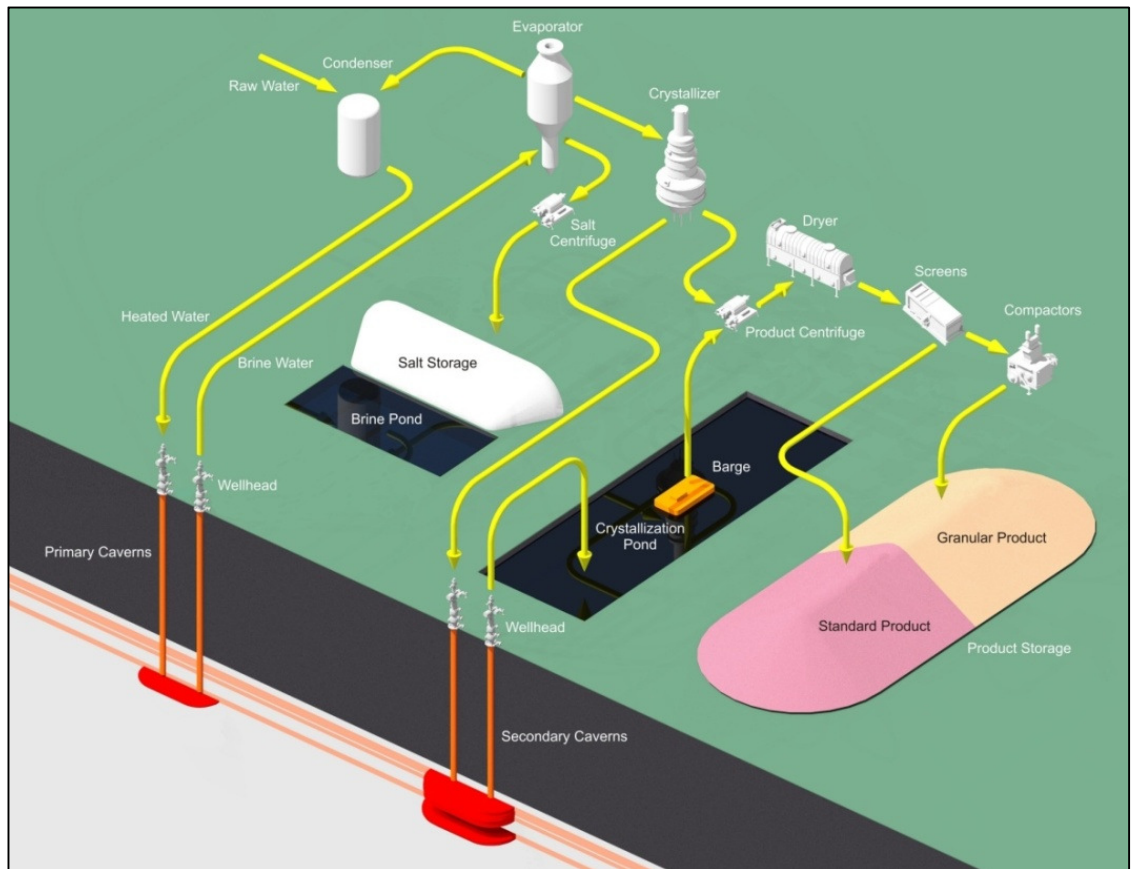


### 3.0 PROCESSING

The Milestone potash process design consists of 11 main process areas. Each major process area is described in the following subsections. Figure 10 is a generalized illustration of the Milestone potash process.

Process and mining assumptions made for the purposes of the study are described following.

**Figure 10: Milestone Potash Project - Generalized Process**



#### 3.1 Wellfield and Solution Mining

Raw water is combined with process condensate, heated and then injected into each primary cavern. In the caverns, potassium chloride and sodium chloride are dissolved to create a near-saturated KCl-NaCl brine. An insoluble oil blanket is injected to control the cavern shape and is recovered from the brine leaving the caverns. The oil is reused and the brine is pumped to the evaporation circuit. Secondary caverns will

each be fed with hot depleted solution from the fourth stage crystallizer once primary mining is completed in the initial caverns.

### 3.2 Evaporation

Using a five effect evaporation train with counter current brine flow, sodium chloride is precipitated out of the cavern fluid leaving a high temperature co-saturated brine which is sent on to the potassium chloride crystallizer circuit via the clarifier. Precipitated sodium chloride is centrifuged to remove brine, and is then sent to the salt handling area.

The process description and process flow diagrams represent evaporation using Multiple Effect Evaporators (MEE). An alternative for this application is the use of Mechanical Vapour Recompression (MVR) evaporation. In an MVR system, a single evaporation body is used. Vapour phase turbines recompress the vapour driven off brine. Energy released during condensation of the high temperature vapour is supplemented by process steam to provide the heat required for evaporation and crystallization of NaCl as described in the preceding section.

A key difference between MEE and MVR is that the energy input to the MEE system is primarily thermal, provided in this instance by natural gas whereas the input to the MVR is mechanical, provided by electrical power. Variations can include gas turbine driven compressors, or co-generation. An advantage of the MVR system is a higher recovery of hot water so that the system make-up water requirements are reduced. Generally, an MVR option will attract higher capital and maintenance costs offset by lower energy and water costs. Both system options will be further reviewed in subsequent stages of the project.

### 3.3 Crystallization

Crystallization of potassium chloride is performed in a four effect draft tube baffle crystallizer circuit. Brine from the clarifier is fed to the first crystallizer. Product slurry is carried through the crystallization circuit by mother liquor. Final product from the fourth effect crystallizer is transferred to the centrifuge and drying circuit. Brine from the fourth effect crystallizer is either sent to the pond crystallization area or to the brine tank for recirculation through the evaporation circuit. A Magnesium Chloride purge is also taken from the 4th effect crystallizer.

The mechanical crystallization system is designed for 2.0 Mt/y, and the MEE evaporation system is designed for 2.5 Mt/y. Once secondary mining begins, the overall plant capacity will increase from 2.0 Mt/y to 2.5 Mt/y. This is expected to occur approximately three years after start-up.

### **3.4 Centrifuging and Drying**

Product debrining is accomplished in two stages. Four centrifuges are used to debrine the slurry to approximately 95% solids. A fluid bed dryer follows the centrifuges to produce a product cake with approximately 0.1% moisture. Concentrate from the centrifuges recirculates to the evaporation circuit while solid product cake proceeds to screening and compaction. Dryer off gas dust is also recovered and returned to the crystallization circuit.

### **3.5 Product Screening**

Dried product from the fluid bed dryer is fed into the product screens, where it is separated into three size fractions. Standard product can be sent directly to storage or load out, or combined with fines to be compacted to granular size. Oversize product, also called 'natural granular', is combined with compacted granular to produce the final granular product.

### **3.6 Compaction**

The compaction circuit generates granular sized product through compaction, flake breaking and screening. Oversize material from the screens is crushed and re-screened while on-size material proceeds to the glazing circuit. Fine material returns to the compactors. Natural granular material is combined with the compacted granular prior to conditioning and glazing. The glazing process increases the surface hardness of the material giving it greater durability for handling and transport. After exiting the glazing dryer/cooler, the product is screened prior to transport or storage. Oversize product from the glazing screens is crushed and rescreened and the fines are returned to compaction. Dust from compaction is recovered and is sent to the salt handling area.

### **3.7 Loadout and Storage**

Standard and granular products are transferred to separate storage areas within the product storage building. From storage, either standard or granular product can be reclaimed and shipped via truck or rail. Granular product will be screened to remove oversize and undersize material prior to being shipped. Alternatively, standard or granular material may be sent directly to load out for immediate shipping. Anticaking agent is applied prior to shipping.

### **3.8 Salt Handling**

Brine from the evaporation circuit is collected in the clarifier, where fine salts are separated. From the clarifier, clear brine is sent to the crystallization circuit. Fine salts from the clarifier and coarse salts from the sodium chloride centrifuges are slurried in the repulp tank and transported to the salt pile in the salt handling area. Reclaim brine from the salt brine pond is pumped back to the repulp tank for use as a transport

medium. Brines from the crystallization pond, the brine pond and crystallization are injected into disposal wells as required. Brine injection serves to dispose of sodium chloride and magnesium chloride from the evaporation and crystallization circuits.

### **3.9 Utility Water and Air**

Two natural gas fired boilers will supply steam for the process. Condensate is treated and collected in a tank prior to return to the boilers. A cooling tower will be used to provide cooling for the evaporation and crystallization areas.

### **3.10 Pond Crystallization**

The crystallization pond will collect brine from the secondary mining operation. A floating barge collection system will be used to recover crystallized potassium chloride to the centrifuge feed system. Brine from the crystallization pond will gain heat from the cooling water return in the brine pre-heater and the crystallizer barometric condensers before being returned to the secondary brine tanks for reuse in the secondary mining caverns.

Pond crystallization utilizes Saskatchewan's relatively cool climate to increase crystallization capacity. Warm cavern brine is pumped into a large crystallization pond, designed for slow migration of brine from one end to the other. The shallow pond creates a large surface area, effective for cooling. Brine is allowed to cool as it migrates. Since the dissolution of KCl is much more sensitive to temperature change than NaCl, crystallization is primarily KCl. Once the KCl has precipitated out and is harvested as product, it is sent directly to the product centrifuges. A small amount of NaCl is also crystallized and harvested along with the KCl. The crystallization ponds increase the overall crystallization capacity of the plant from 2.0 Mt/y to 2.5 Mt/y.

The crystallization pond will be commissioned once the initial solution mining caverns transition from primary mining to secondary mining. For this study, it is assumed that all secondary brine will be sent to the ponds for crystallization.

### **3.11 Reagent Storage and Preparation**

Three key reagents are used in this process: ammonia, anticaking oil, and red iron oxide. Ammonia is used to neutralize the hydrochloric acid produced in the product drying circuit which can be corrosive to components in this area. Anti-caking oil, a mixture of de-dusting oil and anti-caking flake, is applied to the product prior to shipping to prevent coalescence of the product during transport. Red iron oxide is used to give the white crystallizer product the characteristic pink hue seen in traditionally mined potash product.

## 4.0 INFRASTRUCTURE

The presentation of plant location, layout and infrastructure is highly conceptual, and is intended to provide a basis for discussion and cost estimating. The following is a brief description of the assumptions used to conceptualize the plant infrastructure.

### 4.1 Plant Site

A plant site has been selected.

The plant site location was selected based on the following criteria:

- Minimal sterilized reserves
- Minimal operating costs
- Low initial magnesium content
- Positive working relationship with landowner

### 4.2 Buildings

For this study, it is assumed that plant buildings are sized and constructed in similar fashion to other Saskatchewan potash facilities.

### 4.3 Roads

Road access involves the improvement of local roads and construction of new sections to connect to the provincial highway system. Road design must be sufficient to withstand ongoing heavy traffic such as bulk delivery of supplies and fuel, and for the shipment of potash by road transport. Shipment to the Northern United States is permitted by "B" train tow trailer units, so the road system must be designed accordingly.

### 4.4 Rail

Onsite rail lines are designed to store one full unit train and one empty unit train. There are approximately 15 km of onsite rail lines.

A single offsite rail line is required to connect the plant rail lines to one of the main rail lines in the area, operated by either CN or CP. There are two major rail lines running near the proposed plant site:

- CN Qu'Appelle: north of proposed plant site
- CP Weyburn: southwest of proposed plant site

Either track could potentially be accessed. Both options are roughly the same distance from the proposed plant site. A distance of 29 km is assumed for the offsite rail line, along with allowances for road crossings. .

The Study assumed Western Potash will enter into a lease agreement for railcars, leasing a total of 600 railcars for the 2.0 Mt/y case.

#### **4.5 Utilities**

- **Water Supply:** The water supply pipeline includes the complete installation of a buried 760 mm (30”) jacketed carbon steel pipe traveling from the south end of Buffalo Pound Lake to the Milestone plant. A distance of 85 km is assumed, and road and stream crossings are included.
- **Power:** The Study assumes that electrical power will be purchased from SaskPower’s provincial grid. The operation will likely be supplied with 138kV power from the existing lines in the area with reinforcement as necessary. The operation will have a dedicated sub-station.
- **Natural Gas:** The buried natural gas supply pipeline will travel from the nearest gas line a distance of 8 km to the Milestone plant site. The line is 150mm (6”) jacketed carbon steel, allowances have been made for road and stream crossings.
- **Steam:** Steam will be generated on site using natural gas fired, high pressure (1,030 kPa(g)) boilers. Steam is used as the heat source for the MEE system and is required as supplemental heat in the MVR system.

#### **4.6 Wellfield Piping**

The allowance for initial wellfield piping from the plant to the production wells will include four lines at 5,200m each. All piping will be buried 2.4m, and allowances for road crossings are included. In total, approximately 40 km of primary, secondary, product and oil piping will be required to access the wellfield. Future phases of piping have not been included in the CAPEX estimate, and have been deferred until required. These costs comprise a component of the sustaining capital estimates.

#### **4.7 Salt Handling Area**

Salt (NaCl) produced in the evaporators is high quality material, capable of being upgraded to industrial grade by simple processing. It can be dried and used as road salt as produced. Several Saskatchewan operations currently provide waste salt to third party producers. It must be assumed, however, that it will be possible to dispose of only a fraction of the salt produced in this way, so that the remainder must be stored

for long term disposal. The currently favoured means of disposal is to allow the stored material to dissolve in natural rain water for injection over time. Management of residual salt represents a significant liability at the end of the productive life of the mine. Although the quantity for this operation is less than for a similar conventional mine, it warrants further consideration. During the next stage of study options for reduction of this inventory, including placement underground and enhanced injection will be considered.

Environmental retention design is based on advice from Western's environmental and surface geotechnical consultant Golder Associates. The site selected is located on a lacustrine plain. This means that the natural terrain is a thick bed of clay with very low permeability. It has been assumed that the salt pile and ponds can be built by the construction of berms with structures to control lateral migration only. Synthetic liners are not required under the salt pile or the brine ponds.

#### **4.8 Port**

This study does not include allowance for capital investment in port facilities. It has been assumed that export will be through terminals owned by others, and that the quantity produced will not exceed the capacity of existing facilities. An allowance for this is included in the freight rates. A flat freight rate of \$60/t is assumed, and includes all port costs. Once the market is better understood, it may be appropriate to use investment to secure space in existing facilities.

### **5.0 CAPEX ESTIMATE**

This Order of Magnitude level CAPEX estimate is not considered suitable for the appropriation of funds and is considered to have an accuracy level of  $\pm 35\%$  with the application of project contingency and no assigned risk.

The summarized Construction CAPEX estimates for the 1.0 and 2.0 Mt/y operations are presented in Table 1.

As the designed ultimate plant capacity increases, greater plant efficiencies can be realized, resulting in a declining CAPEX per tonne plant capacity.

The summarized CAPEX estimates for all plant capacity options considered in the Study are presented in Table 2. The second drilling program and the crystallization pond are included for the 1.25 and 2.5 Mt/y cases, as they occur within three years of plant commissioning.

**Table 1: Summarized CAPEX Estimate**

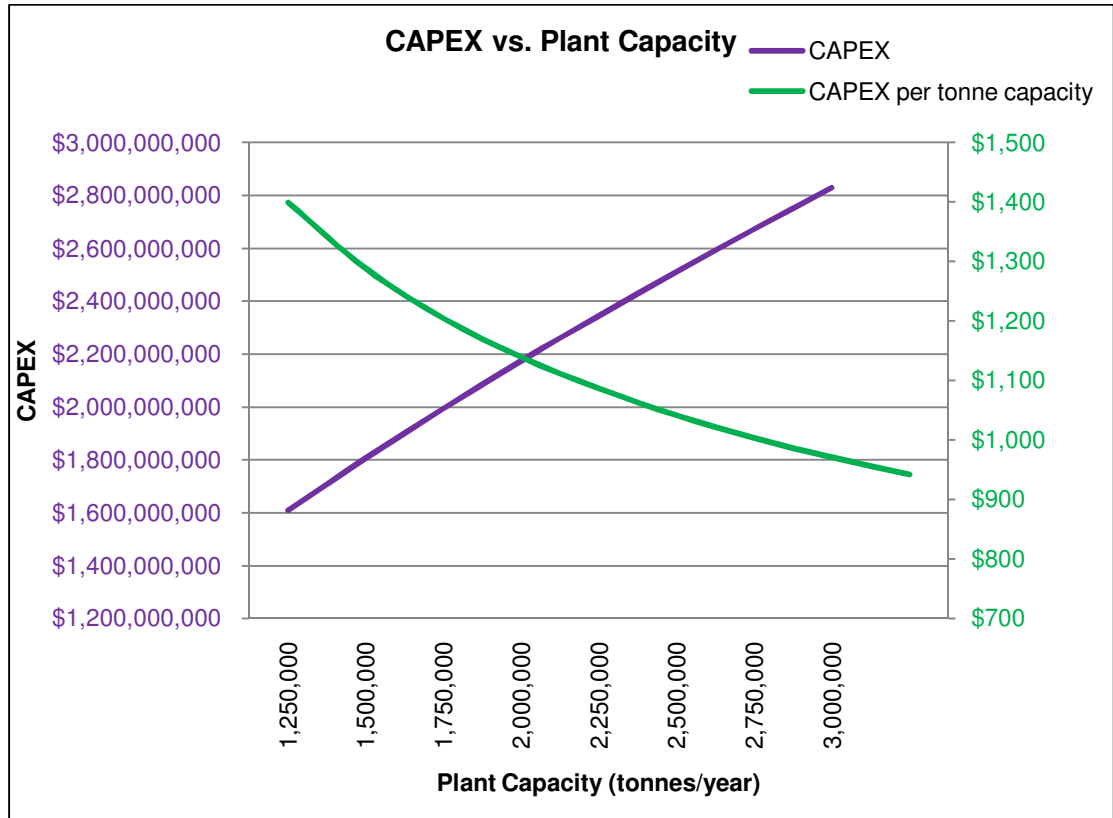
CAPEX Estimate	1.0 Mt/y	2.0 Mt/y
<i>Direct Costs</i>		
Mining	44,639,616	87,585,116
Civil	37,854,646	43,370,147
Civil Piping	21,676,114	28,119,118
Architectural	179,880,000	303,300,000
Building Services	42,773,353	81,237,686
Mechanical	85,777,785	157,904,861
Mechanical Bulks	29,024,708	51,220,431
Process Piping	103,339,447	157,358,986
Electrical	113,353,094	174,389,376
Instrumentation	1,264,575	1,945,500
Direct Costs	\$ 660,000,000	\$1,086,000,000
Contractor Indirects	\$ 130,000,000	\$ 228,000,000
EPCM Costs	\$ 122,000,000	\$ 204,000,000
Owner's Costs	\$ 84,000,000	\$ 136,000,000
SaskWater	\$ 200,000,000	\$ 200,000,000
Subtotal Directs & Indirects	\$1,196,000,000	\$1,854,000,000
Contingency @ 25%	\$299,000,000	\$ 464,000,000
Escalation @ 1.5% per Annum	\$67,230,000	\$104,000,000
<b>CONSTRUCTION CAPEX TOTAL</b>	<b>\$1,562,000,000</b>	<b>\$2,422,000,000</b>

**Table 2: CAPEX vs. Plant Capacity**

Plant Capacity (Mt/y)	CAPEX
1,000,000	\$1,562,000,000
1,250,000	\$1,610,000,000
2,000,000	\$2,422,000,000
2,500,000	\$2,510,000,000

The relationship between CAPEX and plant capacity is approximated in Figure 11, assuming secondary mining in all cases. A larger greenfield conventional potash mining operation is expected to have a CAPEX cost greater than \$2000/tonne capacity, while a comparable solution mining operation can be constructed for approximately \$1000/tonne capacity.

Figure 11: CAPEX vs. Plant Capacity



## 6.0 OPEX ESTIMATE

The mine and surface operations for this project will operate as an integrated facility under the direction of a locally based General Manager and operations team.

The operation will include; exploration for mine development; mine planning and operation; production drilling for cavern development; wellfield operation; processing of brine to produce agricultural grade potash; storage of product; loading of product and traffic control; management of tailings, brine and other waste material handling and environmental management.

The operating team will have responsibility for the following with assistance from corporate office where applicable; on site safety; human relations including union contract negotiation; local payroll administration; procurement of operating supplies; preparation of annual budgets and capital appropriation plans.

The site based operations team will not have responsibility for marketing of product, or transportation and logistics outside property limits.

The process operation will be developed as a self sustaining operation capable of handling all processing and shipping requirements with maintenance facilities to deal with routine activities including refurbishment of equipment. Specialized activities will be carried out by others off site.

Fixed costs are the costs which are associated with nominal capacity, including labour and repair supplies. The staff consists of a total of 264 positions comprised of;

- 79 salaried staff members, 42 hourly personnel on day shift, and 193 hourly paid personnel in four shifts to allow continuous operation.

Variable operating costs are the costs that are dependent on production levels, and include power, energy, raw materials and consumables.

- The power consumption estimate for surface operations is based on operating costs for the evaporation/crystallization section provided by the equipment supplier with additional power supply based on benchmarking values maintained by AMEC. The cost has been calculated based on SaskPower's E12 rate of \$0.422/kWh. MEE power input= 92 kWh.
- Natural gas consumption was calculated by the assumption of an 80% boiler efficiency applied to the steam consumption rates supplied by the evaporator/crystallizer supplier with an additional allowance for direct firing of the dryers and a factor for building and utility heat. The natural gas price was set at \$6.50 /GJ based on current Alberta gas trading prices (AECO-C). The rate includes allowance for transportation to Saskatchewan. MEE natural gas inputs = 4.57 GJ/t (4.33M BTU).
- Water will be brought to site by pipeline as described in a previous section of this report. The pipeline will be operated by SaskWater, but it has been assumed that Western Potash will contribute the capital cost of the line in order to secure the most favourable rate for water consumed. The rate used for this study is \$0.60 per m<sup>3</sup>.
- The primary component in the consumable category is reagents. For the process described, the only significant reagents are de-dusting oil and anti-caking agents applied to finished product prior to shipping to prevent degradation during transportation.

Variable operating cost details for the MME design option are summarized in Table 3.

OPEX Estimates are presented for nominal 1.0 Mt/y and 2.0 Mt/y operations. OPEX costs shown are annual costs, operating at full capacity. Unit costs are expressed as CAD\$/product tonne. Unit cost is averaged over one year, as there are slight seasonal variations to these rates.

Table 3: Variable Cost detail- MEE design

Input Variables	MEE		Price		MEE (\$/Yr)	MEE (\$/T KCI)
FT Equiv Staff	79	<i>people</i>	\$144,681	<i>\$/y</i>	\$11,429,800	\$4.61
Hourly Staff	235	<i>people</i>	\$98,268	<i>\$/y</i>	\$23,092,980	\$9.24
Repair Supplies	30%	<i>Labour Cost +</i>	20%	<i>Labour cost</i>	\$17,261,390	\$6.90
Power (138kVA Line)	166	<i>kVA peak</i>	\$6.34	<i>/kVA (138kV)</i>	\$1,050	
Power Fixed (Basic Monthly)	12	<i>Months</i>	\$184	<i>/mo</i>	\$2,208	
Electricity Charge	289,132,182	<i>kWh</i>	\$0.04	<i>/kWh</i>	\$12,201,378	
Total Electricity Charge					\$12,204,636	\$4.88
Natural Gas	11,433,220	<i>GJ/yr</i>	\$6.50	<i>/GJ</i>	\$74,315,932	\$29.73
Water	7,470,500	<i>m3/yr</i>	\$0.60	<i>/m3</i>	\$4,482,300	\$1.79
Consumables	\$13,208,205				\$13,208,205	\$5.28
Diesel	1,270,292	<i>l/yr</i>	\$0.90	<i>/litre</i>	\$1,143,263	\$0.46
Annual Op Costs					\$157,138,506	
Annual Op Cost per Tonne						\$62.90

The expected OPEX costs are shown for the MEE design option in Table 4.

**Table 4: Milestone Annual OPEX – MEE Design**

<b>ANNUAL OPEX (CAD\$) MEE DESIGN</b>	<b>Primary</b>	<b>Primary &amp; Secondary</b>	<b>Primary</b>	<b>Primary &amp; Secondary</b>
Mill Capacity	1,000,000	1,250,000	2,000,000	2,500,000
Product Tonnes	1,000,000	1,250,000	2,000,000	2,500,000
Product Grade	62.0%	62.0%	62.0%	62.0%
Labor	19,922,405	22,776,541	30,196,719	34,522,780
Repair Supplies	9,961,202	11,388,270	15,098,359	17,261,390
Power	5,603,308	6,103,308	11,204,636	12,204,636
Natural Gas	37,959,015	37,157,966	75,918,030	74,315,932
Water	2,457,600	2,470,350	4,456,800	4,482,300
Consumables	5,283,282	6,604,103	10,566,564	13,208,205
Diesel	750,000	857,447	1,000,000	1,143,263
<b>Total OPEX</b>	<b>81,936,812</b>	<b>87,357,984</b>	<b>148,441,108</b>	<b>157,138,505</b>

The expected unit costs are shown for the MEE design option in Table 5 .

**Table 5: Milestone Unit Cost – MEE Design**

<b>UNIT COST (CAD\$/t) MEE DESIGN</b>	<b>Primary</b>	<b>Primary &amp; Secondary</b>	<b>Primary</b>	<b>Primary &amp; Secondary</b>
Labor	19.9	18.2	15.1	13.8
Repair Supplies	10.0	9.1	7.5	6.9
Power	5.6	4.9	5.6	4.9
Natural Gas	38.0	29.7	38.0	29.7
Water	2.5	2.0	2.2	1.8
Consumables	5.3	5.3	5.3	5.3
Diesel	0.8	0.7	0.5	0.5
<b>Total Unit Cost</b>	<b>81.9</b>	<b>69.9</b>	<b>74.2</b>	<b>62.9</b>

The Milestone property has the advantage of having a higher formation temperature than many other properties being considered for solution mining. The higher temperature increases the relative concentration of KCl in the brine to be processed by 9% when compared with a project with a 10 degree cooler formation temperature, which in turn reduces the energy required for evaporation and for brine circulation. The results of the preliminary analysis of this effect are shown in Figure 12 which illustrates costs for primary and secondary mining in comparable solution operations with selected different formation temperatures.

The higher formation temperatures at Milestone were shown in this Study to reduce production costs by 8.5% when compared to potash production scenarios accessing formation temperatures that were 8 to 10 degrees cooler.

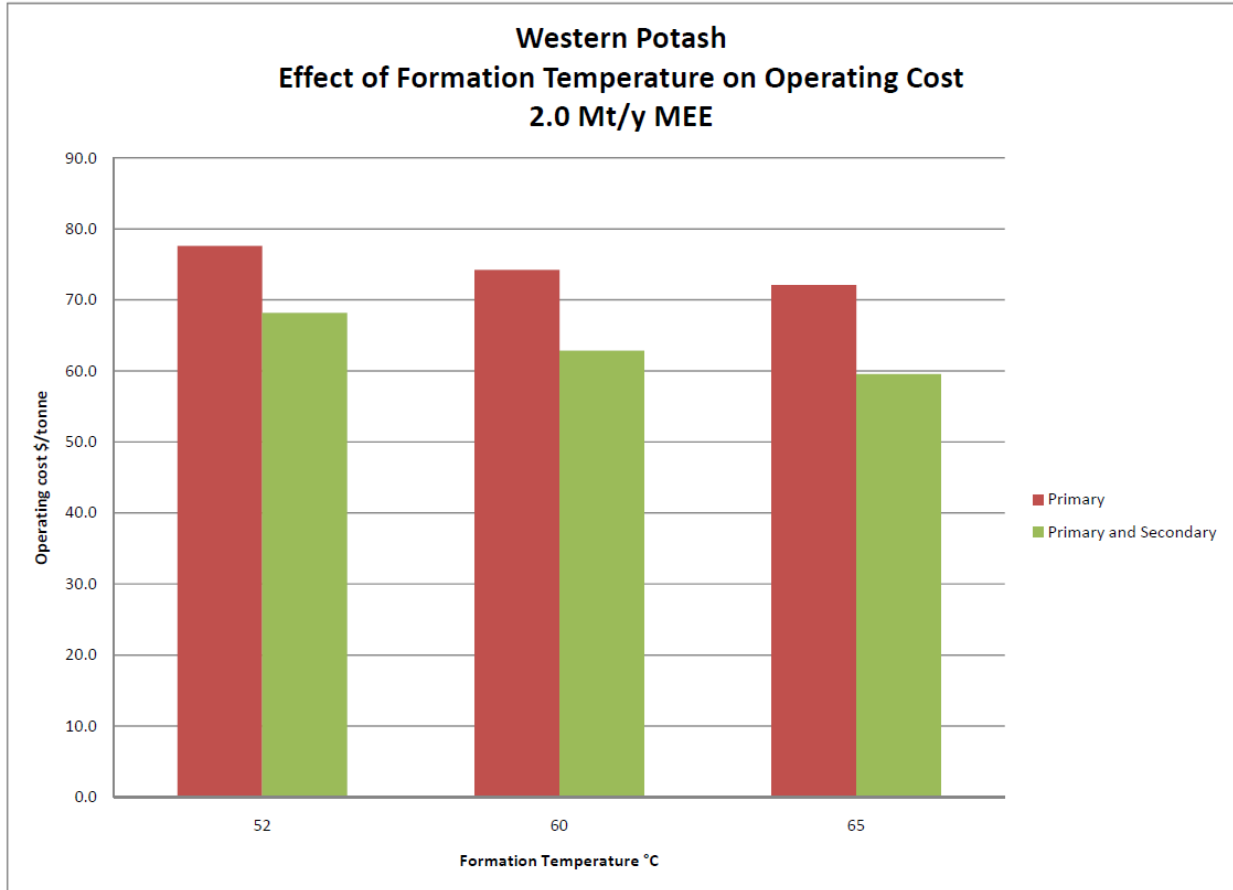
In all cases it is assumed that the solution will be saturated in NaCl at but undersaturated in KCl at formation temperature, and that the feed water or secondary brine will be heated above formation temperature to provide the latent heat of dissolution.

## **7.0 CASH FLOW AND PROJECT ECONOMICS**

A cash flow model was created for the Milestone project, using the CAPEX and OPEX estimates previously presented. A project life of 40 years was used for the analysis, providing the basis for project CAPEX amortization and asset depreciation.

Sustaining CAPEX is assumed to be minimal for the first 10 years of operation, but gradually increases to 2.0% of replacement cost between 10 years and 25 years. The water supply line is expected to be owned and operated by another party, and is excluded from sustaining CAPEX.

Figure 12: Effect of Formation Temperature on Operating Costs - MEE & MVR



### 7.1 Market Study

CRU, one of the leading potash economic consulting groups, was commissioned to produce a study of the market for potash, and to provide some benchmarking for the Milestone project.

In their report, CRU give a favourable indication for the prospects of the project, placing it in the second quartile of potash operations worldwide for conversion costs, with economics comparable to the most efficient operations in the World. Similar to other solution mining projects, it offers the advantage of capital costs which are about half of those of conventional underground mines. The report points out that taxes and freight to ocean ports are higher for Saskatchewan producers than for producers in some other jurisdictions, but that the fundamentals of the Milestone project place it in a competitive position.

On market projections for potash, CRU discussed the recent development in the market which included the peak year of 2008 when the average potash price (fob Vancouver) was US\$571 per tonne. Their projection is that the current price of US\$315 – 320 per tonne will serve as a “floor” price and that there will be steady growth. Average yearly potash gate price estimates for the period 2015 to 2025 were forecasted and presented in Table 6.

The report was delivered prior to the BHP Billiton offer to acquire Potash Corporation of Saskatchewan (“PCS”). The report discusses the effect of then-current expansions and planned greenfield projects on the market, and on the prospects for success for the Milestone project. On balance, CRU considers that the economics for the Milestone project appear favourable.

## **7.2 Economic Analysis**

An economic analysis was performed on the discounted cash flow model (DCF), and the following investment measures were calculated:

- Net Present Value (NPV), at a discount rate of 10%
- Internal Rate of Return (IRR)
- Discounted Payback Period

Final product grade was assumed to be 62% K<sub>2</sub>O. Construction is assumed to take place over a two year period (50/50) starting in 2013, production beginning in 2015. Interest, tax and royalties were added to the Gross Profit, resulting in the Free Cash Flow used for the analysis. The project was assumed to be financed with 100% equity. A flat \$US exchange rate was assumed. No Selling General & Administrative (“SG&A”) expenses were included. All costs are reported as 2013 dollars (escalation is applied as \$70M in the capital estimate), and the Study assumes gate price and costs escalate at the same rate. Tax and royalties were calculating using an allowance of \$CAD 28.90/tonne (included in model separate from operating costs), taken from CRU’s “Support to the Milestone Potash Solution Mining Project Scoping Study” report. No corporate income tax was applied.

**Table 6: CRU global potash gate price range forecast, US\$/tonne**

Year	Low	Average	High
2004	56	<b>66</b>	76
2005	85	<b>98</b>	112
2006	95	<b>113</b>	130
2007	119	<b>140</b>	160
2008	392	<b>511</b>	630
2009	390	<b>415</b>	440
2010	265	<b>290</b>	315
2011	340	<b>365</b>	390
2012	355	<b>380</b>	405
2013	345	<b>370</b>	395
2014	325	<b>350</b>	375
2015	315	<b>340</b>	365
2016	335	<b>360</b>	385
2017	375	<b>400</b>	425
2018	430	<b>455</b>	480
2019	490	<b>515</b>	540
2020	528	<b>553</b>	578
2021	575	<b>600</b>	625
2022	645	<b>671</b>	696
2023	575	<b>600</b>	625
2024	551	<b>576</b>	601
2025	528	<b>553</b>	578
Average 2015 to 2025	486	<b>511</b>	536

A base case cash flow model was created using the following parameters:

- Potash gate price: \$US 340/tonne
- Ultimate plant capacity: 2,500,000 tonnes/year
- Milestone's share of water supply pipeline: 100%

Table 7 shows the resulting investment measures for the base case cash flow model.

**Table 7: Milestone Investment Measures – 2.5 Mt/y**

<b>INVESTMENT MEASURES</b>	
NPV	\$ 2,191,000,000
IRR	19.2%
Discounted Payback (years)	9.5

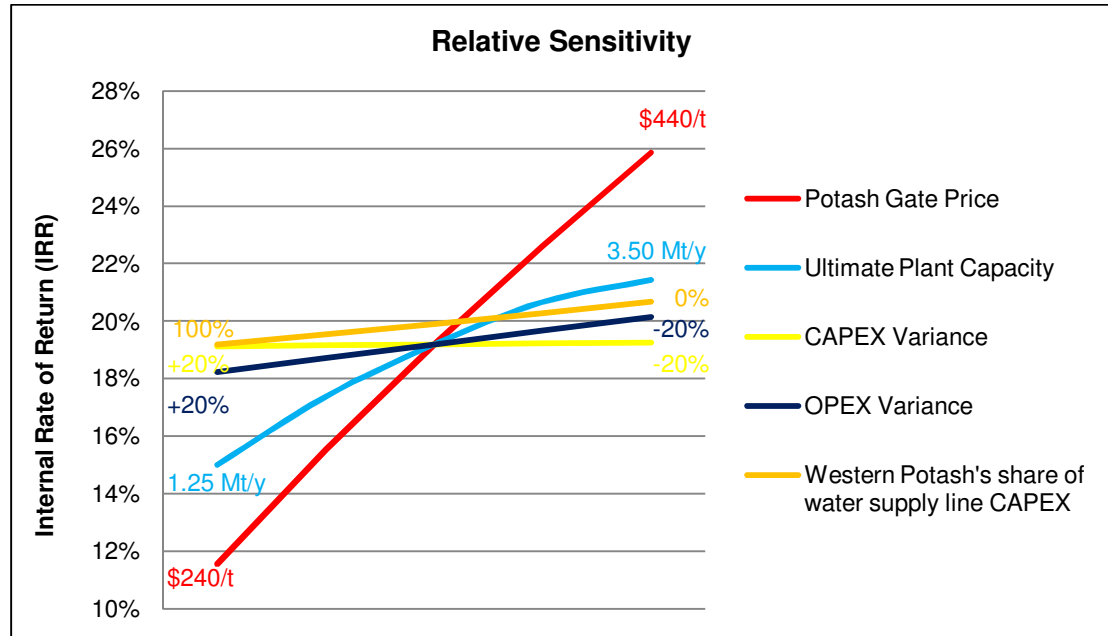
### 7.3 Sensitivity Analysis

The economic model is designed to allow a variety of inputs to test the sensitivity of investment measures to various investment factors. The following investment factors were varied in the sensitivity analysis:

- Potash gate price
- Ultimate plant capacity
- CAPEX variance
- OPEX variance
- Milestone's share of water supply pipeline

Figure 13 illustrates the relative sensitivity of each investment factor to the project IRR. The sensitivity curves illustrate the effect of varying only one factor from the base case. Higher IRR values are possible if more than one factor is varied.

Figure 13: Relative Sensitivity



The relative sensitivity to changes in each investment factor can be compared by observing the slope of each curve. A shallow slope indicates low sensitivity, while a steep slope indicates high sensitivity. The project IRR is observed to be highly sensitive to changes in potash gate price, moderately sensitive to plant capacity and CAPEX variance, and less sensitive to changes in the remaining factors.

Plant capacities greater than 2.5 Mt/y should be further examined in the next phase of study, as higher plant capacities will enhance project economics.

Although some major CAPEX was assumed to be deferred in this study, further deferral of CAPEX should be a major focus in future studies.

## 7.4 Comparison of Plant Capacity Options

The economic measures were generated for each option of plant capacity, as shown in table 8.

**Table 8: Milestone Investment Measures – Comparison of Plant Capacities**

<b>Comparison of Plant Capacities</b>		
1.0 Mt/y	NPV	\$ 290,000,000
	IRR	12.2%
1.25 Mt/y	NPV	\$ 733,000,000
	IRR	15.0%
2.0 Mt/y	NPV	\$ 1,419,000,000
	IRR	16.6%
2.5 Mt/y	NPV	\$ 2,191,000,000
	IRR	19.2%

The economic measures are observed to dramatically improve with increasing plant capacity.

## 7.5 Comparison of Potash Price Assumptions

The economic analysis for the 2.5 Mt/y project was performed using the average potash gate pricing from the CRU report as the basis for revenue, as compared to the conservative assumption of a flat gate price of \$340/tonne. These average prices are shown in Table 4. The prices used were the CRU average yearly potash gate price estimates for the period 2015 to 2025. The average potash gate price for those ten years (\$US 511/t) were subsequently used for the period 2025 to 2055. The resulting economic measures are illustrated in Table 9.

**Table 9: Milestone Investment Measures – Comparison of Potash Price Assumptions**

<b>Comparison of Potash Price Assumptions</b>		
Flat: \$340/t	NPV	\$ 2,191,000,000
	IRR	19.2%
CRU pricing	NPV	\$ 5,220,000,000
	IRR	27.3%

The CRU pricing assumption produces a significant improvement of economic measures over the already solid economics produced by the conservative assumption of \$340/t.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

The Milestone resource is of sufficient size/grade to support >40 year mine life at a production rate of 2.5Mt/yr. The available potash resource is expected to increase with freehold land acquisition and further resource definition, resulting in longer mine life.

Cavern stability risk is considered acceptable. Using a preliminary cavern design, a dual-well solution mining methodology is applied, resulting in 604 caverns in the assumed resource around the Riceton wells.

All equipment and technology proposed in the process plant have been proven successful in other potash operations. Refinement of the process will be necessary to tailor the process for the Milestone potash resource. A crystallization pond is recommended to provide supplemental crystallization capacity for secondary mining. This results in lower OPEX, and higher overall plant capacity.

The Milestone Project has an estimated CAPEX of \$CAD 2.51 Bn and assumes Western Potash carries 100% of the costs associated with installation of a water supply line from Buffalo Pound to site, a distance of 85km. These costs may be reduced through design optimization, and also if cost sharing with another outside party can be negotiated.

The Milestone Project has an estimated OPEX of \$CAD 62.90/t.

An economic analysis over a 40 year project life revealed strong project economics for the Milestone project. The resulting economic study for the 2.5 Mt/y operation produced a NPV (10) of \$CAD 5.2 Bn, and an IRR of 27%.

The Milestone project appears to be viable, and should proceed immediately into the next stage of study. The Study recommends immediate commencement of a pre-feasibility study based on the attractive economic assessment. A detailed taxation and royalty study needs to be completed and incorporated into the economic analysis of this project. Plant capacities of greater than 2.5 Mt/y should be considered.

Options to be studied in future work programs should include the following;

- Updated NI 43-101 resource calculation
- Further cavern/mining design schedules and risk assessments
- Salt backfilling trade-off
- Mitigation of surface subsidence



- Power-energy options
- Mass balance optimization
- Plant capacity optimization
- MEE vs. MVR trade-off
- Water supply CAPEX reduction
- Cogeneration trade-off
- Marketing
- Dissolution testing
- CAPEX Deferral options
- Taxation, royalty, depreciation