



# K+S Potash Canada

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## 2015 Highlights and Milestones

The \$4.1 billion Legacy Project wrapped up a year of outstanding progress on time and on budget, with more than 60 per cent of construction complete at the end of 2015. This greenfield mega-project, the first new potash mine in Saskatchewan in over 40 years, remains on schedule to produce its first tonne of potash by the end of 2016.

“There’s very much a sense of accomplishment as we look back at 2015 and head into the final stretch,” says Kevin Brown, Project Director for Amec Foster Wheeler, the contractor in charge of managing construction at the Legacy mine site. “A big project like this comprises a large number of independent pieces. During 2015, many of those pieces were completed.”

Brown says the launch of the early cavern development (ECD) program is the major milestone of 2015. ECD is the name given to the facilities that enable development of drilled wells into caverns capable of supplying potash-rich brine to the Legacy Project’s

process plant. K+S Potash Canada (KSPC) launched ECD on March 5 with the injection of water into production wells for the first time, thereby commencing mining operations at the Legacy site.

Thomas Papst, Vice President of Engineering at KSPC, directs commissioning for the Legacy Project Execution Team. He does so by managing an integrated team of engineers, technicians, tradespeople and operators as they work to bring facilities into operation. He says the success of ECD hinged on the effective work of this group and that work was contingent on two critical elements.

“Communication and trust are the key things required here,” says Papst. “You have to have everybody on board because when you’re commissioning, everything comes together.”

While much of the ECD occurred underground, the structural steel program accounts for some of the biggest visible changes to the site in 2015.

**Visitors to the Legacy Project at the end of 2014 may have noticed preparatory work on the mammoth structural steel program, which will employ roughly five times the amount of steel used to construct the Eiffel Tower.**

“The program really took off during the first quarter of 2015,” says Brown. “This is when the project started to display its vertical dimension.”

2015 also saw the completion of equipment manufacturing and material fabrication. The giant vessels seen trundling down Saskatchewan highways were eventually coaxed into their permanent locations and the plant completed around them. In addition, the administration and maintenance

# 2015 Highlights and Milestones

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buildings were finished, two product storage warehouses were 95 per cent complete at year-end, and KSPC's rail loop and sidings were taking shape nearby. Meanwhile, Pacific Coast Terminals and KSPC broke ground on the most modern potash handling facility in the world at Port Moody, B.C. The work will be finished by the end of 2016.

Clearly, there are many moving parts to the Legacy Project. As Vice President of Controls at KSPC, Dr. Gerd Dahlhoff is committed to keeping it on time and on budget "no matter what."

"We need to stay focused on our target to produce our first tonne of potash by the

end of 2016," says Dahlhoff. "However, given the excellent work to date by our integrated KSPC-AMEC project team, our operation teams and our contractors, I have every confidence we will hit that target."

## Local companies benefit significantly from the Legacy Project.

Fifty-five per cent of direct contractors and 31 per cent of direct suppliers are from Saskatchewan. All major contracts had been awarded by the end of 2015.

Like many endeavours, regulatory requirements and applications are necessary before anything can happen. Eric Cline, Vice President, Land and Sustainable Development at KSPC, says the company applied for and obtained more than 50 permits last year, ensuring Legacy Project facilities are authorized and in compliance with all government regulations. Cline says the company continues to work cooperatively with the nearby Village of Bethune and its host municipality, the Rural Municipality of Dufferin, where KSPC is now the biggest ratepayer.

"We are proud to be a part of the community and happy to be generating a lot of economic activity here," says Cline.



## Cavern Development Program

### The Legacy Project will soon mark one year of mining even though production will not begin until the end of this year.

On March 5, 2015, K+S Potash Canada (KSPC) announced the Legacy Project had reached a major milestone with the launch of early cavern development (ECD). ECD uses the

mine's powerful pumping system to inject raw water into the mile-deep caverns and return the resulting salt brine. ECD started with 18 caverns beneath wellpads 2 and 3 and has been expanded to include an additional 18 caverns under wellpads 4 and 5.

"We're right on schedule," says Sam Farris, Vice President and General Manager of Operations at KSPC. "Some of the caverns are ready for hot water mining and the others are in various stages of development." Farris says it takes about a year to grow a cavern large enough to provide feed to the process plant, which will be phased into operation using wellpads 2 and 3 followed by 4 and 5.

### "2016 is the year everything comes together," says Farris. "This is a big year."

While ECD uses cold water to grow caverns, primary mining uses hot water to create a solution that maximizes potash content, according to Trevor Dyck, Manager, Production at KSPC.

"After about three months of hot water mining of those four pads, we'll be ready for our first potash production at the end of the year," says Dyck, adding that much

preparation, including personnel hiring and training as well as completion of the remaining process plant systems, must take place before production can occur.

Work on wellpads 6 and 7 is underway with ECD scheduled to begin in spring, says Darren Hrynkiw, Manager, Wellfield at KSPC. Last year, Hrynkiw received approval to begin construction on wellpads 8 and 9, the first to be built by KSPC.

"Wellpads 6 and 7 signify the end of drilling for the Legacy Project," says Hrynkiw. "From now on, we're drilling to sustain ongoing operation for K+S."

ECD and startup require stable operation of equipment and systems as well as staff who are familiar with the equipment they must maintain, repair and occasionally replace. Marc Colombet, Manager, Maintenance and Reliability at KSPC, says his department is just wrapping up the complex task of identifying and purchasing about \$40 million worth of spare parts.

"ECD is a running operation and one of the most important things we had to do in 2015," says Colombet. "Now, one of the critical steps to ensure the success of startup is to buy our spare parts."



Legacy #1 drilling rig floor, looking up into the derrick as the drill pipe is being connected.



Seismic crew laying equipment.

## Seismic Testing

Ever wonder how K+S Potash Canada (KSPC) selects the best spots to mine potash? After all, the precious pink material is situated a mile beneath the Earth's surface, and potash seams can vary in depth and quality or be located beneath geological features or underground conduits that pose hazards in solution mining.

Drilling for core samples is certainly part of the process. However, drilling is costly and provides limited information about the surrounding area, so KSPC uses 3D seismic exploration to "see" what lies below. 3D seismic exploration employs a series of controlled explosions to generate shockwaves that travel down into the Earth. The waves bounce off various types of rocks and return to the surface where data are recorded and later manipulated to produce images.



Helicopter used to move equipment.

"We're essentially painting a picture of what's in the ground," says Megan Frederick, Manager, Geology at KSPC.

Frederick says her team sets out the explosive charges and surface receivers in a grid running east-west and north-south. This pattern allows the team to collect a 3D image showing the height, depth and width of rock formations. "Tighter grids produce more detailed images," she says, adding that her team used a tight grid pattern comprised of 60 metres square boxes.

"You're better able to interpret the data when you have data points this close together," she



KSPC Geology Department leads the seismic project.

says, adding that specially trained technicians handle all the explosives work.

Frederick and her team mapped 65 sq. km of KSPC's 100,000 acre lease during the first quarter of 2015. Together with the 98.4 sq. km mapped by Potash One, the previous owner, more than a third of the lease has been mapped using 3D seismic, which will be sufficient for 50+ years of mining.

While 3D seismic is effective and efficient, it can't provide all information required to determine where future wellpads should be located.

"We've picked areas from the seismic where we'd like to drill," says Frederick. "Once we have core samples, we'll have a better understanding of the ore and its location. That's why seismic is only half the story."

Frederick says the 3D seismic program was a "great success." It met all objectives and came in ahead of time and under budget. "That's always good from a project standpoint," she said.



Equipment used for drilling and loading shot holes.



## Jobs here!

K+S Potash Canada (KSPC) is in the process of hiring 150 tradespeople and operators, with most to start work in early spring.

"We're looking for people who take initiative, want to work in a safe environment and work collaboratively as a part of a team," says Maryann Deutscher, Senior Manager, Human Resources at KSPC.

Deutscher says some wonder what it means to be an operator. At KSPC, an operator typically has two to five years of good industrial experience – the more the better – and has worked in a heavy manufacturing or industrial setting. Most people hired as operators don't have mining experience but have an aptitude for working with heavy equipment and with tradespeople.

## Opportunities with K+S and Contractors

Interested individuals may apply for posted jobs and keep an eye out for new ones on KSPC's career page.

[ks-potashcanada.com/careers](https://ks-potashcanada.com/careers)

Additional information on jobs, job fairs, information sessions and company culture is available on KSPC's Facebook, Twitter, LinkedIn and YouTube.



If you have questions or concerns about the Legacy Project, please call the K+S Community Hotline at  
1-855-385-8686 ext. 2999



# First Nations and Métis Jobs

K+S Potash Canada (KSPC) is working hard to earn a reputation as a company that's respectful and inclusive of First Nations and Métis (FNM) people.

"There are more than 300 First Nations and 44 Métis – all self-declared – on the Legacy Project site right now," says Terry Bird, Lead Advisor, First Nation and Métis Initiatives at KSPC. "And about \$250 million in Legacy Project contracts have been awarded to contractors and suppliers who have FNM involvement."

KSPC's Legacy Project sits within Treaty 4 territory and a good number of First Nations people currently working on site are members of 11 Treaty 4 First Nations represented by File Hills Qu'Appelle Tribal Council (FHQTC). Points Athabasca File Hills Qu'Appelle Contracting (PAFHQC), a First Nations business partnership half owned by FHQTC's development corporation, currently has 70 employees working at the Legacy site, 60 per cent of them First Nations. Bird says PAFHQC has a service contract to clean, maintain and keep the Legacy site safe, and KSPC is building on that relationship.

"It's a good opportunity for us to work with FHQTC's development corporation to create a source for qualified employees, especially as we move into operations," says Bird, adding that the two parties are looking at ways to match training assistance with job opportunities. "We need to get out front on this so they can prepare people to work in careers we're offering now and in the future."

Bird says KSPC's relationship with FHQTC does not negatively impact the opportunities other FNM people have to work for the company. KSPC has policies in place to seek and source job candidates from among all FNM people, as well as to seek and source qualified vendors who have FNM ownership or partnerships and joint ventures with FNM participation, whether or not they are from a Treaty 4 First Nation.

All new employees at KSPC participate in an aboriginal awareness program to help them prepare for a representative workforce environment. To help FNM people get to know the company, KSPC is visiting communities, providing scholarships and sponsoring a host of cultural and recreational events.



Terry Bird, Lead Advisor, First Nation and Métis Initiatives, is proud of the work KSPC has performed to date to ensure labour and business market participation for Saskatchewan First Nations and Métis people.

**Nick Crighton, Human Resources Advisor, FNM Recruitment at KSPC, has been visiting communities, explaining the great job opportunities and encouraging people to call him directly.**



Nick Crighton, Human Resources Advisor, FNM Recruitment, is committed to helping KSPC build a representative workforce.

Maryann Deutscher, Senior Manager, Human Resources at KSPC, says it's important for FNM people to know KSPC is seeking FNM candidates.

"You often hear someone say 'I don't have any connections' or 'I hear you have to know someone,'" says Deutscher. "We encourage people to call our recruitment hotline and talk directly with Nick at 1-866-788-5772 – press 3."

See careers, training and education requirements at [ks-potashcanada.com/careers](https://ks-potashcanada.com/careers)