

VERIFICATION REPORT

RED HILLS 123 MW WIND POWER PROJECT



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Summary:

Western Farmers Electric Cooperative (Client and/or WFEC) commissioned Conestoga-Rovers & Associates Limited (CRA) to perform the second verification of the Red Hills 123 MW Wind Power Project, VCS Project ID: 288 (Project Activity) located near Elk City, Oklahoma, U.S.A. on behalf of Red Hills Wind Project, LLC (Project Proponent). The second verification period extends from 01 June 2009 through 31 December 2010.

The Project Activity consists of the installation and operation of 82 Acciona Windpower AW-77/1500, 1.5 MW turbines for a total rated nameplate capacity of 123 MW. The turbines are located over an area of approximately 5,000 acres of rural and agricultural/grazing lands. Electricity generated by the turbines is upgraded from a 34.5 kilovolt (kV) collection line rating to a 138 kV rating at the Project Activity's substation and then transferred via transmission line to the point of interconnection at the Western Farmers Electric Cooperative transmission line where the electricity is then delivered to the Southwest Power Pool (SPP) grid. The Project Activity's intent is to generate electricity from renewable sources and therefore displace electricity that otherwise would have been produced for or distributed to the SPP grid in the absence of the Project Activity.

The Project Proponent utilized the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM) methodology entitled: "Consolidated baseline methodology for grid connected electricity generation from renewable sources (ACM0002), Version 9.0", dated 13 February 2009 as per the registered VCS Project Description (VCS PD), dated November 2008.

The scope of this verification is such that CRA, as an independent third party recognized as a Validation and Verification Body by the VCS (Registration Number 027) is responsible for reviewing the VCS Monitoring Report including accompanying materials, previous VCS Verification and Validation Reports, and the VCS PD including the monitoring plan, baseline assessment, and any supporting documentation. CRA utilized a risk based analysis against the relevant requirements of both the interpretation from the CDM and of VCS Program Guide Version 3.2 and VCS Standard Version 3.2 as applicable.

As part of the verification process, CRA reviewed the completeness, conservativeness, and accuracy of the underlying evidence for the assumptions and claims made, and data sources used. The results of this investigation were then, together with the results of the review of other areas, combined to form the necessary input for the verification report and opinion.

The verification report and associated annexes document a total of five(5) findings which include:

- One (1) Corrective Action Requests (CARs)
- Four (4) Clarification Requests (CLs)
- Zero (0) Forward Action Requests (FARs)

Upon review of the documentation and explanations provided by the Project Proponent, all findings were closed out in a clear and transparent manner.

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1 INTRODUCTION

1.1 Objective

Western Farmers Electric Cooperative (Client and/or WFEC) commissioned Conestoga-Rovers & Associates Limited (CRA) to complete the second independent third party verification for the registered Verified Carbon Standard (VCS) project entitled:

- Red Hills 123 MW Wind Power Project located near Elk City, Oklahoma, U.S.A., VCS Project ID: 288. (Project Activity)

CRA completed the verification pursuant to the relevant requirements of the VCS guidance (VCS Program Guide, Version 3.2, and VCS Standard, Version 3.2) as well as translational guidance from the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM). As detailed in Section 5.1.1 of the VCS Standard Version 3.2, *"verification is the periodic ex-post independent assessment of the project by a validation/verification body of the GHG emission reductions and removals that have occurred as a result of the project during the monitoring period, conducted in accordance with the VCS rules"*. The objective of CRA on behalf of the VCS is to ensure that only Project Activities that meet the established criteria receive a positive and unconditional verification statement. Specifically, the criteria states that the registered Project Activity must result in emission reductions that are:

- Relevant
- Complete
- Consistent
- Accurate
- Transparent
- Conservative

In the verification of this VCS Project Activity, CRA used a risk-based verification approach to focus and determine the detailed scope of the verification. The VCS and likewise the CDM are rules-based mechanisms, and CRA has ensured that the rules for requesting registration as a proposed VCS Project Activity are complied with, in accordance with the VCS Program Guide Version 3.2, and the VCS Standard Version 3.2.

The key risks associated with the project design, baseline, monitoring plan, emission reduction estimates, environmental impacts, and stakeholder comments are elements that are critical for meeting VCS criteria for achieving real, measurable, permanent, additional, independently audited, unique, transparent, and conservative greenhouse gas (GHG) reductions.

1.2 Scope and Criteria

The Client commissioned CRA to perform the independent third party verification for the second monitoring period of the registered Project Activity, which is located near Elk City, Oklahoma, U.S.A.

CRA, utilizing a risk-based approach as part of the verification process, reviewed the completeness, conservativeness, and accuracy of the underlying evidence for the assumptions and claims made, and data sources used. The results of this investigation then, together with the results of the review of other areas, gave the necessary input for the verification opinion which is completed pursuant to guidance provided within the VCS Program Guide Version 3.2, and the VCS Standard Version 3.2.

1.3 Level of Assurance

CRA has conducted the validation activities and has prepared this report to a reasonable level of assurance with a maximum allowable materiality threshold of 5 percent as outlined in Section 5.3.1 of the VCS Standard, Version 3.2.

1.4 Summary Description of the Project

The Project Activity consists of the installation and operation of 82 Acciona Windpower AW-77/1500, 1.5 MW turbines for a total rated nameplate capacity of 123 MW. The turbines are located over an area of approximately 5,000 acres of rural and agricultural/grazing lands. Electricity generated by the turbines is upgraded from a 34.5 kilovolt (kV) collection line rating to a 138 kV rating at the Project Activity's substation and then transferred via transmission line to the point of interconnection at the Western Farmers Electric Cooperative transmission line where the electricity is then delivered to the Southwest Power Pool (SPP) grid. The Project Activity's intent is to generate electricity from renewable sources and therefore displace electricity that otherwise would have been produced for or distributed to the SPP grid in the absence of the Project Activity.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The CRA Project Team has assessed and verified that the implementation of the Project Activity and the steps taken to report emission reductions comply with the VCS criteria and relevant guidance provided by the VCS and the UNFCCC. The verification included a review of relevant documentation, records, and an on-site visit.

CRA followed a risk-based verification approach. As such, CRA identified the key reporting risks related to the claimed emission reductions and assessed to what extent the project's control systems are adequate for mitigating any perceived reporting risks.

Key reporting risks that are not sufficiently addressed by the project control system represent residual risks. The CRA Project Team conducted detailed verification/testing to investigate the residual risks. Key issues assessed during verification included: verification of correct use of emission factors, accurate fuel consumption estimates, correct use of conversion factors, and consistency in aggregation of emissions data, as applicable. Wherever practical, direct reading instruments are preferred to be used to ensure that any reporting risks are kept with equipment and instrumentation performance limits.

The CRA Project Team ranked reporting risks and assessed the control systems implemented to mitigate these risks. The ranks are assigned as follows:

- **Fully Implemented** - All best practice expectations are implemented, resulting in a low risk
- **Partially Implemented** - A portion of the best practice expectations are implemented, resulting in a moderate risk
- **Limited Implementation** - Few or none of the expected system components or best practice expectations are implemented, resulting in a high risk

During the verification process, the CRA Project Team considered both quantitative and qualitative information on emission reductions. Quantitative data was comprised of the monitoring report and accompanying information submitted to the CRA Project Team by the Project Proponent/Client. Qualitative data was comprised of information on internal management controls, calculation procedures, procedures for transfer, frequency of emissions reports, and review and internal audit of calculations/data transfers.

The audit conclusion was based on the interaction of three key verification principles as follows:

1. Compliance with the monitoring plan
2. Accuracy
3. Quality of evidence

During the desk review, the CRA Project Team became familiar with the Project Activity to be able to compare the situation and status on site with the situation as described in the underlying documentation. The CRA Project Team reviewed the following items:

- Review of the data and information presented to verify completeness
- Review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures
- Evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions
- Review of the last revision of the previous verification and validation reports (as applicable)
- Review of the written management manual (as applicable)
- Review of operation licenses from local authorities (as applicable)

Other documents such as process flow diagrams, technical drawings, manuals of equipment suppliers, and performance records, were reviewed if applicable to the Project Activity.

The CRA Project Team will use a risk-based approach for on-site investigation conducted during the verification process. The Lead Auditor and other Project Team members followed the audit trails and data sets on site for specific indicators, and cross checked with the monitoring plan and records. Direct reading instrumentation and redundancy in the data used to support the verification was identified in the verification reporting.

During the on-site assessment, the CRA Project Team focused on the key areas identified as follows:

- An assessment of the implementation and operation of the VCS Project Activities as per the registered VCS PD
- A review of information flows for generating, aggregating, and reporting the monitoring parameters
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records, or similar data sources
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD and the selected methodology
- A review of calculations and assumptions made in determining the GHG data and emission reductions
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters

The outcome of the on-site assessment and the desk-top review was the creation of a Draft Verification Report. This Draft Verification Report was issued to the Project Proponent/Client for

response to any corrective actions or clarification requests. Upon receipt of the Project Proponent's/Clients response to these requests, the CRA Independent Technical Reviewer completed a peer review of the Draft Verification Report. Any additional findings were presented to the Project Proponent/Client. Upon the Project Proponent/Client response the CRA Project Team issued a Final Verification Report along with a completed Verification Statement and Verification Representation.

2.2 Verification Team

The following presents the members of the CRA Project Team assembled for the verification of the registered VCS Project Activity:

CRA Project Team Position

Lead Auditor/Technical Expert
 Assistant Auditor/Lead Auditor Under-Training
 Validation Team Member
 Independent Technical Reviewer

CRA Project Team Member

Brent Boss, P. Eng.
 Neil Lonsdale, P. Eng.
 Adam Loney, P. Eng.
 Gordon Reusing, M.A.Sc., P. Eng.

Curricula vitae for each of the CRA Project Team Members have been provided as Annex C of this report.

2.3 Document Review

The VCS verification process relies heavily upon documentation review. The primary document for review is the VCS Monitoring Report. The Project Proponent provided CRA with the VCS Monitoring Report and revised VCS Monitoring Reports as detailed below:

<i>Document Date</i>	<i>Date Issued to CRA</i>	<i>Version Number</i>	<i>Methodology</i>
14 February 2012	14 February 2012	1	ACM0002, Ver. 9
06 March 2012	06 March 2012	2	ACM0002, Ver. 9
15 March 2012	15 March 2012	3	ACM0002, Ver. 9

Each of the above submissions was reviewed by CRA. As part of the verification process, additional documentation supplemental to the VCS Monitoring Report was requested and reviewed by CRA. This supplemental information included the following documents:

Issued to CRA Date	Type of Document
16 January 2012	• Red Hills Wind Project, LLC Billing Invoices (Monthly from 30 June 2009 through 31 December 2010) • Green-e Energy Renewable Generator Registration Form and Attestations 1st – 4th Quarters 2010 • Green-e Energy Renewable Attestation From Wholesale Provider of Electricity or REC's 1st – 4th Quarters 2010 • Confirmation letter confirming sale of REC's for 2010 • Green-e Energy Renewable Generator Registration Form and Attestations 2nd – 4th Quarters 2009 • Green-e Energy Renewable Attestation From Wholesale Provider of Electricity or REC's 2nd – 4th Quarters 2009 • Confirmation letter confirming sale of REC's for 2009 • Renewable Energy Certificate Purchase and Sale Agreement and Confirmation Letter (This is the base agreement that confirmation letters set forth in items 5 & 8 are based on). • Invoices and evidence of collection of revenue for sell of the REC's covered by the confirmation letters, items 5 and 8. • Invoices and evidence of payment of invoices for purchase of production (energy and environmental attributes) from project for period 01 July 2009 through 31 December 2010. • Contract for sale of VCU's covered by this report • Meter of record consumption data for period 01 July 2009 through 31 December 2010 • Meter of record test reports for 14 July 2010 and 28 December 2011 • Meter of record production data for period 01 July 2009 through 31 December 2010
17 January 2012	• Renewable Energy Purchase Agreement for Wind Energy Resources, Dated 25 February 2009 • REC sales spreadsheet summary, Dated 2009 • REC sales spreadsheet summary, Dated 2010 • Red Hills 2008 Calibration Test Report PDF, Dated 15 October 2008 • Red Hills 2010 Calibration Test Report Spreadsheet, Dated 14 July 2010
18 January 2012	• Relevant portions of the Interconnection Agreement relating to calibration frequency of the electricity meters, Dated 01 July 2004
08 February 2012	• Monitoring Report Second Calculation of VERs 2009-2010, Version 1
13 February 2012	• Final (No Partial Tons) Monitoring Report Second Calculation of VERs 2009-2010, Version 2 • Reconciliation Spreadsheet for Check and Revenue meters • Revenue Meter consumption data spreadsheet 2009 - 2010

<i>Issued to CRA Date</i>	<i>Type of Document</i>
13 February 2012	Final (No Partial Tons) Monitoring Report Second Calculation of VERs 2009-2010, Version 2
12 March 2012	Northfork Electric Cooperative Inc. Invoices to Red Hills Wind Project, LLC for back-fed electricity (Monthly from 30 June 30 2009 through 31 December 2010)
15 March 2012	Monitoring and Verification Manual for VCS Purposes

2.4 Interviews

CRA completed a Site Inspection for the verification on 16 January 2012. During this portion of the verification process, CRA was able to interview a series of project stakeholders regarding various aspects of the Project Activity. Mr. Brent Boss and Mr. Neil Lonsdale of CRA completed the Site Inspection. The following Project Stakeholders were interviewed by CRA:

<i>Name of Interviewee</i>	<i>Position and Company</i>	<i>Details of Items Discussed</i>
Mr. Richard Ross	Manager – Risk Management – Western Farmers Electric Cooperative	Represented WFECC on the Site and assisted in conducting Site Visit tour. Discussed technical details of the Project Activity implementation and operation and Monitoring Report details.
Mr. Scott Stiker	Site Operations Manager – Acciona Energy North America	Represented the Project Proponent on the Site as well as discussions regarding operations of the Project Activity.

2.5 Site Inspections

The verification process is primarily a document review process. The completion of a Site Inspection provided the CRA Project Team with an added level of assurance that the information provided within documentation from the Project Proponent is complete and accurate as it relates to the registered Project Activity. As stated above, CRA completed a Site Inspection for the validation on 16 January 2012. Aside from interviewing project stakeholders as per Section 2.4 of this report, the CRA Project Team reviewed the implementation status of the Project Activity. During the Site Inspection the CRA Project Team noted that there were a total of 82 installed turbines. All of the turbines were currently operational and operating in compliance with the registered VCS PD.

2.6 Assessment Against VCS Requirements

This Project Activity was assessed by CRA's CRA Project Team versus the approved consolidated large-scale methodology entitled "Consolidated baseline methodology for

grid-connected electricity generation for renewable sources", Version 9 (ACM0002), associated methodological tools referenced within the registered VCS PD, and relevant VCS and CDM guidance documentation.

Findings were categorized as either a Corrective Action Request (CAR), Forward Action Request (FAR), or as a Clarification Request (CL).

The CRA Project Team raised CARs in this Assessment if:

- The Project Proponent/WFEC has made mistakes in assumptions or in the project documentation that will directly influence project results
- The requirements deemed relevant for validation of a Project Activity with certain characteristics have not been met
- There is a risk that the project emission reductions cannot be monitored, calculated, verified, and/or certified
- The Project Proponent/WFEC has made mistakes that will influence the ability of the Project Activity to achieve real, measurable additional emission reductions
- The VCS/CDM requirements have not been met

FARs are issued to highlight issues related to project implementation that require review during subsequent verifications of the Project Activity. FARs will not relate to the VCS/CDM requirements for issuance and thus do not require any formal response from the Project Proponent/WFEC.

CL's were issued to the Project Proponent/WFEC if the CRA Project Team determines that the information provided by the Project Proponent/WFEC is insufficient, unclear or not transparent enough to establish whether the applicable requirements are met.

2.7 Resolution of Outstanding Issues

Each CAR, FAR, and CL raised by CRA was presented in individual tables within the Findings Assessment. The Project Proponent/WFEC was required to complete the appropriate responses and to provide, where necessary, documentation as evidence of their assumptions and/or responses.

A summary of the final results of the findings assessments is presented as follows:

<i>Finding Category</i>	<i>Number of Findings</i>
CAR	1
FAR	0
CL	<u>4</u>
Total	5

Section 3.0 of this report will provide the details of the individual findings and the responses from the Project Proponent/WFEC pertaining to each of the findings.

2.8 Internal Quality Control and Technical Review

Upon completion of the verification assessment, and recommendation by the CRA Project Team, all Project Activity related materials were sent to the Independent Technical Reviewer. The Independent Technical Reviewer checked that the proper procedures have been followed and that all of the conclusions made by the CRA Project Team are just. Ultimately, the Independent Technical Reviewer issued an approval notice to the CRA Project Team based on their review. During review the Independent Technical Reviewer and the CRA Project Team were able to raise additional findings at which point the Project Proponent/WFEC must sufficiently address each of the additional findings should they occur. All findings were successfully closed by the Project Proponent/WFEC.

Documents provided to CRA by the Project Proponent/WFEC are filed according to the date received and the source of the information. All documentation is placed in a private, secure filing system with restricted access to safeguard confidentiality.

2.9 Resolution of Any Material Discrepancy

No material discrepancies were observed by CRA in the validation of the Project Activity

3 VERIFICATION FINDINGS

The following sections will details the verification requirements as established by the CRA Project Team throughout the duration of the verification process. Upon review of the Monitoring Report, Version 1, the CRA Project Team noted that the appropriate Monitoring Report template as provided by the VCS was not utilized. As such, the CRA Project Team raised CAR#1 to have the Monitoring Report updated.

Date:	05/03/2012	Raised by:	Brent Boss/Neil Lonsdale		
Type:	CAR	Number:	#1	Reference:	1.1
Lead Auditor Comment:					
Section 3.17.6 of the VCS Standard Version 3.2 states that "...the monitoring report shall include all the dates and information as set out in the monitoring requirements of the project description and the applied methodology. It shall be prepared using the VCS Monitoring Report Template and shall include the following:					
1) A Summary of the project details					
2) The implementation status of the project					
3) The data and parameters (both available at validation and monitored and a description of the monitoring plan.					
4) The calculation of the net GHG emission reductions and removals					
5) Any additional information relevant to monitoring."					
Currently, the Monitoring Report, Version 1 provided by the Project Proponent is not written in any recognized VCS format/template. As such, the CRA Project Team is requesting that the Project Proponent provide a revised monitoring report that is consistent with the VCS Standard Version 3.2.					
Project Proponent Response:				Date: 03/06/2012	
I have updated the Monitoring Report using the proper template and I have noted it as Version 2. I will submit it under separate cover via email.					
Documentation Provided by Project Proponent:					
This document reference sent as an attachment to email is VCS Monitoring Report Template v3.1 updated Version 2 03062012.docx					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the revised Monitoring Report, Version 2 in conjunction with the requirements of the Monitoring Plan as presented on the VCS website.					

Reasoning for not Acceptance:	Date: 12/03/2012
Based on the finding raised and response provided by WFEC it is evident that WFEC has provided the CRA Project Team with a report that is now in the correct template version as prescribed by the VCS Standard Version 3.2. While the correct version of the template is used the CRA Project Team has noted that there are several items that are either inconsistent or not complete in regards to the template as follows: • In Sections 1.3 and 1.4 of the Monitoring Report, WFEC states the name and contact information of each responsible party but does not list out the responsibilities of each party as per the guidance provided within the template. • Section 1.8 of the Monitoring Report appears to be worded as if being submitted for validation. • Section 2.1, second bullet; the guidance from the template was not deleted and remains in the text. • Sections 2.2 and 2.3 must contain a brief description of the response to each section in place of writing N/A. • Section 3.3, second bullet; states that the organizational structure and responsibilities are provided in an additional document. This document has yet to be provided to the CRA Project Team for review. The CRA Project Team is requesting that WFEC provide corrections, justifications as necessary given the above noted points. <u>CAR#1 Remains Open.</u>	
Project Proponent Response:	Date: 15/03/2012
I have incorporated my responses to the items noted above in the Second Monitoring Report and changed the version number to 3. A copy of the updated monitoring report Version 3 is attached hereto. For Sections 1.3 and 1.4, I expanded the responses to more specifically identify the responsibilities of the proponent and the other entity involved in the project. In Section 1.8, I changed the tense so that it does not read as past tense procedures. In Section 2.1, I removed the standard template language. In Sections 2.2 and 2.3, I explained there were no deviations from the monitoring plan and that the project was not submitted as a group project, meaning it was subject to potential future expansion. For item 3.3 the additional document which is identified as WFEC Red Hills VCS Monitoring and Verification Manual.doc was sent to verifier via email dated 03/15/12.	
Documentation Provided by Project Proponent:	
WFEC Red Hills VCS Monitoring and Verification Manual.doc submitted as an attachment to an email to verifier 3/15/2012. VCS Monitoring Report Template v3.1 Updated Version 3 03152012.docx.	
Information Verified by Lead Auditor:	
The CRA Project Team has reviewed the Monitoring Report, Version 3 in addition to the WFEC Red Hills VCS Monitoring and Verification Manual that specifies the roles and responsibilities for each key party involved in the Project Activity. These documents were reviewed against the VCS Standard, Version 3.2.	
Reasoning for Acceptance and Close Out:	Date: 16/03/2012

Based on the finding raised and response provided by WFEC it is the opinion of the CRA Project Team that the Monitoring Report, Version 3 as provided by WFEC, is now in full compliance with the requirements as set forth in the VCS Standard, Version 3.2. The Monitoring Report, Version 3 now clearly states the roles and responsibilities of key individuals/parties, is written in a current context, and provides all relevant full discussions in regards to the implementation of the monitoring plan and the general Project Activity as was verified by the CRA Project Team throughout the verification process.

CAR#1 is Closed Out.

Acceptance and Close out by Lead Auditor:

Date: 16/03/2012

3.1 Project Implementation Status

The Project Activity received its Validation Representation with the VCS dated 18 November 2009 as a Renewable Energy Industries type project under Sectoral Scope 1 defined by the UNFCCC and adopted by the VCS. The Project Activity was registered utilizing the approved consolidated large-scale methodology entitled "Grid connected electricity generation from renewable sources", Version 9 (ACM0002) with a renewable crediting period of 10 years commencing on 11 November 2008 and concluding on 10 November 2018.

During the verification, a Site Visit was conducted of which Project Activity implementation status was reviewed. The following paragraphs outline the information that was confirmed regarding the implementation status of the Project Activity.

The Project Activity's intent is to generate electricity from renewable sources and therefore displace electricity that otherwise would have been produced for or distributed to the SPP grid in the absence of the Project Activity.

The Project Activity is located over approximately 5,000 acres with the grid connection point geographic coordinates are as follows:

Latitude: 35.5° N
Longitude: -99.4° W

The Project Activity achieves GHG emissions reductions through the installation and operation of 82 Acciona Windpower AW-77/1500, 1.5 MW turbines for a total rated nameplate capacity of 123 MW. The turbines are located over an area of approximately 5,000 acres of rural and agricultural/grazing lands. Electricity generated by the turbines is upgraded from a 34.5 kilovolt (kV) collection line rating to a 138 kV rating at the Project Activity's substation and then transferred via transmission line to the point of interconnection at the Western Farmers Electric Cooperative transmission line where the electricity is then delivered to the Southwest Power Pool (SPP) grid.

The CRA Project Team confirmed the implementation status of the Project Activity during the Site Visit and confirmed the following details:

- At the time of the Site Visit there were currently 82 erected turbines capable of operation with a total nameplate capacity of 123 MW
- Maintenance activities to replace various turbine parts is executed as required throughout the year
- Monitoring of required parameters as per the approved Monitoring Plan is conducted via two electricity meters; a revenue meter and the check meter. The revenue meter is owned by WFEC and the check meter is owned by the Project Proponent. Each meter monitors the net electricity generated as per the approved Monitoring Plan.

No material discrepancies were noted between the Project Activity and the Project Description.

3.1.1 Phased Implementation Delays

The CRA Project Team noted that the Project Activity was registered to operate a total of 82 wind turbines. During the completion of the site visit, the CRA Project Team noted that the Project Activity was fully implemented with a total of 82 turbines installed. As such no phased implementation delays were evident.

3.1.2 Remaining Items from Validation and Previous Verification

The CRA Project Team assessed the Validation Report presented on the VCS website in regards to the registration of the Project Activity as well as the initial Verification Report as the formally available sources of previously raised action requests as this verification report is for the second consecutive monitoring period of the Project Activity. Upon the review of the aforementioned reports the CRA Project Team determined that there was a single FAR raised by the previous Validation/Verification Bodies during the initial verification. The only FAR is stated as the following in the publically available Verification Report:

"Regarding the error in reporting of the commissioning date, the Project Participant agreed to double check the reason why the information in the two databases did not match and correct it. FAR 1 was issued to conduct internal checks/audits so that such errors are captured before the information in monitoring information is reported to third party verifier."

In response to FAR#1 the CRA Project Team has reviewed the records provided directly from WFEC in addition to invoices for electricity supplied to the grid from the Project Proponent. In reviewing the records and potential errors between the two meters it was noted that the net discrepancy between the two meters was a total of 0.1 percent which is well within the tolerance range of 0.1 percent as defined by the electricity meter technical specifications. As such, the CRA Project Team is assured that any other discrepancies noted in the previous verifications have now been addressed. FAR#1 is Closed Out for this current monitoring Period.

3.2 Accuracy of GHG Emission Reduction or Removal Calculations

3.2.1 Monitoring Parameters

The following is a list of monitoring parameter(s) that the Project Proponent measured and recorded in order to calculate the claimed emission reductions throughout the Monitoring Period:

Symbol	Monitoring Parameter Description (Units)	Frequency
EG _y	Electricity supplied to the SPP (MWh)	Continuous/Real-Time (electricity meter)
TEG _y	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads (MWh)	Continuous/Real-Time (electricity meter)

Upon review of the approved methodology, ACM0002, Version 9, the CRA Project Team has determined that the previous verification of the Project Activity applied a conservative factor in calculation of total emission reductions. As per ACM0002, Version 9, the Project Proponent only required to monitor the electricity supplied to the grid. Later versions of the methodology were updated to include the electricity backed into the Project Activity via the parameter termed as "net electricity supplied to the grid". The monitoring of TEG_y as per the approved methodology is applicable only to hydro power plants in order to measure internal loads. However; as the precedent was set at the time of validation in addition to the first verification, WFEC has applied the consumption emissions in order to obtain net elasticity generated. It is the CRA Project Team's determination that this inclusion provides a conservative estimate of the total emission reductions. The CRA Project Team also notes that for time periods in which RECs were generated/claimed the consumption emissions were either prorated to account only for the timeframe that VCUs were also claimed or they were not claimed at all if only RECs were claimed in compliance with the requirements for RECs.

3.2.2 Methods for Recording Monitoring Parameters

Emission reductions regarding this Project Activity are entirely dependent upon the direct measurement of the electricity both supplied and taken from the SPP grid which combines to form the net electricity generated. The net electricity generated is measured directly at the point of interconnection to the SPP grid at the WFEC substation. Located within this substation are two separate electricity meters; the revenue (main) meter and the check meter. The revenue meter is owned by WFEC and the check meter is owned by the Project Proponent. Each of the meters is classified as bi-directional meters in that they record electricity supplied to, and taken from, the grid. Invoices tracking these electricity records were made available by the Project Proponent and WFEC as will be discussed in Section 3.3. Net electricity generated is recorded in the units of MWh.

The Project Proponent records the net electricity generation of the Project Activity through the use of a Supervisory Control and Data Acquisition (SCADA) system. All data parameters

recorded by the SCADA system are accessed by the Project Proponent's personnel through the System Operations Centre. The Project Proponent then correlates the data on a monthly basis and invoices WFEC for the net electricity input into the grid. WFEC also continuously monitors the net electricity input into the grid and will request a revision to the invoice provide by the Project Proponent, if necessary, to resolve any discrepancies. It was noted by WFEC during the Site Visit that no corrections were requested throughout this monitoring period.

The total amount of electricity back fed in to the Project Activity is also invoiced separately to the Project Proponent from Constellation Energy.

It is the CRA Project Team's opinion that methods employed by the Project Proponent and WFEC meet the requirements of the registered VCS PD and the associated approved methodology and additionally provide a level of redundancy with the monitoring of net electricity generated with two separate meters.

3.2.3 Calculation of Emission Reductions

These values once, obtained are then multiplied by the grid emission factor that was established as an ex-ante parameter during the validation stage and therefore only is required to be updated upon renewal of the crediting period. The grid emission factor established for this initial crediting period is 0.67 tCO₂/MWh. As the Project Activity is displacing only carbon dioxide emissions from electricity production the resulting number value is then multiplied by the global warming potential of carbon dioxide as follows:

- $GWP_{CO_2} = 1 \text{ tCO}_2\text{e}/1 \text{ tCO}_2$

The calculations used to determine the overall emission reductions as applied to the Microsoft Excel spreadsheet provided by WFEC are as follows:

Total Emission Reductions Calculation:

$$ER_y = BE_y - PE_y - L_y$$

Where:

- BE_y = Total baseline emissions (tCO₂e)
- PE_y = Total project emissions (tCO₂e)
- L_y = Total leakage emissions (tCO₂e)

Baseline Emissions Calculations:

$$BE_y = EG_y * EF_{grid,CM,y}$$

Where:

EG_y = Net electricity supplied to the grid by the Project Activity (MWh)

$EF_{grid,CM,y}$ = Ex-ante grid emission factor (0.67 tCO₂/MWh)

The net electricity generated (EG_y) is calculated through the subtraction of the total electricity produced by the Project Activity (TEG_y) from the electricity consumed from the grid. As mentioned previously this measurement is completed through the use of bi-directional electricity meters and is confirmed through the review of invoices.

Project Emissions Calculations:

Project emissions are not quantified or required to be quantified based on the registered VCS PD and the approved methodology.

Leakage Emissions Calculations:

Leakage emissions are not quantified or required to be quantified based on the registered VCS PD and the approved methodology.

3.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Through the verification process, the CRA Project Team has raised several clarification requests to WFEC in order to request evidence to support the emission reductions claims made in the Monitoring Report. These requests were provided to WFEC in order to ensure the relevance, consistency, transparency, completeness, accuracy, and conservativeness of the statements and calculations made. These requests are detailed in throughout CL#1, CL#2, CL#3, and CL#4.

Date:	16/01/2012	Raised by:	Brent Boss/Neil Lonsdale		
Type:	CL	Number:	#1	Reference:	1.3
Lead Auditor Comment:					
In order to ensure that the calculation principles as established within the registered methodology ACM0002 Version 9 are maintained consistently throughout the Monitoring Period, the CRA Project Team is requesting that the Project Proponent provide all detailed calculation spreadsheets/programs including but not limited to the emission reduction calculations.					
Project Proponent Response:				Date: 03/06/2012	
This calculation was submitted to Brent Boss via email dated 02/13/2012 in the form of an Excel attachment.					
Documentation Provided by Project Proponent:					
Excel attachment named – Final (No Partial Tons) Monitoring Second Calculation of VER's 2009-2010.xlsx. This is item 20 in the table set forth in Section 5 of the Monitoring Report Version 2.					
Information Verified by Lead Auditor:					

The CRA Project Team has reviewed the emission reduction spreadsheet, Versions 1 and 2 as provided by WFEC.

Reasoning for Acceptance and Close Out:

Date: 12/03/2012

Based on the finding raised and response provided by WFEC, the CRA Project Team has determined that based on the most recent version of the spreadsheet, Version 2, that WFEC has provided a calculation tool that is clear and transparent in regards to the calculation of the total overall emission reductions. The calculation spreadsheet also show the periods in time that RECs were generated and claimed as opposed to VCU's which again maintains a clear and transparent account of the calculations required. Furthermore, the calculations provided within the spreadsheet fully represent the required calculations as set forth in the approved methodology and the Monitoring Plan in registered VCS PD.

CL#1 is Closed Out.

Acceptance and Close out by Lead Auditor:

Date: 12/03/2012

Date:	16/01/2012	Raised by:	Brent Boss/Neil Lonsdale		
Type:	CL	Number:	#2	Reference:	1.5/1.6
Lead Auditor Comment:					
In Section 3.17.1 of the VCS Standard Version 3.2, it states that "Data and parameters used for the quantification of GHG emission reductions and/or removals shall be provided in accordance with the methodology." During the site visit conducted on 16/01/2012, CRA noted that there were two electricity meters in use; a revenue meter and a check meter. The check meter is owned by the Project Proponent and the revenue meter is owned by WFEC. CRA has requested that the Project Proponent and WFEC provide a complete list of the raw data collected from both the revenue and check meters in order to check the accuracy of the calculations. In addition the CRA Project Team is requesting to review the monthly invoices showing the net electricity supplied to the SPP grid.					
Project Proponent Response:				Date: 03/06/2012	
These were provided to Conestoga-Rovers during the site visit on 16 January 2012					
Documentation Provided by Project Proponent:					
This is referenced as item 11 in Section 5 of the Monitoring Report Version 2 and the net number is further supported by items 13 and 15 in Section 5 of the Monitoring Report Version 2.					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the monthly invoices provided to WFEC from the Project Proponent throughout the monitoring period which represent the total amount of electricity supplied to the grid as a result of the Project Activity. Additionally, the CRA Project Team reviewed the invoices provided by Northfork Electric Cooperative, Inc. to the Project Proponent which represent the electricity back-fed from the grid to the Project Activity. The CRA Project Team notes that the back-fed consumption for the Project Activity is recorded at the revenue meter which is a WFEC meter. WFEC is a generation and transmission cooperative that delivers energy to their member owner distribution cooperatives on a wholesale basis and they then deliver on a retail basis to the consumer. The distribution cooperative that serves the area that Project Activity is located in is Northfork Electric Cooperative, Inc. As such, the Project Proponent was billed on a retail basis by Northfork Electric Cooperative, Inc. in place of WFEC. Spreadsheets were also provided by WFEC that consolidated the total electricity use readings for the Project Activity which provided a comparison between the revenue and check meters.					
Reasoning for Acceptance and Close Out:				Date: 12/03/2012	
Based on the finding raised and response provided by WFEC, the CRA Project Team has determined that the records provided in relation to the request made represent an accurate, transparent, and consistent review and application of the net electricity generated by the Project Activity in as applied to the emission reductions calculated for this monitoring period. <u>CL#2 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 12/03/2012	

Date:	05/03/2012	Raised by:	Brent Boss/Neil Lonsdale		
Type:	CL	Number:	#3	Reference:	1.7/3
Lead Auditor Comment:					
In Section 3.17.5 of the VCS Standard Version 3.2, it states that <i>"Where measurement and monitoring equipment is used, the Project Proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards."</i> In order to ensure the accuracy of the metered readings, the CRA Project Team is requesting that the Project Proponent provide complete documentation of the revenue and check meter calibration records which is consistent with the VCS Standard listed above.					
Project Proponent Response:				Date: 03/06/2012	
These records were provided to Conestoga-Rovers during the 16 January 2012 site. They are noted as item 14 in Section 5 of the Monitoring Report Version 2 and via email to Brent Boss on 01/17/2012 which is noted at item 18 in Section 5 of the Monitoring Report Version 2.					
Documentation Provided by Project Proponent:					
Item 14 and 18 in Section 5 of the Monitoring Report Version 2 – Meter of Record test reports for 10/15/2008, and 07/14/2010.					
Information Verified by Lead Auditor:					
Meter of record/revenue meter test reports for 15 October 2008, 14 July 2010, and 28 December 2011 were reviewed by the CRA Project Team in addition to the relevant section (Section 7.4) of the interconnection agreement as it pertains to the meter calibrations.					
Reasoning for Acceptance and Close Out:				Date: 12/03/2012	
Based on the finding raised and response provided by WFEC, the CRA Project Team has determined that as per the requirements established within the Interconnection Agreement for the Project Activity, the revenue meter must be calibrated at a minimum every two years. Based on the calibration reports provided by WFEC, the meter has been calibrated three times over approximately a 3-year period. Each calibration report also further indicates that the revenue meter was operating within full calibration error limits (plus/minus 0.1 percent) throughout the monitoring period. Furthermore, according to the Interconnection Agreement, the check meter is not required to be calibrated to the same level/frequency as specified for the revenue meter. As such the relevant records were not available for review; however, the CRA Project Team did note that the total discrepancy between the two meters throughout the monitoring period was on 0.1 percent leading the CRA Project Team to believe that both units were functioning as fully calibrated units. <u>CL#3 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 12/03/2012	

Date:	05/03/2012	Raised by:	Brent Boss/Neil Lonsdale		
Type:	CL	Number:	#4	Reference:	3.2/3.4
Lead Auditor Comment:					
The CRA Project Team noted during the Sits Visit that the Project Proponent/WFEC had claimed Renewable Energy Credits (RECs) based on renewable electricity generated from the operation of the Project Activity during the Monitoring Period in question. As such, the CRA Project Team is requesting that the Project Proponent/WFEC provide a complete copy of invoices in relation to the timeframe and the total number of RECs generated and sold during the Monitoring Period in order to ensure that no double counting RECs has occurred.					
Project Proponent Response:				Date: 03/06/2012	
These records were provided to Conestoga-Rovers during the 16 January 2012 site visit.					
Documentation Provided by Project Proponent:					
These documents are referenced as items 1-10 in Section 5 of the Monitoring Report Version 2.					
Information Verified by Lead Auditor:					
The CRA Project Team has reviewed invoices provided by WFEC to the third party buyer of the RECs in addition to the associated confirmations of payment /receipt. The CRA Project Team has also reviewed the emission reductions calculation spreadsheet provided by WFEC to ensure that the RECs were accounted for consistently.					
Reasoning for Acceptance and Close Out:				Date: 12/03/2012	
Based on the finding raised and response provided by WFEC, the CRA Project Team has determined that the RECs generated and sold throughout the monitoring period have been documented and accounted for in a consistent and complete manner by WFEC. Full records of sale have been provided and reviewed to further justify the quantity of RECs sold.					
<u>CL#4 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 12/03/2012	

Overall, the CRA Project Team has determined that the Project Proponent/WFEC have provided sufficient documentation as requested though the findings stated above. While not required for this Project Activity, the use of the check meter in relation to the revenue meter provides a further level of redundancy in the calculation of emission reductions and electricity sales.

3.3.1 Sampling of Data and Re-Calculation of Emission Reductions

The CRA Project Team requested a full data sampling regime from the Project Proponent/WFEC. Invoices for electricity supplied to the grid and electricity back-fed from the grid were provided during the verification process. Consolidated raw data of electricity meter readings was also provided to the CRA Project Team. The CRA Project Team then reviewed the provided emission reduction calculation spreadsheet against the requirements of ACM0002, Version 9. In all cases

the CRA Project Team determined that the calculation spreadsheets were completed in compliance with the approved methodology.

At the conclusion of the verification, the CRA Project Team was successfully able to fully replicate the emission reduction calculations based on data retrieved.

3.3.2 Comparison of Calculated Versus Projected Emission Reductions

The comparison between quantity of emission reductions calculated during the monitoring period and what was projected within the registered VCS PD are summarized in the table below:

<i>Time Period (equivalent)</i>	<i>Registered VCS PD (tCO₂e)</i>	<i>Monitoring Report (tCO₂e)</i>
01 June 2009 – 31 December 2010	466,922	142,721

As the projected values in the registered VCS PD are based around many assumptions and other default inputs, it is difficult to actually accurately predict the emission reductions achievable during any given monitoring period. As a result, it is CRA's opinion that the Project Activity has been implemented and operated as per the registered VCS PD.

3.4 Management and Operational System

The Project Proponent operates the Project Activity on a daily basis and is responsible for the performance, maintenance, and calibrations as required by the methodology and the established interconnection agreement. Redundancy in terms of monitoring is observed via the inclusion of two electricity meters; a revenue meter and the check meter. The revenue meter is owned by WFEC and the check meter is owned by the Project Proponent. Each meter monitors the net electricity generated as per the approved Monitoring Plan.

Ultimately, the management and operational system for the Project Activity is a robust and redundant system that leaves little room for error. Invoices are reviewed based on the records kept by each party involved and the discrepancies notes between the monitors was within the 0.1 percent allowable error tolerance.

Calibrations required as per the interconnection agreement for the revenue meter are completed by qualified personnel employed by WFEC. The Project Proponent operates the Project Activity daily operations according to the "Monitoring and Verification Manual for VCS Purposes" as approved during the validation stage of the Project Activity. The "Monitoring and Verification Manual for VCS Purposes" document outlines the Project Activity and the responsibilities for operations, monitoring the net electricity generation, the maximum permissible errors outlined for the electricity meters, calibration, and verification requirements.

It is the opinion of the CRA Project Team that the Project Activity and all parties involved within, have abided by the established procedures and responsibilities as laid out within the "Monitoring and Verification Manual for VCS Purposes" which establishes a sufficient management system as evidenced through the quality of reproducible and redundant data viewed during this verification.

4 VERIFICATION CONCLUSION

CRA was contracted by Western Farmers Electric Cooperative (Client) on behalf of Red Hills Wind Project, LLC (Project Proponent) to perform the second verification of the Red Hills 123 MW Wind Power Project in the State of Oklahoma, U.S.A.

As stated in Section 1.1, CRA as validator/verifier is responsible for reviewing the VCS Monitoring Report and any supporting documentation to ensure that the principles of VCS Program Guide, Version 3.2, and VCS Standard, Version 3.2 are met, specifically that the registered Project Activity has resulted in emission reductions that are:

- Relevant
- Complete
- Consistent
- Accurate
- Transparent
- Conservative

Verification Opinion

The verification was performed in accordance with the VCS Program Guide, Version 3.2, and VCS Standard, Version 3.2 in addition to the UNFCCC CDM methodology and associated methodological tools.

Through the construction of an 82 turbine wind power project with a total nameplate capacity of 123 MW, the registered Project Activity has resulted in a reduction of GHG emissions that are relevant, complete, consistent, accurate, transparent and conservative. Furthermore the emission reductions generated by the registered Project Activity have served to contribute to sustainable development, and resulted in long-term benefits to the mitigation of climate change.

Upon completion of the verification process it is the CRA Project Team's opinion that that all relevant VCS verification criteria have been satisfied. The registered Project Activity properly applies the criteria of ACM0002 Version 9.0. Within the VCS Monitoring Report it was demonstrated and confirmed by CRA that the Project Proponent/WFEC has applied the Monitoring Plan as per the requirements of the registered VCS PD. Therefore, it is CRA's opinion that the emission reductions attributable to the registered Project Activity during the second monitoring period are stated in a manner that is materially correct and is a fair representation of implemented Project Activity as per the VCS PD.

All CARs and CLs raised by CRA have been satisfactorily resolved by the Client/Project Proponent. The claimed emission reductions have been reviewed by CRA for completeness, accuracy, and consistency. The cumulative errors noted by the CRA Project Team totalled to less than 1 percent of the total emission reductions and therefore no material errors were noted.

Based on the verification assessment performed, CRA is issuing a Positive Verification Opinion in regards to this Project Activity and will therefore certify that the registered Project Activity has obtained the reported emission reductions as follows:

Reporting period: From 01-06-2009 to 31-12-2010

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	142,721
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	142,721

Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES LIMITED



Brent Boss, P. Eng.



Neil Lonsdale, P. Eng.

ANNEX A: ABBREVIATIONS

ACM	Approved Consolidated Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂ e	Carbon Dioxide Equivalent
CRA	Conestoga-Rovers & Associates Limited
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Greenhouse Gas
kV	Kilovolt
MW	Megawatt
SPP	Southwest Power Pool
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS PD	Verified Carbon Standard Project Document
WFEC	Western Farmers Electric Cooperative

ANNEX B: VERIFICATION PROTOCOL

DOCUMENT (DESK) REVIEW		Comments
(1) Ensure that the following documentation is in place and reviewed prior to the site visit:		
Monitoring report/documentation provided by the PP to ensure completeness and adequate frequency	☒	Monitoring Report and subsequent revisions were reviewed for completeness and frequency. All is within limits.
The registered VCS PD, including the monitoring plan and the validation reports (double validation process)	☒	Validation Reports were reviewed and provided to CRA by the PP website.
Previous monitoring and verification reports, if any.	☒	This initial verification report was reviewed by the CRA Project Team. 1 FAR was outstanding and was addressed in Section 3.1.2.
The applied monitoring methodology.	☒	Confirmed Registered methodology: ACM0002, Version 9 with the UNFCCC CDM.
Relevant decisions, clarifications and guidance from the CMP and the CDM EB and the VCS.	☒	Relevant VCS and UNFCCC (as applicable) guidance and clarifications were considered in the Verification Report.
Assess the quality control system that is responsible for safeguarding data.	☒	Section 3.4 of the Verification Report.
Monitoring records that sustain claimed emission reductions.	☒	Full data sampling was completed and all emission reductions were re-calculated. Invoices used as backup for all input values.
Any other information and relevant references on the project activity and project operator.	☒	Calibration records and other manufacturer information were reviewed.
(2) Ensure all FARs referenced in the validation report have been properly addressed during the monitoring period.	☒	All FARs previously raised in Validation were assessed by CRA. FAR#1 was closed out by CRA.

ON-SITE ASSESSMENT		
(1) Prepare for on-site assessment by :		
Assessing relevant information and making a draft determination of the on-site audit activities	☒	The Monitoring Report and supporting documentation was delivered by the PP and assessed by CRA both prior and during the completion of the Site Visit.
Organizing the logistical aspects of the visit, including the agenda and whom to interview.	☒	Agenda was organized by CRA and PP in plenty of time prior to the Site Visit (approximately 10 to 15 days prior).
(2) On-site assessment will consist of the following:		
An introduction meeting and explanation of objectives of the verification.	☒	Proposal and Scope of work as per the contract.
Interviews with data coordinators, process engineers and other key personnel at the site to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD.	☒	Section 2.4 of Verification Report details interviews.
An assessment of the implementation and operation of the VCS project activity as per the registered VCS PD.	☒	A Site Visit Tour was conducted and CRA has pictures logged in filing as evidence.
A review of information flows for generating, aggregating, and reporting the monitoring parameters.	☒	Confirmed during the Site Visit as stated in the Monitoring Report.
A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records, or similar data sources.	☒	Raw data was collected and was used to re-calculate all emission reductions.
A check of the monitoring equipment including calibration certificates and performance and observations of monitoring practices against the requirements of the VCS PD and the selected methodology.	☒	Section 3.3 of the Verification Report. Calibration records were cross referenced from Site to provided Documents. See CL#3.
A review of calculations and assumptions made in determining the GHG data and emission reductions.	☒	Section 3.2.3 of the Verification Report.

An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.	☒	Sections 3.3 and 3.4 of the Verification Report.
Interviews with local project stakeholders, as applicable.	☒	Only, PP and WFEC staff interviewed.
Specific testing and calculation checks (done on high risk, material data sources, and data management issues).	☒	Full data sampling (all parameters) for any parameters impacting emission reduction estimation was gathered during the Site Visit.
Close-out meeting presenting the results and findings.	☒	Initial Findings Assessment was sent to PP within the week after the Site Visit. Any major items were discussed during the Site Visit (none noted).
Development of an agreement on next steps to close out CARs and FARs.	☒	Following the Site Visit CRA Issued a Findings Assessment and subsequent back-and-forth responses regarding open findings.
		
QUALITY OF EVIDENCE		
(1) Determine that there is a clear audit trail that demonstrates:		
Whether sufficient evidence is available.	☒	Full data parameters were provided by PP to CRA in a protected and unalterable format (invoices) in addition to spreadsheet data.
The source and nature of the evidence (external or internal).	☒	When necessary the PP supplied clear evidence of third party reports or calibration records from qualified individuals.
If comparable information is available from sources other than that used in the monitoring report.	☒	Same as above.

(2) The DOE shall assess that the data collection system meets the requirements of the monitoring plan as per the applied methodology.	☒	The data monitoring system meets the requirements of the Monitoring Plan as confirmed during the Site Visit.
(3) The DOE shall only certify emission reductions that are based upon verifiable evidence.	☒	Again, full data sampling was completed and certified by CRA.
CAR/FAR/CL		
(1) Raise a CAR if any of the following occur:		
Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient.	☒	One CAR in total was raised. See throughout Verification Report.
Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions.	☒	One CAR in total was raised. See throughout Verification Report.
Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.	☒	FAR#1 from validation was closed out for this monitoring period.
(2) Raise a CL if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.	☒	Four CLs were issued as per Verification Report.
(3) All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.	☒	All Findings are closed out prior to issuance of Final Verification Report. No FARs were issued.
(4) Raise a FAR during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.	☒	No new FARs issued.
VERIFICATION OF SPECIFIC REQUIREMENTS		
(1) By means of an on-site visit, assess that all physical features of the proposed VCS project activity proposed in the registered VCS PD are in place and that the project participants have operated the proposed VCS project activity as per the registered VCS PD. If an on-site visit is not conducted, the DOE shall justify the rationale of the decision.	☒	A Site Visit Tour was conducted and CRA has pictures logged in filing as evidence of project implementation.

(2) If it is identified that the implementation or operation of VCS project activity does not conform with the description contained in the registered VCS PD, conduct an assessment on the potential impacts due to these changes following the relevant guidelines established by the Executive Board and based on this assessment, submit a notification or a request for approval of changes from the project activity as described in the registered VCS PD prior to the conclusion of the verification/certification for the corresponding monitoring period.	☒	N/A
MONITORING PLAN COMPLIANCE		
(1) Check the following regarding the monitoring plan:		
The monitoring plan of the proposed VCS project activity shall comply with the applied methodology.	☒	Confirmed during Site Visit and review of documentation.
Verify that the validated monitoring plan is in accordance with the approved methodology applied by the proposed VCS project activity.	☒	Confirmed during Site Visit and review of documentation.
If during verification, it is concluded that the monitoring plan is not in accordance with the monitoring methodology, request a revision to the monitoring plan prior to concluding its verification and making a certification decision. May make a request for revision of the monitoring plan covering the monitoring period under verification, for approval by the VCS.	☒	Monitoring plan is within compliance.
(2) Assess monitoring results to verify:		
The monitoring plan is properly implemented and followed by relevant personnel.	☒	Confirmed during Site Visit and through documentation review.
Indicators stated in the monitoring plan are sufficiently monitored and updated as applicable: • Project emission indicators • Baseline emission indicators • Leakage indicators • Sustainable development indicators for VCS projects	☒	No leakage or project emissions present. Indicators in monitoring plan are sufficiently monitored at this time.

The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan.	☒	Confirmed as per registered VCS PD and Monitoring Plan and the document titled "Monitoring and Verification Manual for VCS Purposes"
The proposed monitoring frequency is sufficient to show the full range of variations.	☒	Confirmed.
The accuracy of equipment used for monitoring is sufficient and regularly controlled and calibrated.	☒	Accuracy was established via calibrations for electricity meters. Found to be more than adequate and within the 0.1% allowable tolerance
Monitoring results are consistently recorded, reviewed and approved.	☒	Calibration reports were reviewed by CRA.
Quality assurance and quality control procedures have been applied in accordance with the monitoring plan.	☒	Confirmed. Sections 3.3 and 3.4 of the Verification Report.
(3) Bring to the attention of the VCS issues which may contribute in enhancing the level of accuracy and completeness of the monitoring plan, for monitoring aspects that are not specified in the methodology, particularly in the case of small-scale methodologies.	☒	None noted.
ASSESSMENT OF DATA AND CALCULATIONS OF GHG DATA		
(1) GHG emission reductions achieved by/resulting from the proposed VCS project activity shall be calculated applying the selected methodology.	☒	Confirmed, Section 3.2.3 of the Verification Report.
(2) Determine during verification that:		
A complete set of data for the specified monitoring period is available. If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, opt to either make the most conservative assumption theoretically possible in finalizing the verification report, or raise a request for deviation prior to submitting request for issuance, if appropriate, in consultation with the PP.	☒	CRA gathered raw data set and invoices during the Site Visit to confirm.
Information provided in the monitoring report has been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis.	☒	Confirmed and completed during the Site Visit.

Calculations of baseline emissions, proposed VCS project activity emissions and leakage, as appropriate, have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document.	☒	Section 3.2.3 of the Verification Report.
Any assumptions used in emission calculations have been justified.	☒	All assumptions have been confirmed as applicable and justified.
Appropriate emission factors, IPCC default values and other reference values have been correctly applied.	☒	Default parameters used by PP match those validated in the registered VCS PD.
ACCURACY		
(1) Checking for accuracy involves:		
For quantitative data and information: minimizing bias and uncertainty in the measurement process and the processing of data.	☒	Confirmed throughout Section 3.3 of the Verification Report.
For non-quantitative information: minimizing bias in favour of a particular result.	☒	All assumptions were justified and backed-up accordingly.
(2) Ensure that the level of accuracy and completeness in the monitoring and verification process will not be reduced as a result of the proposed revision. Using objective evidence, assess the accuracy and completeness of each proposed revision to the monitoring plan including the frequency of measurements, the quality of monitoring equipment (e.g. calibration requirements, and the quality assurance and quality control procedures).	☒	No Monitoring Plan revisions. QA/QC requirements throughout Sections 3.3 and 3.4 of the Verification Report.
REQUEST FOR REVISION OF THE MONITORING PLAN		
(1) If the monitoring plan is not in accordance with the monitoring methodology applied to the registered VCS project activity and/or does not reflect the actual monitoring activity based on the registered VCS PD, submit a request for revision of the monitoring plan as well as a request for revision of monitoring plan to the VCS prior to requesting issuance of VCUs.	☒	N/A

VERIFICATION REPORT		
(1) The final verification report will include:		
A summary of the verification process and the scope of verification.	☒	Section 1.2 of the Verification Report.
Details of the verification team.	☒	Section 2.2 of the Verification Report.
Findings of the desk review and site visit.	☒	Section 3 of the Verification Report.
Project Team's findings and conclusions as to whether the proposed VCS project activity has been implemented in accordance with the VCS PD, the compliance of the monitoring plan with the monitoring methodology, the compliance of monitoring with the monitoring plan and assessment of data, and calculation of GHG emission reductions.	☒	Sections 3 and 4 of the Verification Report.
A list of each parameter specified by the monitoring plan and a clear statement on how the values in the monitoring report have been verified.	☒	Section 3.2.1 of the Verification Report.
Assessment and close out of any CARs, CLs, or FARs issued to the project participants.	☒	Section 4 of the Verification Report.
Assessment of remaining issues from the previous verification period, if appropriate.	☒	Section 3.1.2 of the Verification Report.
Conclusion on the verified amount of emission reductions achieved.	☒	Section 4 of the Verification Report.

ANNEX C: CURRICULA VITAE

EDUCATION

B.Eng. Environmental Engineering (Co-op), University of Guelph, 2008
Other
Courses: 40-Hour OSHA Health and Safety Training (as per OSHA 29 CFR 1910.120), 2006

EMPLOYMENT

2008- Project Engineer and Manager
Present Conestoga-Rovers & Associates
2007 Student Engineering Assistant, Conestoga-Rovers & Associates (8 months)
2006 Student Engineering Assistant, Conestoga-Rovers & Associates (8 months)
2005 Student Biomonitoring Technician, Ontario Ministry of the Environment (4 months)

AFFILIATIONS

Association of Professional Engineers of Ontario, Practicing Member (P.Eng.)

PROFILE OF PROFESSIONAL ACTIVITIES

Regulatory Compliance

- Developed a detailed design and design and operations report for the landfill gas collection and control system for the Humberstone Landfill, Welland, Ontario, and the Stratford Landfill, Stratford, Ontario including the well field design, specification drawings including all relevant hydraulics, buried pipe and condensate trap sizing calculations to obtain the Certificate of Approval (Waste). Assisted in the obtaining of the Certificate of Approval (Air) for both Sites as well.
- Provides operational assistance for the Eastview Landfill including balancing of the well field, assessments of the leachate collection system and the operations of the utilization facility for compliance with Certificate of Approval Waste and Air requirements.
- Provides operational support for organics processing facility's in London and Ottawa, Ontario including odour assessments involving the odour abatement equipment efficiencies and operations improvements to minimize fugitive odours.
- Assisted in developing the model package (Design and Operations Report) for the Application for Amendment to Provisional Certificate of Approval for a Waste Disposal Site, for landfill sites which apply under amended Ontario Regulations 232/98 and 347 for the Ontario Ministry of the Environment
- Assisted in preparation of a study regarding applicable wastewater treatment technologies and disposal options for an organics processing facility in Ontario
- Assisted with the submission of applications for Amendments Certificate of Approval for Air, Waste Disposal Site and Section 53 (Industrial Sewage Works) under the Environmental Protection Act (including formulation of a Design and Operations Report for the site) for source-separated organics aerobic composting facilities in London, Ontario and Ottawa, Ontario

Greenhouse Gas Auditing Projects

- Listed as a Key Team Member and Project Manager in the Greenhouse Gas Assurances (GGAS) Group and assisted in the successfully obtaining CRA's Designated Operating Entity (DOE) status with the UNFCCC effective as of May 28, 2010
- Lead the application and registration of CRA with the Verified Carbon Standard (VCS) as an accredited Validator/Verifier and is the primary contact and project resource for all VCS related project works and will be completing a validation of verification of a wind project located in Oklahoma as a Lead Auditing Team Member and a wind power project located in Iowa as the Lead Auditor (2011)
- Currently in the process of completing a CDM validation as a Lead Auditor in Training for a carbon dioxide removal project activity at a hydrogen production facility in Argentina (2011). Work includes findings assessment preparation, site-visit, and validation report and validation opinion formation
- Conducted greenhouse gas verification assessments as a Lead Auditor in Training for three projects for Alberta Environment; a liquid natural gas plant in Boyle, Alberta (2011), a pulp mill (2011) in Fort Saskatchewan, Alberta, and a static-pile aerobic composting site (2009) in Edmonton, Alberta under the Alberta Offset System which included a site visit, review of the overall processes, record keeping practices and techniques, emission reduction calculations compliance, and a report on findings
- Currently in the process of completing two CDM validations as a Lead Auditor for landfill sites located in Los Angeles, Chile and in Tucumán, Argentina (2011). Work includes findings assessment preparation, site-visit, and validation report and validation opinion formation
- Currently in the process of completing a VCS validation and verification assignment as a Lead Auditor in Training for wind power project located in Dempsey Ridge, Oklahoma (2011). Work includes findings assessment preparation, site-visit, and validation report and validation opinion formation and subsequent verification reports.
- Currently in the process of completing a Swiss Charter verification as a Lead Auditor for a refrigerator recycling plant located in São Paulo, Brazil (2011). Work includes findings assessment preparation, site-visit, and verification report and verification opinion formation
- Experience with the validation process in preparation of Project Design Documents (PDD) for emission reduction projects related to landfill gas destruction under the Clean Development Mechanism (CDM) for the Manaus landfill (Manaus, Brasil)
- Performed greenhouse gas emission reductions calculations and prepared the Monitoring Report for the Aurà and CEAMSE landfill sites in Brasil and Argentina respectively. The reports were completed to UNFCCC standards and included a review of the overall process, record keeping practices and techniques and emission reduction calculation compliance
- Performed greenhouse gas emission reduction calculations using a modified first order kinetic landfill gas model for a municipal solid waste anaerobic digester under CDM requirements for various sites across the Canada and the USA as well as in Egypt. All of these Sites also included an assessment of emission reductions associated with cogeneration
- Completed assessment for emission reduction credits for a large-scale operation green-packaging project using sugar cane bagasse in Brasil under CDM biomass methodology AM0057 requirements. The project additionally generates electricity using the bagasse material
- Prepared detailed assessment of transferability of Alberta Offset System protocols to CDM protocols in relation to both cement and asphalt methodologies
- Conducted a greenhouse gas verification report for the Eastview Landfill Site in Guelph, Ontario. The report was complied in accordance with the requirements of the PERRL Initiative

- Developed a Project Information Note (PIN) for the emissions avoided through aerobic composting at the Orgaworld London and Ottawa, Ontario composting facilities as well as the City of Guelph Wet/Dry composting facility. Preparation of this document includes the quantification of emission reduction using the Alberta Offset System Protocols
- Developed several project documents under various emissions reporting standards for landfill operations in British Columbia including the Nanaimo Landfill and the Salmon Arm Landfill Sites and in Ontario at the Eastview Landfill Site. These reports have been prepared in accordance with ISO-14064 Part 2 standards using various GHG methodologies to quantify the emissions such as those from the UNFCCC and CAR

Computer Aided Design

- Performs day-to-day Auto-CAD drawings including process flow diagrams, general and civil scale drawings related to a variety of composting and landfill related projects

Solid Waste Management

- Prepared cost estimates for the installation of landfill gas collection and control systems using both flaring and utilization technologies for international and Canadian landfills: Manaus landfill (Manaus, Brasil), and the Eastview landfill (Guelph, Ontario)
- Assisted with the preparation of successful proposals for a five-year contract to haul and process source-separated organics for the City of Toronto and a twenty-year contract to process source-separated organics for the City of Ottawa.
- Assisted in the completion of a 2007 Baseline Study of Canadian Landfills based on waste filing practices and leachate management considering nearly 90 landfill sites for Environment Canada

Modelling and Assessment

- Experience with Scholl-Canyon and Rettenberger first-order landfill gas generation models for the prediction of landfill gas generation at several landfills in Canada, the United States of America (U.S.A.) and South America
- Experience with Scholl-Canyon and Rettenberger first-order landfill gas generation models as they apply to anaerobic municipal solid waste digesters for projects in the U.S.A.
- Performed landfill gas modelling and assessment for international landfills: González Catàn landfill and Ensenada landfill (Buenos Aires, Argentina), Aurà landfill (Belém, Brasil), Manaus landfill (Manaus, Brasil)
- Performed greenhouse gas emission reductions calculations and reporting for the Eastview landfill (Guelph, Ontario) and assisted with emission reductions calculations for the Merrick landfill (North Bay, Ontario) under the Pilot Emission Reductions, Removals, and Learnings (PERRL) initiative

Agricultural Engineering

- Developed and assisted in implementing a monitoring methodology under the Climate Action Reserve (CAR) for the collection and utilization of methane gas produced in anaerobic dairy manure digesters for various projects in California, U.S.A.
- Assisted in approvals process for Provincial certificates of approval for the utilization of leachate and ammonium sulphate as a non-agricultural source material (NASM) on agricultural lands for a composting facility's in both London and Ottawa, Ontario

Presentations

- Prepared and delivered a 1 hour presentation entitled "Understanding the Clean Development Mechanism (CDM) Project Development Process" to the CRA community through a recorded webinar conference. The presentation covered all aspect of project validation and verification from the perspective of a project developer as well as an independent party conducting validations or verifications of project activities
- Prepared a presentation on the current and future odour management at a composting facility operation within Ontario. The presentation was presented to local stakeholders, members of the MOE and the local Municipality
- Assisted in the preparation of a presentation entitled "*A Life-Cycle Greenhouse Gas Comparison of Anaerobic Digestion Versus Composting of Source-Separated Organics*" Presented at the Compost Council of Canada's Conference on September 20, 2011

EDUCATION

B.Sc. University of Guelph, Environmental Engineering, 2002

Other

Courses: Project Managers Training
Sampling Strategies and Statistical Analyses of Contaminated Sites
ISO 14064 Part 1 – Greenhouse Gas Inventories
ISO 14064 Part 2 – Greenhouse Gas Projects
OSHA 40-Hour Health and Safety Training and 8-Hour Annual OSHA Refresher
Canadian WHMIS/Hazard Communication Training
Standard First Aid with CPR Level A

EMPLOYMENT

2007- Project Manager
Present Conestoga-Rovers & Associates
2004-07 Project Engineer, Conestoga-Rovers & Associates
2002-04 Project Manager/Engineer-in-Training, Church and Trought Inc.
2000-01 Engineering Student Intern, Sudbury International Engineered Products Limited
1999 Engineering Assistant, Atomic Energy of Canada

AFFILIATIONS

Professional Engineer, Association of Professional Engineers of Ontario

PROFILE OF PROFESSIONAL ACTIVITIES

- Verifier – Verification of the Alberta Environment Specified Gas Baseline Emissions Intensity Application prepared by Syncrude Canada Ltd. for their Mildred Lake and Aurora North Plant operations in Alberta
- Project Manager for ongoing groundwater and surface water monitoring at multiple sites in Ontario
- Preparation of several Spill Prevention and Contingency Plans (SPCP) for facilities regulated under Ontario Regulation 224/07 – Spill Prevention and Contingency Plans. Work activities included facility/site investigations, identification of potential spill sources, analysis of spill potential, determination of potential impacts to facility/site, environment, and surrounding areas, and preparation of a SPCP document for the facility
- Peer review of several SPCP for facilities regulated under Ontario Regulation 224/07
- Preparation of a Closure Plan for a client with a facility in Ohio, pursuant to the Ohio Administrative Code 3745-55-12. Closure Plan currently in development, in consultation with the Ohio Environmental Protection Agency

- Project Manager, reviewer, and verifier of numerous Systems for Monitoring and Reporting for Technologies (SMART) Reports, on behalf of Sustainable Development Technology Canada (SDTC). This involved CRA reviewing the quantification of the environmental impacts associated with the manufacturing and use of their technology as well as the impacts of similar technologies that are currently available. Types of environmental impact calculations requiring validation from CRA included greenhouse gases (GHG), clean air emissions, soil contamination, and water contamination estimates
- Prepared and managed several SMART reports, inclusive of GHG, clean air emissions, soil contamination, and water contamination estimates, on behalf of a companies seeking funding through SDTC
- Aided in the preparation and submission of a Statement of Interest and Proposal, inclusive of GHG, clean air emissions, soil contamination, and water contamination estimates, for a company seeking funding through the SDTC
- Assisted Environment Canada in the development of quantification methods, defining supporting information requirements and data gaps for the Credit for Early Action Program specifically for applicants in the Oil and Gas Sectors including: upstream oil and gas, petroleum refining, natural gas pipelines, storage and distribution, and oil sands
- Preparation of proposals for activities including Phase I and Phase II Environmental Site Assessments (ESAs), due diligence investigations, soil and/or groundwater investigations, sustainable development related programs, and permitting work. Proposal preparation may include review of previous site history, work plan development, and costing preparation
- Involved in groundwater sampling campaigns, which includes well development and sampling. Sampling techniques known include inertial pumping using a waterra tubing and foot valve combination, peristaltic pump, or through the use of a bailer
- Overseen drilling activities including borehole advancement, soil stratigraphy logging, borehole soil sampling, and monitoring well installations
- Overseen test pitting activities as part of an ongoing delineation of soil contamination at a site
- Borehole/monitoring well/test pit soil stratigraphy log creation through the use of computer program gINT
- Conducted background/title searches and prepared summary reports for specific sites as part of Phase I ESA activities
- Involved in Phase II ESA activities including sampling for use in delineating site contamination
- Preparation of numerous Site-specific Health and Safety Plans for distinct sites with unique potential health hazards
- Involved in research and analysis activities to aid the expert testimony of company Principal in a court case in New Jersey involving contamination responsibilities between sites located on the Passaic River
- Project Coordinator for the preparation and submission of the National Pollution Release Inventory (NPRI) and Ontario Regulation 127 Reports to the Ontario Ministry of the Environment and Environment Canada, on behalf of multiple companies
- Dealt extensively with clients in preparing air emission inventories and relayed this information as it relates to particular air standards and regulations
- Prepared numerous Certificates of Approval (Air) for industrial sites in Ontario. This involved site visits and inspections, preparing the application, including emissions inventories and Regulation 346 dispersion modeling

EDUCATION

B.Sc. Eng. University of Guelph, Environmental Engineering, 1996

Other

Courses: 40-Hour OSHA HAZWOPER Training and 8-Hour Annual OSHA Refresher (1999 and 2000–2009, respectively)
Testing Industrial Air Emissions, 2000
Chemical Hydrogeology, University of Waterloo, 2002
Environmental Microbiology, 2002
Industrial Processes, 2004
Environmental Economics, 2006
Industrial Ecology, 2007
ISO 14064 Part 1 – Greenhouse Gas Inventories, 2008
ISO 14064 Part 2 – Greenhouse Gas Projects, 2008
ISO 14064 Part 3 – Greenhouse Gas Verification, 2010

EMPLOYMENT

2005-Present	Associate – Sustainability, Compliance, and Air Groups Conestoga-Rovers & Associates
1999-05	Project Manager, Conestoga-Rovers & Associates
1998-99	Project Engineer, Conestoga-Rovers & Associates
1998	Research Assistant, Agriculture and Agri-Food Canada
1996-97	Environmental and Quality Assurance Technician, Golden Town Apple Products

AFFILIATIONS

Professional Engineer, Association of Professional Engineers of Ontario
Michigan Board of Professional Engineers Fundamentals of Engineering Exam, April 1999

PROFILE OF PROFESSIONAL ACTIVITIES

Life Cycle Assessment, Greenhouse Gas Emissions Reporting, and Validation, and Verification

- Project Manager and technical advisor for the preparation and verification of applications for funding to Sustainable Development Technology Canada for various clients, including the preparation of life cycle assessments
- Project Manager for the preparation of a web-based, database-driven Environmental Footprint Calculator for a large cement, aggregate, and construction company in Canada

- Lead verifier, verification team member, and independent peer reviewer for verifications and verification audits of greenhouse gas inventories and projects in Alberta and British Columbia
- Lead validator for a greenhouse gas project being completed under the Clean Development Mechanism of the Kyoto Protocol at a hydrogen plant in Argentina
- Project Manager for review and assessment of greenhouse gas emissions from the upstream oil and gas industry for Environment Canada
- Peer Reviewer for the preparation of a Greenhouse Gas Inventory for a large North American potato chip producer
- Lead technical advisor for the preparation of a Greenhouse Gas Inventory for a large North American waste company
- Lead technical advisor for the preparation of Greenhouse Gas Emissions assessments for several clients
- Senior Technical Advisor for the assessment of reporting requirements under the USEPA Mandatory Greenhouse Gas Reporting Rule for clients in the petroleum industry

Air Emissions Sampling, Permitting, and Reporting

- Project Manager for numerous air emissions (including Greenhouse Gas Emissions) assessments for clients in Canada reporting under the National Pollutant Release Inventory (NPRI) and the Greenhouse Gas Reporting Program
- Project Manager, Project Coordinator, and project engineer on numerous air permit applications and air emissions reports for numerous clients throughout Ontario
- Project Coordinator for the Ontario Ambient Air Monitoring Sites for Environment Canada's Canadian National Air Toxics Measurement Program in 2004/2005. Responsible for coordination of all aspects of the sampling and reporting activities for over 10 ambient air monitoring sites in Ontario
- Conducted sampling and reporting for numerous air emission source testing projects in Canada, the United States, and Puerto Rico, including specialized field gas chromatography sampling
- Lead technical advisor for ambient air monitoring programs at multiple sites in Ontario and New Brunswick
- Project Manager and Coordinator for air emissions activities associated with multiple facilities for an automotive parts manufacturer in Ontario, including preparation of Ontario Ministry of the Environment Director's Order appeal documents, Certificate of Approval (Air) Applications, Ontario Regulation 127 and National Pollutant Release Inventory reporting, and source sampling

Agriculture-Related Experience

- Primary researcher for preparation of a paper regarding the evaluation of swine manure treatment processes for Agriculture and Agri-Food Canada
- Researcher for the evaluation of a prototype cattle manure treatment technology for Agriculture and Agri-Food Canada
- Project Manager for assessment of environmental issues associated with an aerobic composting operation

Environmental Due Diligence and Remediation

- Project Manager for ongoing Remedial Investigation/Feasibility Study (RI/FS) activities at a Superfund Landfill Site in Ohio

- Project Manager for RCRA corrective action and Ohio Voluntary Action Program activities at a former refractory manufacturing facility in Ohio
- Conduct investigative and remedial activities for a chemical manufacturing facility in Ontario including:
 - Project management, technical and field support relating to the remediation of contaminated off-Site Municipal Aquifer
 - Project Manager for the design and construction of a \$4.2 million dollar ammonia treatment system for contaminated groundwater
 - Project Coordinator for annual ambient air monitoring program downwind of the Site
 - Project Coordinator for the 1998 through 2004 Annual Environmental Reports
 - Project Engineer for surface water monitoring programs, primary author of monthly Progress Reports, assessment and management of analytical data
 - Supervise and conduct field activities such as groundwater sampling, groundwater elevation monitoring, surface water sampling, surficial soil sampling, and waste water sampling air and odour sampling
- Project Manager for a large indoor contaminated soil excavation and groundwater collection trench installation at a former wallpaper manufacturing facility in Ontario
- Project Manager and Project Coordinator for a large site assessment, plant demolition, and contaminated soil and groundwater remediation project at a former airplane manufacturing facility in Ontario
- Project Manager and Phase I auditor for a large multi-site due diligence project at pulp and paper, mining, and port facilities in the Province of Newfoundland and Labrador
- Project Manager and Project Coordinator for several litigation support projects in the United States, including preparation of expert reports, expert witness support, and completion of potentially responsible party searches
- Project Manager and Assessor for numerous Phase I and II Environmental Site Assessments and Environmental Compliance Audits in the United States and Canada
- Project Manager for activities at a large chemical manufacturer in Ontario, including wastewater treatment system optimization, compliance audit, Certificate of Approval (Air) Application preparation, asbestos survey, and ongoing compliance assistance
- Project Manager for an AS/SVE and bioremediation project at an industrial site in New Jersey
- Project Manager/Coordinator for facility-wide environmental and health and safety compliance audits and environmental monitoring programs for two large automotive manufacturing sites in Ontario
- Managing and preparation of Phase I and Phase II Site Assessments for numerous property transfers in the United States and Canada
- Project engineer for an Engineering Evaluation and Cost Assessment (EE/CA) for the remediation of a lead-acid battery disposal area in Michigan

EDUCATION

M.A.Sc. Mechanical Engineering, University of Waterloo, 1989

B.A.Sc. Mechanical Engineering, University of Waterloo, 1987

EMPLOYMENT HISTORY

1990- Present Principal/Vice-President
Conestoga-Rovers & Associates, Waterloo, ON
Named CRA Principal/Vice President, 2003
Named CRA Associate, 1998

1989-90 Instructor for Engineering Professionals, Beijing Languages Training Center, P.R. China

PROFESSIONAL REGISTRATIONS/AFFILIATIONS

Licensed Professional Engineer: Ontario and Michigan

Member, Air and Waste Management Association

PROFILE OF PROFESSIONAL ACTIVITIES

Air Compliance, Permitting and Assessments

- Air compliance audits, Title V permitting, State permitting, Federally Enforceable State Operating Permits (FESOPs)/Synthetic Minor permitting, and evaluation and implementation of applicable NSPS, NESHAP, and MACT standards for manufacturing facilities including chemical, automotive, cellophane, coating, distillery, energy, fiberglass, food, glass, locomotive, metal finishing, molding, petroleum, secondary metals, steel and wood furniture manufacturing sectors in the United States, Canada, and the UK
- Completed over 100 Ontario Emission Summary and Dispersion Modelling (ESDM) Reports for a variety of industries
- Environmental Impact Statements (EIS) and Environmental Assessments (EA) for over 10 sites
- Air emissions modeling, air dispersion modeling, permitting, risk assessments, noise assessments and ambient air monitoring programs for quarries, mines, aggregate processing equipment, cement manufacturing, landfills and site remediation facilities
- Risk Management Plans (112R RMPs) including hazard assessments and off-site consequence analyses
- USEPA Community Right to Know Application for a Continuous Release
- USEPA Clean Air Act Emission Reduction Credit (ERC) Applications for emissions trading
- Project Manager and primary technical resource for the General Motors Corporation EPCRA Corporate Manual and the General Motors of Canada Limited NPRI and OnAir Corporate Manual inclusive of the development of the associated training programs. Key components include detailed OEM process knowledge, VOC emission quantification methods and regulation compliance
- Developed and manage numerous ambient air monitoring programs for particulate (PM, PM10, PM2.5), VOCs, TRS, and ozone

- Expert for quantification of emissions reductions as part of CRA's role as an Applicant Entity (AE) for Clean Development Mechanism (CDM) projects in the United Nations Framework Convention on Climate Change and for Alberta Environment offset project emissions
- Manage and conduct corporate training programs for US EPCRA and Canadian NPRI Reporting
- Managed and conducted EPCRA, NPRI, and OnAir Reporting for over 50 facilities
- Air emissions inventories, dispersion modeling and permitting for over 200 manufacturing facilities
- Air emissions assessments, permitting, and monitoring for over 30 hazardous waste site remedial actions including groundwater treatment systems, soil remediation systems and fugitive emissions
- Litigation support including expert testimony
- Odor emissions assessments and preparation of remedial action plans for numerous facilities in the food, chemical and automotive sectors
- Incinerator/oxidizer design, installation, permitting and trial burn stack testing including a RCRA hazardous waste incinerator
- Air emissions assessments for over ten landfill sites including estimation of landfill gas generation rates and particulate and evaluation of off-site impacts of odor and VOCs and NSPS requirements
- Managed and conducted stack testing programs for over 50 facilities

Noise and Vibration Compliance, Permitting, and Assessments

- Noise impact assessments for wind farms including noise modeling and noise monitoring of various proposed and existing wind farm projects in Barrie, Ontario and New York State in accordance with applicable noise guidelines, bylaws, and regulations
- Noise and vibration impact assessments and attenuation for equipment and traffic sources at over 50 manufacturing facilities, residential developments, and landfill sites
- Noise impact assessments and abatement for a variety of clients involved in food processing including ice cream, cheese manufacturing, meat processing, and chemical preservatives
- Conducted noise impact assessment for Oklahoma Highway 64 expansion using Federal Highway Administration Traffic Noise Model (TNM)
- Prepared residential noise barrier design for highway noise impacts using Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) model
- Managed a railroad noise assessment for a proposed residential development using the Ontario Sound from Trains Environmental Analysis Method (STEAM) model
- Managed noise monitoring programs and impact studies for two lime mining and manufacturing facilities including large kiln operations and traffic assessments
- Prepared an Acoustic Audit report for a casting plant in accordance with permit requirements
- Managed noise study for landfill site including road traffic and on-site equipment and barrier design
- Managed acoustic audit for a dust collection system including sound frequency measurements for ductwork, fan, and collector
- Acoustic audit and residential impact evaluation for an oxidizer used in automotive industry

Incineration, Gasification and Thermal Treatment Facilities

Mr. Reusing has extensive air emissions and noise emissions experience with incineration, gasification and thermal treatment facilities, including incineration of municipal and hazardous wastes, and gasification of biomass, biosolids, and municipal waste. His experience includes both waste disposal and

energy from waste facilities. Mr. Reusing has completed numerous emissions inventories, Applications for Certificates of Approval (Air), noise assessments, trial burns, environmental assessments, stack testing, ambient air monitoring, and engineering emission control studies for many types of incineration and gasification facilities including:

- Clean Harbors (liquid hazardous waste incineration), Corunna, Ontario
- Durez Corporation (liquid hazardous waste incineration), Niagara Falls, New York
- Algonquin Power (municipal waste incineration to power), Brampton, Ontario
- REM Energy (municipal waste gasification to power), multiple sites, Canada and US
- Pristine Superfund Site, (PCB waste thermal desorption site), Reading, Ohio
- Clean Harbors (solid waste thermal desorption), Corunna, Ontario
- Liberty Energy (biomass and biosolids gasification to power), Hamilton, Ontario
- Elementa Group (municipal waste steam reformation to energy), Sault Ste. Marie, Ontario
- Index Energy (biomass incineration to power), Ajax, Ontario
- Carter Industrials Superfund Site, (PCB waste thermal desorption site), Detroit, Michigan

Iron and Steel and Foundry Facilities

Mr. Reusing has managed emissions inventories, Applications for Certificates of Approval (Air), stack testing, ambient air monitoring, and engineering emission control studies for many iron and steel and foundry facilities including:

- Algoma Essar, Primary Steel Mill, Sault Ste. Marie, Ontario
- Stelco Steel, Primary Steel Mill, Hamilton, Ontario
- Dofasco Steel, Primary Steel Mill, Hamilton, Ontario
- Gerdeau-Ameristeel, Secondary Steel Mill, Whitby, Ontario
- Atlas Specialty Steel, Secondary Steel Mill, Welland, Ontario
- Standard Induction Casting, Steel Foundry, Windsor, Ontario
- Diversa Cast, Steel Foundry, Guelph, Ontario
- Slater Steel, Secondary Steel Mill, Hamilton, Ontario
- Daimler Chrysler, Aluminum Castings Plant, Etobicoke, Ontario
- Cambridge Brass, Brass Foundry, Cambridge, Ontario
- Oxford Automotive, Chatham and Wallaceburg, Ontario
- Canada Alloy Castings (a Division of Flowserve), Steel Foundry, Kitchener, Ontario
- Delta Faucet, Brass Foundry, London, Ontario
- Milward Alloys, Secondary Brass Foundry, Buffalo, New York
- H. Kramer, Secondary Brass Foundry, Chicago, Illinois
- Heico Steel, Secondary Steel Mill, Hawkesbury, Ontario

Renewable Energy Projects

Mr. Reusing is a renewable energy technology and air emissions expert with a keen interest in renewable energy and considerable experience in the project management of renewable energy projects.

Mr. Reusing has completed solar, wind, biomass, and biosolids power feasibility and environmental impact assessments for sites across North America. Mr. Reusing has considerable experience working with Municipalities and has managed public information sessions and consultations on a variety of renewable energy projects.

Mr. Reusing has managed the compliance permitting and environmental assessment programs for several renewable energy facilities. These include: solar and alternative energy feasibility study for Township of Michipicoten, Ontario; a wind energy feasibility study for City of Barrie; a wind energy feasibility and energy audit study for Huron County in Ontario; 1,000 MW of wind projects in the state of New York, the Liberty Energy 10 MW biomass and biosolids gasification facility in Hamilton, Ontario; the Elementa Group 10 MW municipal waste steam reformation plant and associated pilot plant in Sault Ste. Marie, Ontario; the Index Energy Ajax Cogeneration 25 MW wood waste to steam and power plant in Ajax, Ontario; Mr. Reusing has also verified the greenhouse gas (GHG) credits for the Verdant 10 MW wood waste power plant and the Blue Ridge and Sundance wood biomass thermal energy plants in Alberta.

Environmental Impact Statement (US-EIS) and Environmental Assessment (Canadian-EA) Projects

Mr. Reusing has managed the air emissions and noise assessments for numerous environmental impact statement (EIS) and environmental assessment (EA) projects in the United States and Canada. This work includes advanced emissions and dispersion modeling, ambient air monitoring, noise monitoring programs, advanced acoustic modeling and presentations for agency and public meetings for the following EIS, EA and high-profile air assessment projects:

- Liberty Energy Biomass Power Plant, Hamilton, Ontario
- Green Lane Landfill (City of Toronto), St. Thomas, Ontario
- Fort-Erie to Buffalo International Bridge Crossing, Ambassador Niagara Signature Bridge Group
- Sydney Tar Ponds Site, Sydney, Nova Scotia
- Wind Farms, 4 sites, each 400 to 1,000 MW capacity, Upstate New York
- Nucular Waste Processing Facility, Mississauga, Ontario
- PCB Waste Processing Facility, Cornwall, Ontario
- Touquoy Gold Project, Moose River Gold Mines, Halifax Regional Municipality
- Clean Harbors (hazardous waste landfill expansion), Corunna, Ontario

Chemtura Canada Co./Cie. (formerly Crompton Co.), Elmira, Ontario

CRA has provided air and noise consulting services and ambient air monitoring programs for Chemtura Canada Co./Cie. since 1990. The Chemtura (formerly known as Crompton) site in Elmira, Ontario required ambient air quality monitoring to be completed during excavation and transfer activities associated with the soil removal and transfer to a secure containment facility. CRA was retained to develop and implement a perimeter air quality monitoring program at the site.

Chemtura also required an extensive VOC and reduced sulphur monitoring program as part of an odour emissions investigation over a period of 3 years. CRA implemented a complex program consisting of portable GCs and continuous reduced sulphur monitors for instantaneous, compound specific monitoring. In addition, CRA conducted time-averaged VOC and sulphur compound monitoring using USEPA and NIOSH methods. CRA also designed, installed, operated and maintained a meteorological station on site for 3 years. CRA continues to provide significant air quality services to Chemtura which includes ambient air quality monitoring for selected VOCs, source testing, annual emissions reporting

including Reg. 127 and NPRI, C of A (Air) preparation, site specific risk assessments and other applicable regulatory assistance.

MRR PCB Incineration Facility, Cornwall, Ontario

The Material Resource Recovery (MRR) PCB incineration facility retained CRA to conduct an ambient air monitoring program for particulate, PCBs and dioxins and furans in 2005. CRA also conducted a phytotoxicology sampling program and a 5-year technical review of the PCB incinerator operation. Two public presentations of the 5-year review and the air sampling and phytotoxicology sampling programs were conducted and lead by Mr. Gordon Reusing, the Project Manager for this Proposal. CRA is currently preparing an Application for C of A (Waste) and (Air) for major modifications, including emissions estimates and dispersion modeling.

Landfills – Air and Noise Assessments, Regulatory Reporting

Mr. Reusing has extensive air and noise assessment experience and regulatory reporting experience, completing over 80 reports each year for a wide variety of industrial and municipal clients, including over 15 landfill and waste management sites, including:

- Merrick Landfill Site and City Public Works Garage, City of North Bay, Ontario
- Mayer Waste Disposal Site, Township of Champlain, Ontario
- Marathon Landfill Site, Town of Marathon, Ontario
- Green Lane Landfill Site, St. Thomas, Ontario
- Millstream Landfill, Victoria, British Columbia
- Municipality of McDougall Landfill Site, Township of McDougall, Ontario
- City of Kawartha Lakes 6 Landfill Sites and Water Pollution Control Plant, Lindsay, Ontario
- Dawn and Moore Landfill Sites, County of Lambton, Ontario
- St. Mary's Landfill Site, St. Mary's, Ontario
- Mid-Huron Landfill Site, Clinton, Ontario
- Peterborough County/City Waste Management Facility, Peterborough, Ontario
- Brighton and Seymore Landfill Sites, County of Northumberland, Ontario
- Highwest Landfill, Victoria, British Columbia

Quarries and Mining – Air and Noise Assessments, Regulatory Reporting

Mr. Reusing has completed numerous air and noise assessments, ambient air monitoring and regulatory reporting projects for quarry and mining sites, including:

- Dufferin Milton Quarry, Dufferin Aggregates a Division of St. Lawrence Cement, Milton, Ontario
 - Air and noise permitting for 3 to 6 million tonnes per year limestone quarry
- Vinemount Quarry, Division of Waterford Sand and Gravel, Hamilton, Ontario
 - Ontario Municipal Board hearings for quarry expansion, ambient air monitoring programs and air quality assessments for 1.5 million tonnes per year limestone quarry
- McDougall Quarry, Fowler Construction Company Limited, Parry Sound, Ontario
 - Air and noise permitting for limestone quarry processing equipment

- Lafarge Cement Quarries (2), Bath and Woodstock Cement Plants, Ontario
 - Air and noise permitting and blasting assessment for limestone quarry operations
- Federal White Cement Plant Quarries (2), Woodstock Plant, Ontario
 - Air and noise permitting for limestone quarry operations and air quality assessments
- Rockfort Quarry, James Dick Construction Ltd, Caledon, Ontario
 - Air quality assessments and dispersion modeling for proposed 1.5 to 2.5 million tonnes per year limestone quarry
- St. Vincent Quarry, Grey County, Ontario
 - Noise and blasting assessment
- Durham Aggregate Pit, Grey County, Ontario
 - Acoustic Assessment Report
- Vermiculite Canada Mine, Regis Resources, Buckhorn, Ontario
 - Air and noise permitting for vermiculite open surface mine
- Touquoy Gold Mine Project, Moose River Gold Mines, Halifax Regional Municipality, Nova Scotia
 - Air, noise, and light environmental assessment studies

PUBLICATIONS AND PRESENTATIONS

- Reusing, G.L., R. Maier, "Tire Recycling Pilot Plant Using Microwave Technology", Air and Waste Management Association, Ontario Section Annual Conference, Toronto, October 6, 2010
- Reusing, G.L., Tim Wiens, "Noise Modelling Versus Reality Under Worst-Case Meteorological Conditions", Canadian Acoustics Proceedings, Volume 38, Number 3, September 2010
- Reusing, G.L., "Liberty Energy Study", Latest Developments in Air Modeling Conference, Air and Waste Management Association, Toronto, January 19-22, 2009
- Reusing, G.L., "District Energy Plants and Ajax Case Study", Sustainable Energy Career Symposium, University of Waterloo, January 26, 2009
- Reusing, G.L., Nolan, W., Kerr, G., Taylor, C., "Biomass to Energy: Greenhouse Gas Reduction Quantification Protocols and Case Study" 2nd Climate Change Technology Conference, Hamilton, May 12-15, 2009
- Reusing, G.L., Taylor, C., Vel, S. "Greenhouse Gas Reduction Quantification Protocols for Biomass Projects", Annual Air and Waste Management Conference, Detroit, June 16-19, 2009
- Reusing, G.L., Annual Environmental Compliance Training Seminars for General Motors, Masco Corporation, Tomkins Corporation, Magna International, Linamar Corporation and various industry associations 2003-2007
- Reusing, G.L., Session Moderator, Environmental Nuisances: Noise, Light, Odor and Fugitive Dust, Air and Waste Management Conference, Vancouver, May 2007
- Reusing, G.L., "New Ontario Dispersion Models and Air Standards, Odor Assessments and Noise Assessments", Environmental Law & Regulation Conferences, Canadian Institute, 2005 and 2006
- Reusing, G.L., "Introduction to Environmental Issues for Occupational Health and Safety", Environmental Panel Discussion Expert, University of Western Ontario Course, November 2006
- Reusing, G.L., "Fugitive Dust Assessment and Control", Environmental Nuisances: Noise, Odor and Fugitive Dust, Air and Waste Management Conference, Toronto, May 9-11, 2005

- Reusing, G.L., "New Ontario Dispersion Models and Air Standards, Odor Assessments and Noise Assessments", Environmental Law & Regulation Conference, Canadian Institute, December 2, 2005
- Reusing, G.L., "Preparing Applications for Certificates of Approval (Air)" , Centre for Health-Environment-Safety (CHES), Training Seminar for Industry, March 10, 2005
- Reusing, G.L., "Expediting Certificates of Approval Air", Environmental Law & Regulation Conference, Canadian Institute, December 8, 2004
- Reusing, G.L., Freeman, D., "Air Dispersion Modeling", Training for New Brunswick Department of Environment and Local Government Air and Risk Assessment Staff, Fredericton, New Brunswick, November 2002
- Reusing, G.L., Law, S., Loney, A., "Ambient Air Odor Regulations in Canada and the United States", Paper Presented to the 2002 Joint CSCE/EWRI of ASCE Environmental Engineering Conference, An International Perspective on Environmental Engineering, Niagara Falls, Ontario, July 2002
- Reusing, G.L., "Odor Assessment Methodology for a Complex Industrial Facility", Paper Presented to the Odors and Toxic Air Emissions 2002 Specialty Conference, Water Environment Federation, Albuquerque, New Mexico, April 2002
- Reusing, G.L., "Industrial Wood-Fired Boiler Optimization and Emissions Compliance", in Pollution Engineering, April 2002
- Reusing, G.L., "Ontario Environmental Compliance Seminar - Air Regulations", Canadian Association of Metal Finishers, September 2001
- Reusing, G.L., "Understanding the Clean Air Act", Paper Presented to the Environmental Regulation Course, Executive Enterprises, Cincinnati, October 1995
- Reusing, G.L., Crutcher, A.J., Benson, M.A., "Waste Management Issues for the Forest Industry - Burning of Woodwaste", Paper Presented to the 1994 Environmental Law and Management Conference for the Canadian Forest Industry, Toronto, September 1994
- Reusing, G.L., Bragg, G.M., "A Multi-Chamber Ventilation Model with Random Parameters", in Building and Environment, Volume 25, No. 4, 1990
- Siurna, L., Bragg, G.M., Reusing, G.L., "Transient Solutions to a Stochastic Ventilation Model", in Building and Environment, Volume 24, No. 3, 1989