

SiteLine

Joffre Site Community News

Published for the Central Alberta community by NOVA Chemicals

September 2015
Volume 26, Number 3

Special Edition: Annual Environment Review

Highlights of what's inside...

About our environment report ...	2
Water resources	3
Water stewardship award.....	3
Air emissions	4 & 5
GHG emissions intensity	5
PE1 Expansion Project update..	6
E2 Furnace refurbishment.....	6
Noise management strategy	6
Proposed new retention pond ...	8
Open House invitation.....	8



NOVA Chemicals Community Nature Trail now open!

See masthead picture above; more details page 7.

Our 2020 Environmental Plan: Implementing a new strategy

This is our **14th annual report to our community** on our environmental performance and goals for continuous improvement.

Our environmental systems and programs have grown in sophistication over the years. Our Joffre Site growth strategy has also captured opportunities for continuous improvement in our environmental performance. This report includes forecasts related to our expanded polyethylene operations scheduled for commissioning and start-up in the last quarter of 2016. We have also provided updates on other site projects that will help us achieve our environmental goals and targets.

NOVA Chemicals' Responsible Care Council recently launched **our new 2020 Environmental Plan**. It is a significant update to our corporate Environment Strategy. This plan will continue to position us as a responsible, environmental leader in our industry and provides focus to our teams and employees on the environmental priorities of most significance to our company and stakeholders. Specific environmental targets include reductions in air emissions — greenhouse gases (GHG), oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) — as well as waste reduction and improved water use.

Recently the Alberta Government introduced measures related to its GHG Reduction Program, as well as an overall review of the Alberta Climate Change

Strategy. An advisory panel is consulting with stakeholders and the Province expects to use its recommendations to prepare a broad strategy by year-end. We look forward to providing our input to the advisory panel.

We believe that Alberta can achieve the right balance in GHG policy to both remain competitive with other jurisdictions and make needed progress on this important issue. We share the government's concern about GHG emissions, and as a Responsible Care® company we are committed to continuously improving all aspects of our operations including **our energy efficiency and environmental performance**. Updates to our sites are capital intensive and generally take several years to implement. During the past 10 years we have invested more than \$1.3 billion dollars in growth and capital improvements in our Alberta facilities with the goal of continuous improvement. Over the same 10 years we have reduced our direct GHG emissions intensity by about 5%.

We invite you to join us to discuss this environment report and any aspect of our operations at the **Fall Community Open House on October 14 (invitation page 8)**. As stakeholders, your input on our environmental performance, plans and strategy are always welcome.

Rick Van Hemmen, Joffre Site Leader

About our environment report and our approach to Responsible Care

This annual *SiteLine* environment report provides our community and stakeholders with an overview of our performance in the important areas of water, air, GHG emissions and noise management. It also highlights our involvement in various community projects dedicated to making a difference and improving the quality of life in Central Alberta.

NOVA Chemicals has played a leadership role in the development of our industry's Responsible Care® ethic, and most recently its sustainability principles. We continue to put a priority on achieving our mission of enabling great plastic products and doing so responsibly.

Our Taking Care model, shown to the right, frames our unique approach to Responsible Care and sustainability. It provides the “umbrella” for our corporate-wide 2020 Environmental Plan, and the Joffre Site environmental management system and programs. We remain focused on meeting all regulatory requirements and ensuring emissions are below all regulatory compliance limits. We strive for continuous improvement in our performance.

Looking ahead

Our growth strategy also reflects our commitment to continuous improvement. Our current initiatives — the Polyethylene 1 (PE1) Expansion Project and the associated rail yard expansion, the Ethylene 2 (E2) Furnace Refurbishment Project and the proposed new stormwater retention pond — provide opportunities for updating of equipment and other improvements that align with our Responsible Care practices.

This report includes a look to the future with a performance forecast in many of our charts related to our expanded polyethylene operations scheduled for commissioning late in 2016. The forecast, based on modeling conducted for this project's environmental studies, helps to show the modest change to our industrial footprint.

Taking Care

Our work at NOVA Chemicals results in plastic products that take care of food, water and other goods vital to life. To enable these products, we must first take care of the people, places, materials and processes that make them possible. We take care with respect to our operations, communities, products and the environment. Taking Care is a way to think and a way to work. It's our particular approach for putting Responsible Care® into practice.



Operations

In our operations, we take care to attract and develop talented people committed to the safety and well-being of themselves and others. We foster relationships that promote community safety and other social and environmental values.



Communities

In our communities, we take care to be a neighbor that promotes conversation, understanding and involvement. We contribute positively to community development, public policy and reporting.



Products

In our products and those we enable, we innovate to improve people's lives. We take care to promote the safety, security and value of products throughout their life cycle.



Environment

In our environment, we take care to conserve, protect and enhance natural resources. Through innovation, operational excellence and environmental stewardship, we seek to protect life and to continuously improve our environmental performance.

Responsible Care verification report expected soon

This June, site visits for our fifth Responsible Care verification were completed. We expect the report from the Chemistry Industry Association of Canada (CIAC) independent panel sometime this Fall. We will provide highlights of the report in *SiteLine* and at a future Open House.

The verification process provides us a valuable third-party perspective on how we are doing in relation to the Responsible Care codes and ethic. Thank you to Joffre Community Advisory Panel (JCAP) member Kathy Pyper for being the community representative on the independent panel.



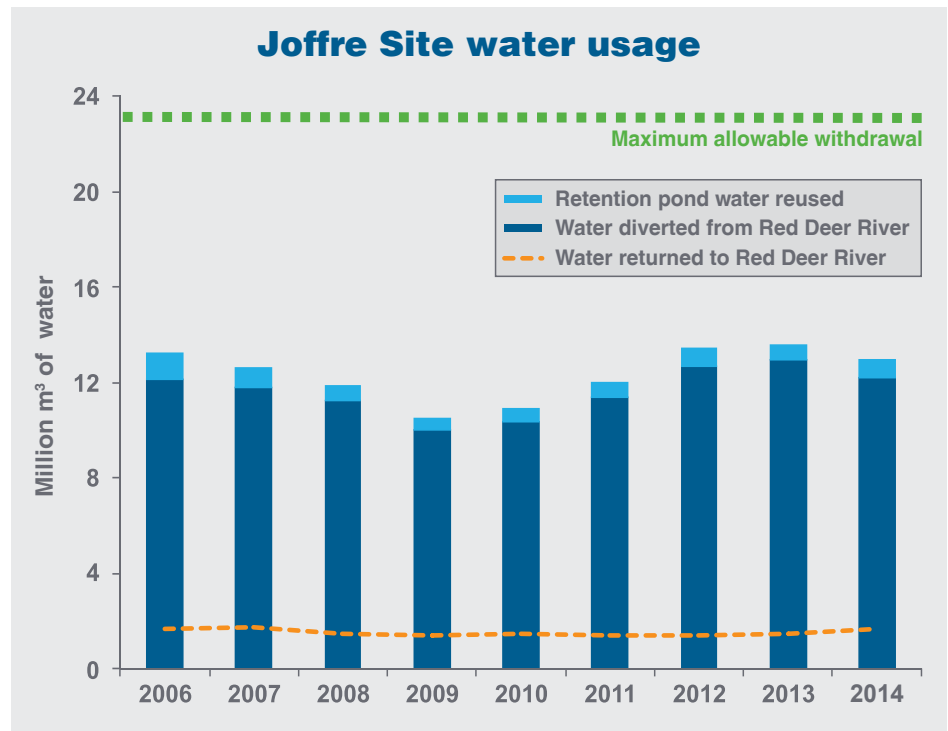
Responsible Care®
Our commitment to sustainability.

Minimizing our impact on water resources

Water is critical to Joffre Site operations, and our management programs focus on minimizing our impact on this valuable resource.

The Red Deer River has an annual flow of roughly two billion cubic metres (m³). NOVA Chemicals has water licences for approximately 23 million m³ per year, which is just over 1% of the annual flow in the river. In 2014, we withdrew almost 12.2 million m³ or 53% of our allotment from the river. We also collected and used 0.74 million m³ from surface runoff. The predicted usage from the PE1 Expansion once in operation is an approximate increase of 10%.

The majority of water used in our manufacturing facilities is returned to the environment through evaporation in cooling tower plumes. The amount of water vapour released back to the ecosystem is about 80% of our intake. Water returned to the river goes through extensive testing to meet regulatory obligations and strict environmental standards before discharge.



This graph shows the amount of water used at the Joffre Site. The greater the production rate, the greater the water usage.

Watershed stewardship award presented to NOVA Chemicals



Joffre Site Environmental Specialist Andrea Hiba Brack, PEng., accepts our stewardship award from RDRWA Executive Director Jeff Hanger.

The Red Deer River Watershed Alliance (RDRWA) presented a watershed stewardship award in the business category to NOVA Chemicals at its June Annual General Meeting.

“We are honoured to be recognized with the RDRWA Steward Award and to join with others in the region in promoting a healthy watershed,” said Jim Dixon, NOVA Chemicals’ Director Responsible Care. “Our work with this organization

is a visible link to Responsible Care. By working together, we can protect our water supply and support efforts that enable us to take care of the ecological, human and economic impacts to this natural resource.”

NOVA Chemicals strives to use resources responsibly by conserving, recycling and reusing wherever feasible. RDRWA is a multi-sector, non-profit organization that promotes the good use and proper management of water within the Red Deer River watershed. See more at www.rdrwa.ca.

Exemplary commitment to Alberta’s safety codes

In April, the Alberta Safety Codes Council congratulated NOVA Chemicals and our safety codes administration team on receiving a 2015 Accreditation Award. The Award recognizes an accredited municipality, corporation or agency that shows exemplary behaviour in safety codes administration, staff engagement and public awareness about the Alberta safety codes system. NOVA Chemicals is accredited in the Gas, Electrical, Building, Plumbing and Fire Codes in the Province of Alberta.



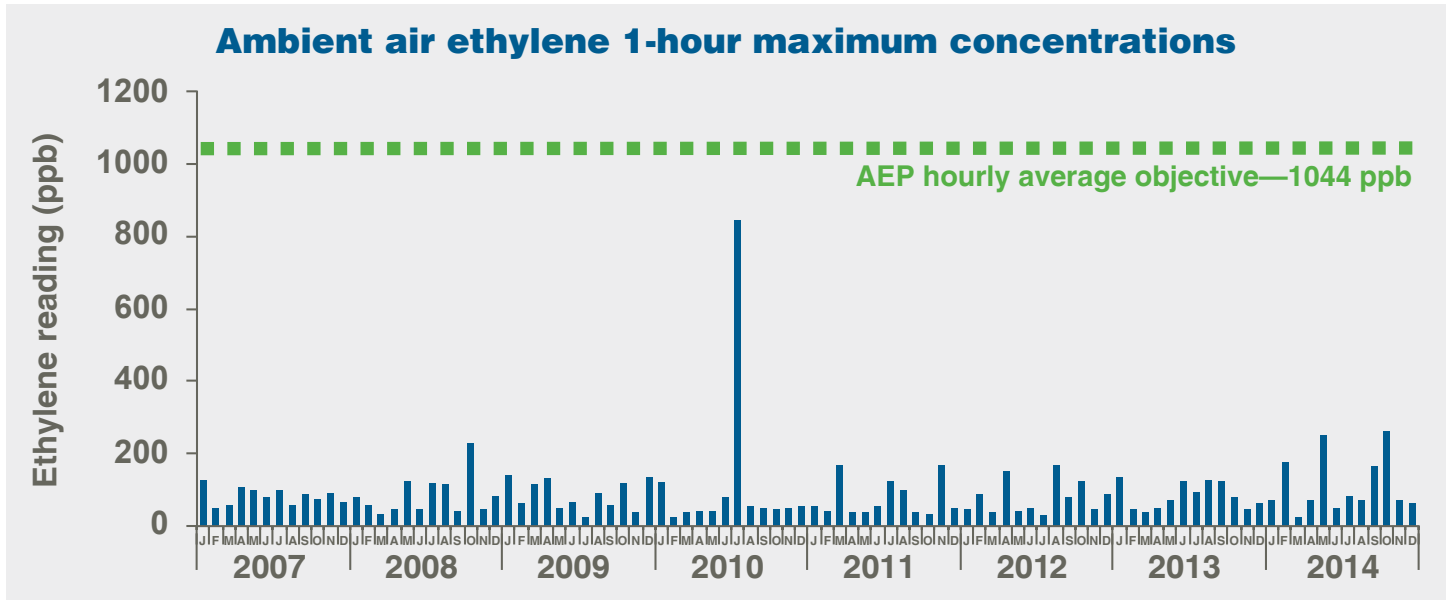
Putting litter in its place

Our employees were among the more than 60 community members who participated in the Red Deer River Clean-up on May 31. After 83 bags of garbage were picked up along with many other items including buckets and a foldable table, NOVA Chemicals sponsored a BBQ for the community event. “NOVA Chemicals’ sponsorship and participation has a huge impact on the success of the event,” said Suzanne Jubb, Recreation, Parks and Culture, The City of Red Deer.

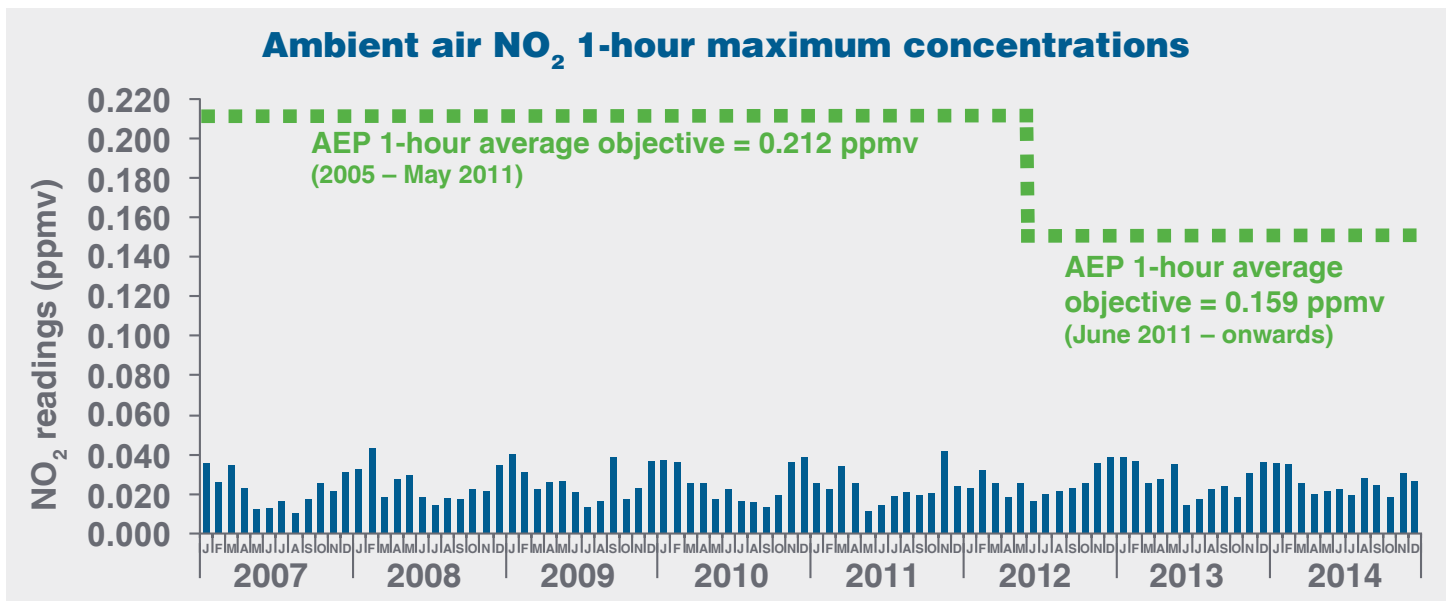
Ensuring air emissions meet Alberta quality objectives

Air quality management is a priority for NOVA Chemicals. Through the Joffre Site Air Emissions Management Program we strive to reduce emissions, monitor impacts and continuously review our performance. We remain focused on ensuring air emissions are below all regulatory compliance limits and air quality objectives set out by Alberta Environment and Parks (AEP).

Data related to a variety of air quality parameters, as shown in the graphs below and on page 5, indicate our concentrations and readings are consistently below established guidelines. The PE1 Expansion is not yet in operation, however predictions show an increase in ambient ethylene concentrations of 0.5% and ambient oxides of nitrogen (NO₂) concentrations of 0.4% at the fenceline. We expect the E2 Furnace Refurbishment Project (see story page 6) will help to offset NO_x emissions as a result of furnace design improvements.



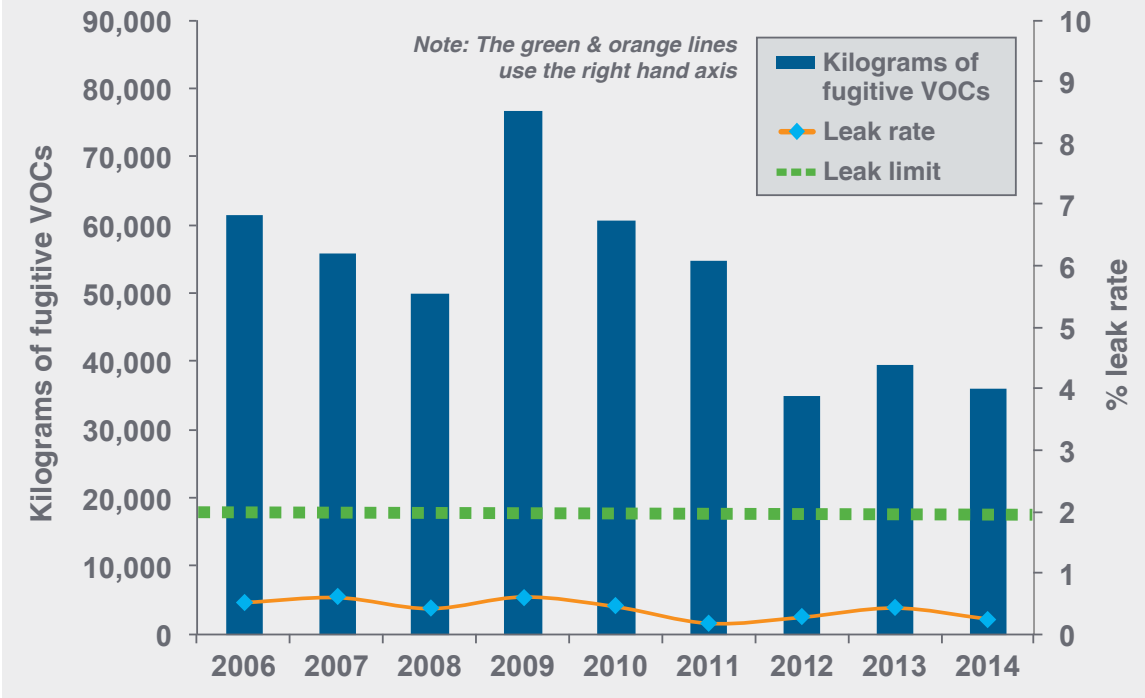
Ambient ethylene (1-hour maximum) concentrations are well below the AEP Hourly Average Objective of 1,044 parts per billion (ppb). (The spike in 2010 was the result of a leak in an INEOS LAO facility exchanger which was promptly repaired with no adverse environmental impacts indicated through ongoing atmospheric monitoring.)



Concentrations of oxides of nitrogen, specifically NO₂, are consistently below regulatory limits. We are focusing on a site NO_x strategy, and our 2020 Environmental Plan also has goals for NO_x emissions reductions.

Earlier this year, a NO_x Emissions Reduction Steering Team was formed to determine strategies for Joffre Site NO_x emissions reductions activities. The team meets on a quarterly basis and includes representatives from leadership, technical experts and Responsible Care environmental specialists. Some of the focus areas of the team include tracking NO_x emissions performance, reviewing impacts and opportunities of site projects, and interfacing with AEP and regional groups such as the Parkland Airshed Management Zone.

Petrochemical facility fugitive VOCs



Volatile organic compounds (VOCs) emissions are hydrocarbons that can affect air quality. Our site's comprehensive Leak Detection and Repair (LDAR) program is fully implemented according to the Canadian Council of Ministers of the Environment Code of Practice. While the Code states that leaks over 10,000 ppm must be repaired, we schedule prompt maintenance for any leak over 1,000 ppm.

Continued reduction in GHG emissions intensity

In 2014, we continued to reduce our GHG gas footprint. We have achieved nearly a 5% reduction in our GHG emissions intensity as compared to the average emissions intensity established during the baseline period of 2003 - 2005.

There is a regulatory requirement for large industrial facilities to reduce their emissions by 12% when compared against the baseline period. The Alberta Government announced in June an increase in the reduction requirement to 15% as of January 1, 2016 and 20% by January 1, 2017. When facilities are not able to achieve the provincial compliance obligation, GHG

offset markets, as well as technology funds that contribute to research and development opportunities, are critical tools to help meet compliance.

Offsets are based on reductions of GHG emissions according to specific protocols including some from agricultural producers. The offsets we have purchased for our Joffre Site support the building of organic carbon in soil through low and zero-tillage practices and assist the agricultural community in advancing sustainable practices.

NOVA Chemicals Imagination Grove a great learning space

Last year to mark our 35th anniversary at the Joffre Site, NOVA Chemicals became the signature corporate sponsor of the Waskasoo Environmental Education Society's Imagination Grove outdoor classroom and natural learning play space

located at the Kerry Wood Nature Centre. The Imagination Grove is being well used by area schools — stretching young imaginations while providing fun and exercise in a safe and mostly natural environment.



PE1 Expansion Project

Main structures substantially complete

We continue to make good progress on our PE1 Expansion Project which we expect to start-up in the last quarter of 2016. The expansion will allow us to increase our overall site polyethylene capacity by approximately 40%.

With main structures now substantially complete, the workforce is focused on detailed work such as electrical, instrumentation, piping and mechanical systems. Building cladding will start this Fall in preparation for Winter work. By the end of the year, electrical / instrumentation modules, building enclosures, structural steel, equipment installations, main piping systems and power distribution will all be complete.

Currently there are about 500 workers on site. By the end of 2015, the workforce numbers will peak at about 800 workers per day for an approximate six-month period.

To minimize community impacts such as traffic, we continue to promote carpooling and other proactive measures that reinforce courteous driving.



Main structures are substantially complete on our PE1 Expansion Project. Building cladding will soon be underway in preparation for Winter work.

Related infrastructure for the expansion such as the new electricity substation and expanded rail yard north of the Joffre Site are now complete (see July issue of *SiteLine*).

Noise management strategy encompasses site growth

Our noise management strategy is constantly being updated and adapted to reflect site changes. The overall goal, however, remains the same: to mitigate site operating noise impacts on our neighbours.



The recently completed E3 noise reduction project targets flare stack blower frequency.

Current mitigation projects encompass site growth:

- The E2 Furnace Refurbishment Project is using silencers on the new induced and forced draft furnace fans.
- Our North Rail Yard Noise Abatement Strategy is in place to meet commitments made to the community at a stakeholder workshop in 2013. The strategy will be regularly assessed to ensure its effectiveness especially as increased shipments begin late in 2016. (See April 2015 issue for details.)
- Noise sources from the PE1 Expansion Project will be validated once construction is complete in 2016.

Other mitigation projects recently completed involve the Ethylene 3 (E3) flare stack blower variable frequency drive. Another project underway involves installing acoustic treatment on the Polyethylene 2 reactor agitator gearbox.

Our annual community noise survey was conducted this summer at five residences near the Joffre Site. Results will be available at the October Community Open House.

New contractor for furnace refurbishment

Melloy Industrial Services Inc. has been awarded the lead contractor role for the E2 Furnace Refurbishment Project after we conducted a contractor review earlier this summer.

The new contractor is proceeding with the first phase of the project which includes the refurbishment of five furnaces and a capital investment of approximately \$250 million. A second phase of the project is planned for 2017 once phase one is complete.

The work will enable E2 to operate at full design capacity. Air quality and noise management benefits are expected from the furnace design improvements. About 100 trade workers are now on site for this work.



Digging in for 17 years

Our employees came out for their 17th consecutive year on June 5 to help out The City of Red Deer's Urban Forestry Project. Another 1,000 seedlings were planted to benefit the area's air quality, biodiversity and wildlife habitat and corridors.

NOVA Chemicals Community Nature Trail open to public!

NOVA Chemicals Community Nature Trail is now open for the enjoyment of the community and our employees.

It was a busy summer at the 89-hectare (220-acre) NOVA Chemicals Community Nature Trail located just north of the Joffre Site. The trail surfaces are now complete, along with amenities such as the parking lot and picnic area. Interpretive signs have also been installed along the five kilometres (three miles) of trail.

A special event to officially open this PE1 Expansion legacy project is being planned for 2016. This wonderful habitat for birds and other wildlife is a great example of how nature, agriculture, industrial and recreation uses can exist harmoniously.

To learn more about the trail, directions, hours and other visitor information please go to: www.novachem.com/Joffre to view the fact sheet. Let us know what you think!



Vehicle Emissions Testing Clinic supports Clean Air Day

On June 3 our employee Enviro-Action Team partnered with the Parkland Airshed Management Zone, The City of Red Deer, the Sheraton Red Deer and the Alberta Government to host a Vehicle Emissions Testing Clinic on Clear Air Day for the citizens of Central Alberta. The successful event saw about 60 participants receive a diagnostic on their vehicle's performance. A properly tuned vehicle helps the environment and saves drivers money.



Annual August event draws good crowd

More than 55 neighbours came out for our Annual Emergency Preparedness Awareness Community BBQ on August 6. Tours of our emergency equipment, information booths, kids events and an opportunity to validate emergency response contact information were part of the evening.

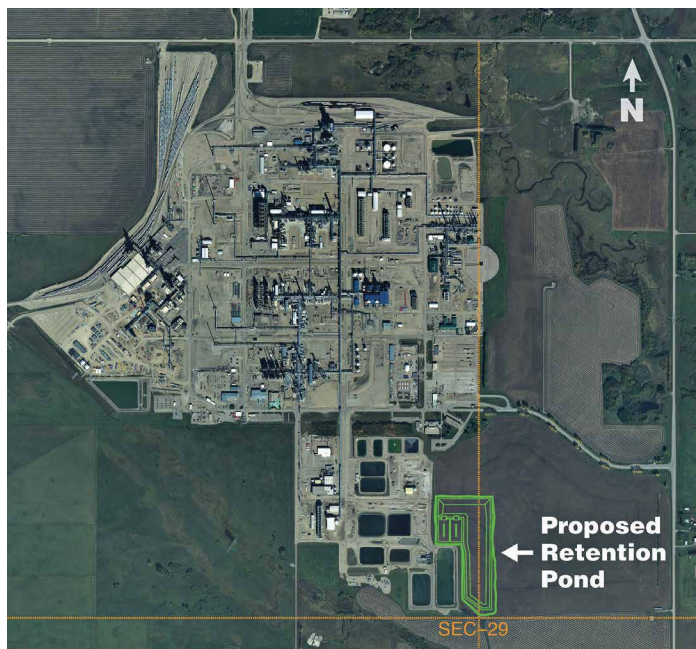
Additional design work nearing completion for proposed new retention pond

This past Spring, we shared preliminary information with the community on a proposed new retention pond which would allow us to remediate our existing southeast pond. During the Summer, we undertook additional design work on the proposed new pond including identification of potential locations. We expect to have more details at the Fall Community Open House on October 14 for your review and input.

A location just east of the existing pond continues to be a preferred location. The new pond, incorporating best practices, will help the site more effectively capture run-off from major storm events. This water, once it is softened and clarified is normally re-used in our operations.

Once the new pond is operational, we will be able to remediate the existing pond using a staged "in-situ" approach to reduce the potential for issues like odour. The existing pond has been in operation for many years and there is some contamination contained within the sediment from historical spills dating back to the early 1980s.

We will apply to Lacombe County to rezone agricultural land to industrial for the new pond. We will also consult with Alberta Environment and Parks, and expect to seek an amendment to the Joffre Site *Alberta Environmental Protection and Enhancement Act* (EPEA) approval. These applications would be made by year-end after further consultation with the community on the design details. Construction, once approvals are received, could start sometime in 2016.



Buffer zone update

Former greenhouse area to be reclaimed

We will be going ahead with the reclamation of the former greenhouse property located in our buffer zone to the south of the Joffre Site. We will be removing the building, including the foundations. Any useful materials recovered during the reclamation will be recycled.

A scope of work is being developed and more information will be available at the Fall Community Open House.

SiteLine is published by NOVA Chemicals Corporation

P.O. Box 5006, Red Deer, AB, T4N 6A1
Attn. Roxann Good: 403.314.7421

For more information, please see these websites:

- www.novachemicals.com | www.novachemicals.com/Joffre
- Chemistry Industry Association of Canada: www.canadianchemistry.ca
- American Chemistry Council: www.americanchemistry.com



Community Open House

- Date:** Wednesday, October 14, 2015
Time: 5:30 to 6:30 p.m. "Drop in to Chat"
6:30 to 7:30 p.m. Presentation/Discussion
Place: Haynes Hall (Travelling east on Highway 11, turn north (left) on Range Road 244 for 3.3 km to Township Road 390. Cross over 390 and take first left into parking lot of Haynes Hall.)

Refreshments will be served

- Agenda:**
- Get business and facility operations updates
 - Get updates on the PE1 Expansion Project
 - Find out more about NOVA Chemicals Community Nature Trail — now open
 - Discuss any topic of interest
 - Provide your input and suggestions

