



**Value Chain Solutions – Heartland Complex
Amendment for Clean Oil Refining
("COrE-H")**

Plain Language Document

May 2, 2016

INTRODUCTION

The purpose of this Plain Language Document is to introduce the proposed changes to the Value Chain Solutions – Heartland Complex (“VCS-H”) involving the substitution of one phase of the current development plan with Clean Oil Refining Process Units (COfRe-H™).

VCS-H (formerly Heartland Upgrader Project, or “HUP”) was previously designed for three Phases. Each Phase consisted mainly of two proprietary upgrading processes, i.e. the Accelerated DeContamination (ADC™) and the Clean Oil Cracking (COC™), and produces sour synthetic medium crude oil.

In keeping with the Alberta Government’s desire for more value-added processing within the province, and for the Project to gain greater robustness against volatilities in oil price and light / heavy price differential, VCI is proposing to amend VCS-H by removing one of the three Phases, and in its place, adding the Clean Oil Refining unit, to further process the product from COC™ into high quality diesel, hydrotreated naphtha, and a premium synthetic crude oil.

COfRe-H is part of VCI’s Value Chain Solution (VCS) strategy, in which VCI applies its proprietary technologies in the oil sands development for VCI as well as third party bitumen producers to decarbonize bitumen upfront, add value within Alberta, free up the pipeline bottleneck, and achieve last-man-standing robustness against volatilities in oil price and light / heavy price differential.

The proposed changes are within the previously approved and amended project area, and result in reductions in overall project emissions.

Value Creation Inc. (“VCI”) is planning to submit an amendment application for the COfRe-H Project to the Alberta Energy Regulator (“AER”) within the next few months. Concurrently, VCI will be consulting with stakeholders who may be directly affected by the Project.

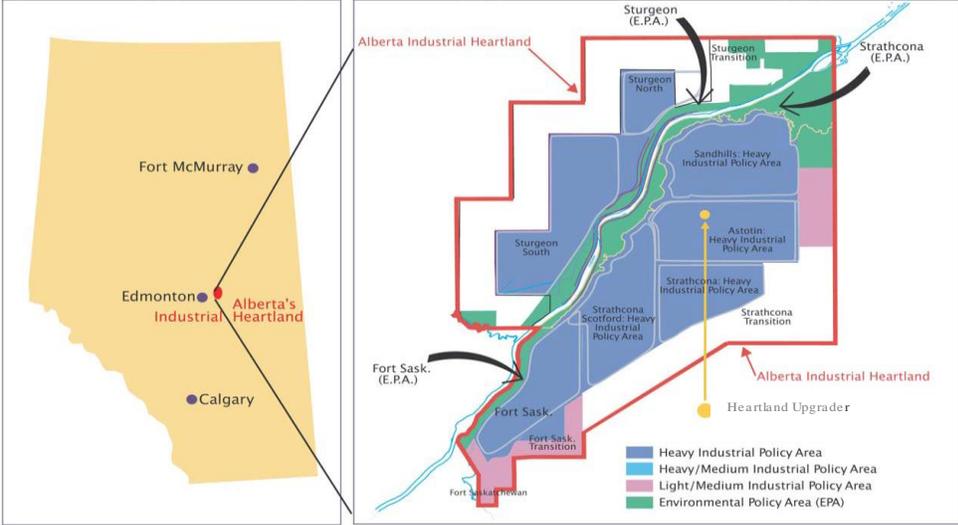
COMPANY OVERVIEW

VCI is a private Canadian company based in Calgary with vast oil sands resources and competitive proprietary upgrading technologies for oil sands and extra heavy oils. VCI owns the VCS-H and has regulatory approvals for processing up to 260,000 barrel per day of diluted bitumen.

COfRe-H is part of VCI’s Value Chain Solution (VCS) strategy, in which VCI applies its game changing technologies in the oil sands development, for VCI as well as third party bitumen producers to reduce greenhouse gas emission by decarbonizing bitumen upfront, add value within Alberta, free up the pipeline bottleneck, broaden the market, and achieve robustness against volatilities in oil price and light / heavy price differential.

FACILITY LOCATION

VCS-H is strategically located in the pivotal oil sands transportation hub in the Alberta’s Industrial Heartland (“AIH”), located in the designated Astotin Heavy Industrial Area of Strathcona County within Alberta’s Industrial Heartland (“AIH”), northeast of Edmonton. The legal land description is the South Half of Section 10, Township 56, Range 21, West of the 4th Meridian. The location is indicated on a regional map shown below:



Location of VCS-H

PROJECT DESCRIPTION

VCS-H will be developed in two identical Phases. Each Phase will process approximately 86.8 kbpd of merchant dilbit in the Diluent Recovery Unit to recover the diluent, followed by VCI’s Proprietary Accelerated DeContamination (“ADC™”) process and Clean Oil Cracking (“COC™”) process, as described in the original Application and the subsequent Amendment. The liquid product from COC™ is then processed in CORE-H.

In an alternative development scenario, Phase 2 will process the product from VCI’s integrated *in situ* projects, rather than merchant dilbit. ADC™ and COC™ will be located at the *in situ* production site in Northern Alberta, not at VCS-H. The products will then be combined and sent to VCS-H Phase 2. In this scenario, Phase 2 of VCS-H will only have a distillation unit, followed by CORE-H, and therefore, the overall emissions and footprint at VCS-H site will be lower than the base case scenario.

CORE-H is a special refining unit that will provide a low-cost means of converting feedstock derived from oil sands bitumen into high value refined products in a superior environmental manner. The low cost of CORE-H arises from its simplicity in the process configuration, which is made possible by the unique feed characteristics, which in turn are derived from VCI’s innovative upgrading technologies.

CORE-H will be supplied with VCI’s Clean Oil La Fit (“COLF™”) feedstock coming from the other previously approved process units of VCS-H. COLF™ is a premium synthetic crude oil produced by VCI’s proprietary upgrading processes from the oil sands bitumen feedstock. COLF™ has unique properties that make CORE-H possible with a simple process configuration and low cost. CORE-H will produce a high quality diesel, naphtha, liquefied Petroleum Gas (“LPG”), and premium synthetic crude which can be sent to other refineries for further refining and blending.

The main process unit for each Phase of CORE-H is a single integrated hydroprocessor unit that achieves both hydrocracking and hydrotreating. The auxiliary units include a Steam Methane Reformer Unit for

hydrogen manufacturing, and the sulphur management processes such as Amine Treatment Unit, Sour Water Stripper and Sulphur Recovery Unit.

The utilities and offsites (“U&O”) units include:

- Water treatment and steam generation system;
- Waste water and surface runoff system;
- Electricity substation and switch yard;
- Flare system;
- Nitrogen system;
- Instrument air and utility air system;
- Fuel gas system;
- And Fire water system.

Natural gas will be supplied from the existing pipeline running close to the site, supplemented by the refinery gases. Electrical power will be available locally. Process water will be drawn from the North Saskatchewan River, supplemented by the water from the surface water run off ponds when available.

REGULATORY APPROVALS

VCI’s current Oil Sands Conservation Act (OSCA) approval 10330A and Environmental Protection & Enhancement Act (EPEA) approval 203303-00-01 cover three phases of development as shown in the Figure 1 and Figure 2 below:

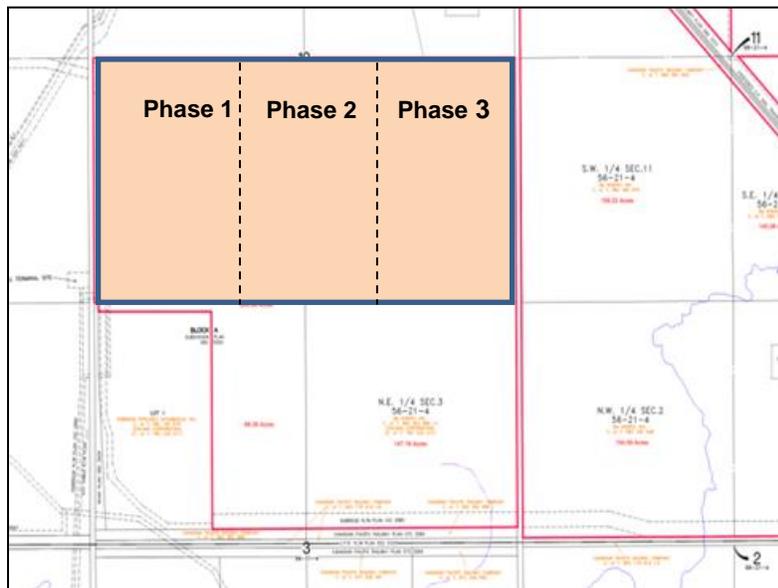


Figure 1. Phases Approved for Original Project

VCI is proposing to amend the middle phase, with a Clean Oil Refining Unit (COrE-H) in its place to further process the products of the two remaining phases. This amendment reduces the overall project capacity from 260 kbpd to 173 kbpd. See diagram below:

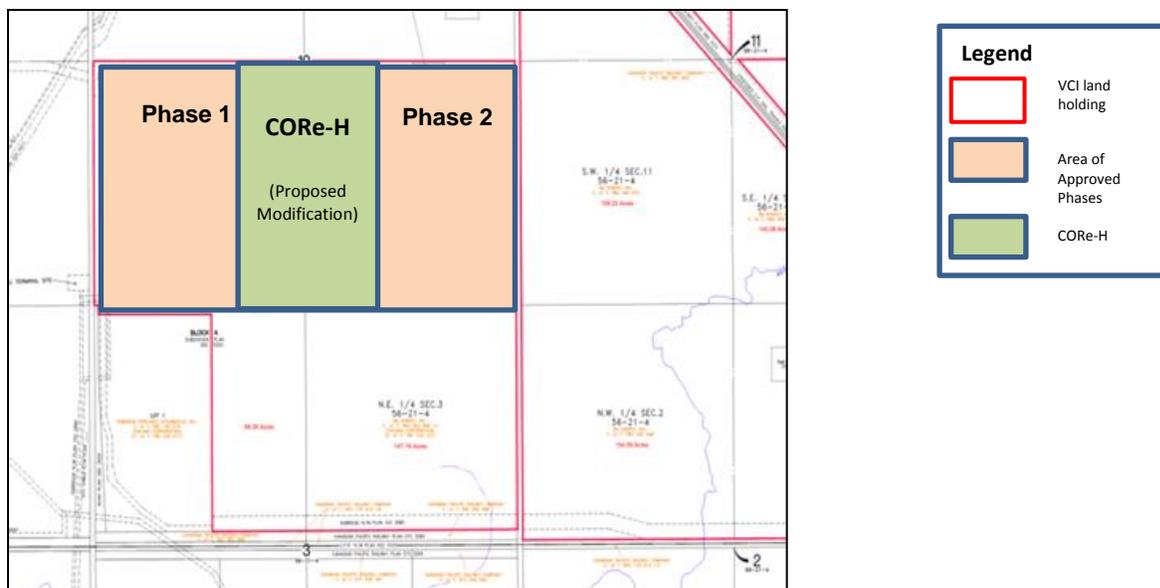


Figure 2. Proposed Amendment for CORE-H within existing Project Boundary

The facility with the proposed amendment will continue to only process feedstock derived from oil sands bitumen and will all be contained within the existing footprint of the VCS-H site location.

An Environmental Impact Assessment (EIA) has previously been completed for the approved project. The process changes that are being proposed will be an amendment to the existing regulatory approvals. The emissions for the amended project will be lower than those evaluated for the original EIA. Environmental studies will be needed to update the assessment of the original EIA.

VCI PROPRIETARY TECHNOLOGIES

While the VCI proprietary technologies are not part of the CORE-H, it is necessary to provide a brief description to put CORE-H into proper context, since it is these technologies that produce the unique feedstock that enables the cost effective configuration and superior environmental performance of CORE-H.

The enabling technologies that make CORE-H possible are VCI's proprietary Accelerated DeContamination ("ADC™") and the Clean Oil Cracking ("COC™") processes.

ADC™ transforms bitumen into clean heavy oil by almost complete removal of its most carbonaceous materials called asphaltenes. This allows for up-front de-carbonization of bitumen and solid carbon sequestration, and will significantly reduce greenhouse gas emissions.

COC™ is a low-cost cracking process that can achieve high conversion of the ADC™ product. The product from COC™ is a premium medium crude oil. It is clean in the sense that it has very low residue and contaminants, and is nearly asphaltene-free. It is cleaned **oil**, and will **fit** the majority of the existing North American refineries, and is thus brand-named Clean Oil La Fit ("COLF"). COLF is then refined in CORE-H into hydrotreated naphtha, ultra-high-quality diesel, and a premium synthetic crude oil.

ENVIRONMENTAL IMPACTS AND BENEFITS

VCI is committed to the protection and enhancement of the environment. CORE-H is designed with superior environmental performances, in terms of both the full life cycle emissions of the feed and products, as well as the local emissions from the project itself.

In terms of the full life cycle of the bitumen, emissions are reduced due to the application of VCI proprietary technologies as follows:

- Decarbonization of bitumen upfront at the project site in the form of asphaltenes, compared with the conventional route of transporting the diluted bitumen to long distances, through multiple processes in complex deep conversion refineries, and finally still having the asphaltenes end up mostly as carbon in the form of petroleum coke;
- The elimination of the need for diluent due to the application of VCI proprietary technologies, resulting in reduced emissions associated with the transportation of the diluent;
- The intrinsic energy efficiency in VCI's proprietary processes (more details can be provided upon request to VCI);
- The unique properties of the COLF product which makes it possible to use a simple and energy efficient refinery to process, as CORE-H will demonstrate.

In terms of local emissions from the Project itself, the high environmental performances are achieved by the following factors:

- CORE-H has a very simple process configuration, which results in lower energy use per unit of feedstock. In particular, unlike a conventional refinery, CORE-H does not have a Catalytic Cracking Unit or a Coker Unit, and thus there is no coke production or coke burning on an operating basis;
- VCI will apply industrial best practices in designing and operating the process units, in particular, the process heaters, sulphur recovery unit, and waste water treatment and disposal;
- VCI will minimize water consumption by maximizing recycling of the water used in the utilities and process.

SOCIO-ECONOMIC IMPACTS AND BENEFITS

VCI's mission is to transform oil sands development from its current economic and environmental vulnerabilities to profitable growth with robust economics against market volatilities and superior environmental performances. VCI is committed to accomplishing this mission via its Full Value Chain Solution strategy which adds value, frees up pipeline capacity, broadens markets and more importantly is significantly more environmentally sustainable. CORE-H is a major component of VCI's Value Chain Solution strategy.

CORE-H will provide significant economic benefits to local, regional, provincial and national economies throughout the various stages of development and operation. These benefits include:

- Increasing the value of the oil sands production within the province by going up the value chain, not just selling the raw resources;

- Business and employment opportunities related to facilities engineering, fabrication and construction;
- Business and employment opportunities related to ongoing operations once the facility is fully built; and
- Municipal, Provincial and Federal government revenues through taxes.

The CORE-H Project will use industry’s best practices for procuring goods and services. When cost, quality and reliability are equal, preference will be given to local and regional suppliers located nearest to the Project.

A socio-economic impact assessment update will be completed for the Project to identify specific impacts and opportunities. VCI will also engage with the Community and Stakeholders to ensure the company understands any community concerns, with a view to identify mitigative measures and solutions as more detailed planning for the Project takes place.

PROJECT DEVELOPMENT SCHEDULE

Figure 3 shows the preliminary schedule for the first Phase of CORE-H Project. As the Project is a very much needed facility, VCI will work with all stakeholders to accelerate the regulatory and development processes as appropriate. The preparation of the amendment application is currently underway and is expected to be filed in Q3 2016. The regulatory review of the amendment application is anticipated to take up to Q2 2017. Front End Engineering Design (“FEED”) can start with early indications of regulatory approval and market acceptance. Site preparation and construction will start once the regulatory approvals and owner project sanction is obtained. The project commissioning and start-up is possible before Q3-2020.

The Engineering of Phase 2 of CORE-H Project may start once Phase 1 is completed, depending on market conditions and alignment with VCI’s TriStar Projects productions. Phase 2 commissioning and start up can follow within two and half years after Phase 1. Stakeholder consultation will be ongoing throughout the life of the Project.

	2016	2017	2018	2019	2020
Stakeholder Consultation	[Blue bar spanning from start of 2016 to end of 2019]				
Submit Application	[Blue diamond at end of 2016]				
Regulatory Review	[Blue bar spanning from start of 2016 to end of 2016]				
Anticipated AER Approval		[Blue diamond at end of 2016]			
Engineering & Procurement		[Blue bar spanning from start of 2017 to end of 2019]			
Construction			[Blue bar spanning from start of 2018 to end of 2020]		
Commissioning and startup					[Blue bar at end of 2020]

CORE-H Phase 1 Proposed Schedule

SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

VCI is passionate about its Value Chain Solution strategy it offers to Alberta’s oil sands industry, and will maintain an open dialogue with, and ongoing support from, local communities and stakeholders. To date,

VCI has made substantial investments in research and development in pursuit of innovative approaches to increasing the value addition of the oil sands resources while reducing the environmental impact. VCI is committed to delivering the highest standards of integrity in all that we do – in safety, environmental performance, business ethics and community engagement. To support our commitment, VCI will:

- Carry out its business and operations with openness, honesty and integrity;
- Meet or exceed regulatory requirements governing the approval and operation of the Project;
- Work with governments, regulatory agencies, other operators, communities and stakeholders to address any issues or concerns as they arise;
- Seek to understand and collaborate on initiatives designed to improve the quality of life in nearby communities;
- Seek to understand and to minimize impacts of its operations on the environment through collaboration and commitment to innovation; and
- Protect the health and safety of its workers and people living in nearby communities.

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Glossary of Terms

ADC™	Accelerated Decontamination™. VCI’s trademarked innovative bitumen processing technology
AER	Alberta Energy Regulator
AIH	Alberta’s Industrial Heartland
Asphaltenes	The heaviest hydrocarbon fractions of bitumen
Bitumen emulsion	A fluid mixture of bitumen and water
COC™	Clean Oil Cracking™. VCI’s trademarked innovative bitumen upgrading technology
COLF	Clean Oil La Fit, a brand name of the clean oil product from VCI’s proprietary upgrading processes
CORe-H Project	Clean Oil Refining Unit - Heartland Project
DCO	Decontaminated Crude Oil. Product of ADC™ Process
Diluent	Light hydrocarbons added to bitumen to allow the bitumen to flow and be transported more easily
EIA	Environmental Impact Assessment
HUP	Heartland Upgrader Project
kbpd	Thousand barrels per day
LPG	Liquefied petroleum gas
U&O	Utilities and Offsites