



Rødebro 2015. Vurdering af udviklingen i den naturlige nedbrydning i nedstrømsforureningsfane efter kildeoprensning

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Certificate of Analysis: Gene-Trac® *Dehalococcoides* Assay

Customer: Alice Badin, University of Neuchatel

SiREM Reference: S-3220

Project: Rodekro

Report Date: 11-Jun-14

Customer Reference: 2188-032414

Data Files: MyiQ-DHC-QPCR-1120
MyiQ-DB-DHC-QPCR-0477
iQ5-TBA-QPCR-0050

Table 1a: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhc *	<i>Dehalococcoides</i> Enumeration/Liter **
B58-6	DHC-10491	20-May-14	Field Filter	NA	2 x 10 ³ U
B61-3	DHC-10492	19-May-14	Field Filter	NA	9 x 10 ² U
B61-1	DHC-10493	19-May-14	Field Filter	NA	9 x 10 ² U
B71-3	DHC-10494	19-May-14	Field Filter	NA	9 x 10 ² U
B23-3	DHC-10495	19-May-14	Field Filter	0.00002 - 0.00006 %	1 x 10 ³ J
B23-2	DHC-10496	19-May-14	Field Filter	0.00002 - 0.00007 %	2 x 10 ³
B74-3	DHC-10497	19-May-14	Field Filter	0.00002 - 0.00006 %	1 x 10 ³ J
B58-2	DHC-10498	20-May-14	Field Filter	NA	2 x 10 ³ U
B34-4	DHC-10499	20-May-14	Field Filter	0.00002 - 0.00005 %	1 x 10 ³ J
B34-3	DHC-10500	20-May-14	Field Filter	0.00002 - 0.00006 %	3 x 10 ³
B34-2	DHC-10501	20-May-14	Field Filter	0.00002 - 0.00006 %	2 x 10 ³ J
B34-6	DHC-10502	20-May-14	Field Filter	NA	3 x 10 ³ U
Blank	DHC-10503	20-May-14	Field Filter	NA	2 x 10 ³ U

Notes:

* Percent *Dehalococcoides* (Dhc) in microbial population. This value is calculated by dividing the number of Dhc 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhc enumeration.

** Based on quantification of Dhc 16S rRNA gene copies. Dhc are generally reported to contain one 16S rRNA gene copy per cell; therefore, this number is often interpreted to represent the number of Dhc cells present in the sample.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.

U Not detected, associated value is the quantification limit.

B Analyte was detected in the method blank within an order of magnitude of the test sample

NA Not applicable as *Dehalococcoides* not detected and/or quantifiable DNA not extracted from the sample.

I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.

E Extracted genomic DNA was not detected in sample.

Analyst: 

Jennifer Wilkinson
Senior Laboratory Technician

Approved: 

Ximena Druar, B.Sc.
Genetic Testing Coordinator

Certificate of Analysis: Gene-Trac® VC, Vinyl Chloride Reductase (*vcrA*) Assay

Customer: Alice Badin, University of Neuchatel

SiREM Reference: S-3220

Project: Rodekro

Report Date: 11-Jun-14

Customer Reference: 2188-032414

Data Files: iQ5-VC-QPCR-0662
iQ5-VC-QPCR-0663
VC-QPCR-check-gel-0664/0665
iQ5-DB-VC-QPCR-0382

Table 1b: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent <i>vcrA</i> *	Vinyl Chloride Reductase (<i>vcrA</i>) Gene Copies/Liter
B23-3	VCR-4812	19-May-14	Field Filter	0.0001 - 0.0004 %	2 x 10 ³
B23-2	VCR-4807	19-May-14	Field Filter	0.00009 - 0.0003 %	2 x 10 ³
B74-3	VCR-4808	19-May-14	Field Filter	NA	2 x 10 ³ U
B34-4	VCR-4809	20-May-14	Field Filter	NA	2 x 10 ³ U
B34-3	VCR-4810	20-May-14	Field Filter	0.00003 - 0.00008 %	1 x 10 ³ J
B34-2	VCR-4811	20-May-14	Field Filter	NA	3 x 10 ³ U

Notes:

* Percent *vcrA* in microbial population. This value is calculated by dividing the number of vinyl chloride reductase A (*vcrA*) gene copies quantified by the total number of bacteria estimated to be in the sample based on the mass of DNA extracted from the sample. Range represents normal variation in enumeration of *vcrA*.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.

U Not detected, associated value is the quantification limit.

B Analyte was detected in the method blank within an order of magnitude of the test sample.

NA Not applicable as *vcrA* not detected and/or quantifiable DNA not extracted from the sample.

I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.

C Correction factor applied to correct for non-specific PCR amplification products, value is an estimated quantity.

E Extracted genomic DNA was not detected in sample.

Analyst: 

Jennifer Wilkinson
Senior Laboratory Technician

Approved: 

Ximena Druar, B.Sc.
Genetic Testing Coordinator

Table 2.1: Detailed Test Parameters, Gene-Trac Test Reference S-3220

Customer Sample ID	B58-6	B61-3	B61-1	B71-3
SiREM Dhc Sample ID	DHC-10491	DHC-10492	DHC-10493	DHC-10494
SiREM <i>vcrA</i> Sample ID	NA	NA	NA	NA
Date Received	26-May-14	26-May-14	26-May-14	26-May-14
Sample Temperature	15 °C	15 °C	15 °C	15 °C
Filtration Date	20-May-14	19-May-14	19-May-14	19-May-14
Volume Used for DNA Extraction	860	2000	2000	2000
DNA Extraction Date	29-May-14	29-May-14	29-May-14	29-May-14
DNA Concentration in Sample (extractable)	3298 ng/L	1290 ng/L	1277 ng/L	1515 ng/L
PCR Amplifiable DNA	Detected	Detected	Detected	Detected
Dhc qPCR Date Analyzed	6-Jun-14	6-Jun-14	6-Jun-14	6-Jun-14
<i>vcrA</i> qPCR Date Analyzed	NA	NA	NA	NA
Laboratory Controls (see Tables 3 & 4)	Passed	Passed	Passed	Passed
Comments	--	--	--	--

Notes:

Refer to Tables 3 & 4 for detailed results of controls.

°C = degrees Celsius

Dhc = *Dehalococcoides*

NA = not applicable

PCR = polymerase chain reaction

qPCR = quantitative PCR

vcrA = vinyl chloride reductase

ng/L = nanograms per liter

mL = milliliters

DNA = Deoxyribonucleic acid

Table 2.2: Detailed Test Parameters, Gene-Trac Test Reference S-3220

Customer Sample ID	B23-3	B23-2	B74-3
SiREM Dhc Sample ID	DHC-10495	DHC-10496	DHC-10497
SiREM <i>vcrA</i> Sample ID	VCR-4812	VCR-4807	VCR-4808
Date Received	26-May-14	26-May-14	26-May-14
Sample Temperature	15 °C	15 °C	15 °C
Filtration Date	19-May-14	19-May-14	19-May-14
Volume Used for DNA Extraction	760	760	760
DNA Extraction Date	29-May-14	29-May-14	29-May-14
DNA Concentration in Sample (extractable)	3727 ng/L	3363 ng/L	3701 ng/L
PCR Amplifiable DNA	Detected	Detected	Detected
Dhc qPCR Date Analyzed	6-Jun-14	6-Jun-14	6-Jun-14
<i>vcrA</i> qPCR Date Analyzed	10-Jun-14	9-Jun-14	9-Jun-14
Laboratory Controls (see Tables 3 & 4)	Passed	Passed	Passed
Comments	--	--	--

Notes:

Refer to Tables 3 & 4 for detailed results of controls.

°C = degrees Celsius

Dhc = *Dehalococcoides*

PCR = polymerase chain reaction

qPCR = quantitative PCR

vcrA = vinyl chloride reductase

ng/L = nanograms per liter

mL = milliliters

DNA = Deoxyribonucleic acid

Table 2.3: Detailed Test Parameters, Gene-Trac Test Reference S-3220

Customer Sample ID	B58-2	B34-4	B34-3
SiREM Dhc Sample ID	DHC-10498	DHC-10499	DHC-10500
SiREM <i>vcrA</i> Sample ID	NA	VCR-4809	VCR-4810
Date Received	26-May-14	26-May-14	26-May-14
Sample Temperature	15 °C	15 °C	15 °C
Filtration Date	20-May-14	20-May-14	20-May-14
Volume Used for DNA Extraction	760	760	760
DNA Extraction Date	29-May-14	29-May-14	29-May-14
DNA Concentration in Sample (extractable)	3879 ng/L	4097 ng/L	4089 ng/L
PCR Amplifiable DNA	Detected	Detected	Detected
Dhc qPCR Date Analyzed	6-Jun-14	6-Jun-14	6-Jun-14
<i>vcrA</i> qPCR Date Analyzed	NA	9-Jun-14	9-Jun-14
Laboratory Controls (see Tables 3 & 4)	Passed	Passed	Passed
Comments	--	--	--

Notes:

Refer to Tables 3 & 4 for detailed results of controls.

°C = degrees Celsius

Dhc = *Dehalococcoides*

NA = not applicable

PCR = polymerase chain reaction

qPCR = quantitative PCR

vcrA = vinyl chloride reductase

ng/L = nanograms per liter

mL = milliliters

DNA = Deoxyribonucleic acid

Table 2.4: Detailed Test Parameters, Gene-Trac Test Reference S-3220

Customer Sample ID	B34-2	B34-6	Blank
SiREM Dhc Sample ID	DHC-10501	DHC-10502	DHC-10503
SiREM <i>vcrA</i> Sample ID	VCR-4811	NA	NA
Date Received	26-May-14	26-May-14	26-May-14
Sample Temperature	15 °C	15 °C	15 °C
Filtration Date	20-May-14	20-May-14	20-May-14
Volume Used for DNA Extraction	660	660	660
DNA Extraction Date	2-Jun-14	2-Jun-14	2-Jun-14
DNA Concentration in Sample (extractable)	3589 ng/L	3549 ng/L	3636 ng/L
PCR Amplifiable DNA	Detected	Detected	Detected
Dhc qPCR Date Analyzed	6-Jun-14	6-Jun-14	6-Jun-14
<i>vcrA</i> qPCR Date Analyzed	9-Jun-14	NA	NA
Laboratory Controls (see Tables 3 & 4)	Passed	Passed	Passed
Comments	--	--	--

Notes:

Refer to Tables 3 & 4 for detailed results of controls.

°C = degrees Celsius

Dhc = *Dehalococcoides*

NA = not applicable

PCR = polymerase chain reaction

qPCR = quantitative PCR

vcrA = vinyl chloride reductase

ng/L = nanograms per liter

mL = milliliters

DNA = Deoxyribonucleic acid

Table 3: Gene-Trac Dhc Control Results, Test Reference S-3220

Laboratory Control	Analysis Date	Control Description	Spiked Dhc 16S rRNA Gene Copies per Liter	Recovered Dhc 16S rRNA Gene Copies per Liter	Comments
DNA Extraction Blank	4-Jun-14	DNA extraction sterile water (FB-2200)	0	2.6×10^3 U	--
Positive Control Low Concentration	6-Jun-14	qPCR with KB1 genomic DNA (CSLD-0758)	1.4×10^5	1.0×10^5	--
Positive Control High Concentration	6-Jun-14	qPCR with KB1 genomic DNA (CSDH-0758)	1.5×10^7	1.1×10^7	--
DNA Extraction Blank	6-Jun-14	DNA extraction sterile water (FB-2196)	0	2.6×10^3 U	--
DNA Extraction Blank	6-Jun-14	DNA extraction sterile water (FB-2197)	0	2.6×10^3 U	--
Negative Control	6-Jun-14	Tris Reagent Blank (TBD-0717)	0	2.6×10^3 U	--

Notes:

Dhc = *Dehalococcoides*

DNA = Deoxyribonucleic acid

qPCR = quantitative PCR

16S rRNA = 16S ribosomal ribonucleic acid

U Not detected, associated value is the quantification limit.

Table 4: Gene-Trac VC Control Results, Test Reference S-3220

Laboratory Control	Analysis Date	Control Description	Spiked <i>vcrA</i> reductase Gene Copies per Liter	Recovered <i>vcrA</i> reductase Gene Copies per Liter	Comments
Positive Control Low Concentration	9-Jun-14	qPCR with KB1 genomic DNA (CSLV-0530)	1.0×10^5	6.9×10^4	--
Positive Control High Concentration	9-Jun-14	qPCR with KB1 genomic DNA (CSHV-0530)	1.3×10^7	6.5×10^6	--
DNA Extraction Blank	9-Jun-14	DNA extraction sterile water (FB-2196)	0	2.6×10^3 U	--
DNA Extraction Blank	9-Jun-14	DNA extraction sterile water (FB-2197)	0	2.6×10^3 U	--
DNA Extraction Blank	9-Jun-14	DNA extraction sterile water (FB-2200)	0	2.6×10^3 U	--
Negative Control	9-Jun-14	Tris Reagent Blank (TBV-0501)	0	2.6×10^3 U	--
Positive Control Low Concentration	10-Jun-14	qPCR with KB1 genomic DNA (CSLV-0531)	9.8×10^4	9.2×10^4	--
Positive Control High Concentration	10-Jun-14	qPCR with KB1 genomic DNA (CSHV-0531)	9.6×10^6	1.1×10^7	--
Negative Control	10-Jun-14	Tris Reagent Blank (TBV-0502)	0	2.6×10^3 U	--

Notes:

DNA = Deoxyribonucleic acid

qPCR = quantitative PCR

16S rRNA = 16S ribosomal ribonucleic acid

U Not detected, associated value is the quantification limit.

vcrA = vinyl chloride reductase

Project Name Kodekro		Project # 2188 - 032 414 (Quote)		Analysis																															
Project Manager Alice BADIN / Helte BROHOLT				Preservative 0 0 0 0																															
Email Address alice.badin@unine.ch / mmbr@env.dtu.dk				<table border="1"> <tr> <td>Gene-Trac Dhc</td> <td>Gene-Trac VC</td> <td>Gene-Trac Dhb</td> <td>VcrA</td> <td>Pyroleg 454</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>												Gene-Trac Dhc	Gene-Trac VC	Gene-Trac Dhb	VcrA	Pyroleg 454															
Gene-Trac Dhc	Gene-Trac VC	Gene-Trac Dhb	VcrA													Pyroleg 454																			
Company University of Neuchâtel																																			
Address																																			
Phone # 0041-7987 33884		Fax #																																	
Sampler's Signature <i>[Signature]</i>		Sampler's Printed Name ALICE BADIN																																	

Preservative Key

- 0. None
- 1. HCl
- 2. Other _____
- 3. Other _____

Customer Sample ID	Sampling		Matrix	# of Containers	Analysis												Other Information			
	Date	Time			Gene-Trac Dhc	Gene-Trac VC	Gene-Trac Dhb	VcrA	Pyroleg 454											
B58-6	20/5/14	10h00		4	X	X	X	X												~ 300-400 µl
B61-3	19/5/14	14h30		4	X	X	X	X												
B61-1	19/5/14	15h45		4	X	X	X	X												
B71-3	19/5/14	11h30		4	X	X	X	X												~ 900-1000 µl
B23-3	19/5/14	18h20		4	X	X	X	X												~ 300-400 µl
B23-2	19/5/14	17h30		4	X	X	X	X												~ 300-400 µl
B74-3	19/5/14	18h45		4	X	X	X	X												~ 300-400 µl
B58-6				4	X	X	X	X												~ 300-400 µl
B58-6				4	X	X	X	X												~ 300-400 µl
B58-2	20/5/14	11h30		4	X	X	X	X												~ 300-400 µl

Cooler Condition: Good.		P.O. #		Billing Information		Turnaround Time Requested		For Lab Use Only	
Cooler Temperature: 15°C.		Bill To:				Normal <input type="checkbox"/>		Filters	
Custody Seals: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						Rush <input type="checkbox"/>		F-01886-F-01935	
								Proposal #: _____	

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name	Printed Name D. Despoli	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm SiREM	Firm	Firm	Firm	Firm
Date/Time	Date/Time MAY 26 '14 12:00pm	Date/Time	Date/Time	Date/Time	Date/Time

Project Name Røddekrø		Project # 2188-0324114		Analysis																							
Project Manager Alice BADIN / Mette BROHOLT				Preservative	0	0	0	0																			
Email Address alice.badin@umine.ch / mubra@env.dtu.dk				<div style="display: flex; justify-content: space-around;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Gene-Trac Dhc</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Gene-Trac VC</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Gene-Trac Dhib</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">VerA</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Pyrolog 454</div> </div>																							
Company University of Neuchâtel																											
Address																											
Phone # 0041-79 87 33 884		Fax #		Preservative Key 0. None 1. HCl 2. Other _____ 3. Other _____																							
Sampler's Signature [Signature]		Sampler's Printed Name ALICE BADIN																									

Customer Sample ID	Sampling		Matrix	# of Containers													Other Information											
	Date	Time																										
B34-4																												
B34-4	20/5/14	12h30		4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B34-3	20/5/14	13h20		4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B34-2	20/5/14	14h15		4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B34-6	20/5/14	15h00		4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bk (Blank)	20/5/14	18h00		2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Cooler Condition: GOOD	Sample Receipt	P.O. #	Billing Information	Turnaround Time Requested	For Lab Use Only
Cooler Temperature: 15°C		Bill To:		Normal <input type="checkbox"/>	Filters F-01886-F-01935
Custody Seals: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				Rush <input type="checkbox"/>	
					Proposal #: _____

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name	Printed Name D. Di Pasoli	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm SiREM	Firm	Firm	Firm	Firm
Date/Time	Date/Time MAY 26 '14 12:00pm	Date/Time	Date/Time	Date/Time	Date/Time