

## 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 <sup>3</sup> U
B61-3	DHC-10492	19-May-14	Field Filter	NA	9 x 10 <sup>2</sup> U
B61-1	DHC-10493	19-May-14	Field Filter	NA	9 x 10 <sup>2</sup> U
B71-3	DHC-10494	19-May-14	Field Filter	NA	9 x 10 <sup>2</sup> U
B23-3	DHC-10495	19-May-14	Field Filter	0.00002 - 0.00006 %	1 x 10 <sup>3</sup> J
B23-2	DHC-10496	19-May-14	Field Filter	0.00002 - 0.00007 %	2 x 10 <sup>3</sup>
B74-3	DHC-10497	19-May-14	Field Filter	0.00002 - 0.00006 %	1 x 10 <sup>3</sup> J
B58-2	DHC-10498	20-May-14	Field Filter	NA	2 x 10 <sup>3</sup> U
B34-4	DHC-10499	20-May-14	Field Filter	0.00002 - 0.00005 %	1 x 10 <sup>3</sup> J
B34-3	DHC-10500	20-May-14	Field Filter	0.00002 - 0.00006 %	3 x 10 <sup>3</sup>
B34-2	DHC-10501	20-May-14	Field Filter	0.00002 - 0.00006 %	2 x 10 <sup>3</sup> J
B34-6	DHC-10502	20-May-14	Field Filter	NA	3 x 10 <sup>3</sup> U
Blank	DHC-10503	20-May-14	Field Filter	NA	2 x 10 <sup>3</sup> 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 %	$2 \times 10^3$
B23-2	VCR-4807	19-May-14	Field Filter	0.00009 - 0.0003 %	$2 \times 10^3$
B74-3	VCR-4808	19-May-14	Field Filter	NA	$2 \times 10^3$ U
B34-4	VCR-4809	20-May-14	Field Filter	NA	$2 \times 10^3$ U
B34-3	VCR-4810	20-May-14	Field Filter	0.00003 - 0.00008 %	$1 \times 10^3$ J
B34-2	VCR-4811	20-May-14	Field Filter	NA	$3 \times 10^3$ 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**

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

**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**

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

**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**

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

**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**

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

**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	$2.6 \times 10^3$ U	--
Positive Control Low Concentration	6-Jun-14	qPCR with KB1 genomic DNA (CSLD-0758)	$1.4 \times 10^5$	$1.0 \times 10^5$	--
Positive Control High Concentration	6-Jun-14	qPCR with KB1 genomic DNA (CSHD-0758)	$1.5 \times 10^7$	$1.1 \times 10^7$	--
DNA Extraction Blank	6-Jun-14	DNA extraction sterile water (FB-2196)	0	$2.6 \times 10^3$ U	--
DNA Extraction Blank	6-Jun-14	DNA extraction sterile water (FB-2197)	0	$2.6 \times 10^3$ U	--
Negative Control	6-Jun-14	Tris Reagent Blank (TBD-0717)	0	$2.6 \times 10^3$ 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)	$1.0 \times 10^5$	$6.9 \times 10^4$	--
Positive Control High Concentration	9-Jun-14	qPCR with KB1 genomic DNA (CSHV-0530)	$1.3 \times 10^7$	$6.5 \times 10^6$	--
DNA Extraction Blank	9-Jun-14	DNA extraction sterile water (FB-2196)	0	$2.6 \times 10^3$ U	--
DNA Extraction Blank	9-Jun-14	DNA extraction sterile water (FB-2197)	0	$2.6 \times 10^3$ U	--
DNA Extraction Blank	9-Jun-14	DNA extraction sterile water (FB-2200)	0	$2.6 \times 10^3$ U	--
Negative Control	9-Jun-14	Tris Reagent Blank (TBV-0501)	0	$2.6 \times 10^3$ U	--
Positive Control Low Concentration	10-Jun-14	qPCR with KB1 genomic DNA (CSLV-0531)	$9.8 \times 10^4$	$9.2 \times 10^4$	--
Positive Control High Concentration	10-Jun-14	qPCR with KB1 genomic DNA (CSHV-0531)	$9.6 \times 10^6$	$1.1 \times 10^7$	--
Negative Control	10-Jun-14	Tris Reagent Blank (TBV-0502)	0	$2.6 \times 10^3$ 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 <b>Kodekro</b>		Project # <b>2188-032414 (Quok)</b>		Analysis																													
Project Manager <b>Alice BADIN / Hette BROHOLT</b>				Preservative <b>00</b> <b>0</b> <b>0</b>																													
Email Address <b>alice.badin@unine.ch / mmbr@env.dtu.dk</b>				<div style="display: flex; justify-content: space-between;"> <div style="width: 80%;"> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Gene-Trac Dhc</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Gene-Trac VC</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Gene-Trac Dhb</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">VcrA</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">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> </tr> </table> </div> <div style="width: 15%;"> <p><b>Preservative Key</b></p> <p>0. None</p> <p>1. HCl</p> <p>2. Other _____</p> <p>3. Other _____</p> </div> </div>												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 <b>University of Neuchâtel</b>																																	
Address																																	
Phone # <b>0041-7987 33884</b>		Fax #																															
Sampler's Signature 		Sampler's Printed Name <b>ALICE BADIN</b>																															
Customer Sample ID		Sampling		Matrix		# of Containers		Other Information																									
		Date	Time																														
<b>B58-6</b>		<b>20/5/14</b>	<b>10h00</b>			<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									
<b>B61-3</b>		<b>19/5/14</b>	<b>14h30</b>			<b>4</b>		<b>X X X X</b>																									
<b>B61-1</b>		<b>19/5/14</b>	<b>15h45</b>			<b>4</b>		<b>X X X X</b>																									
<b>B71-3</b>		<b>19/5/14</b>	<b>11h30</b>			<b>4</b>		<b>X X X X</b> <b>~ 900-1000 ml</b>																									
<b>B23-3</b>		<b>19/5/14</b>	<b>18h20</b>			<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									
<b>B23-2</b>		<b>19/5/14</b>	<b>17h30</b>			<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									
<b>B74-3</b>		<b>19/5/14</b>	<b>18h45</b>			<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									
<del><b>B23-1</b></del>						<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									
<del><b>B23-2</b></del>						<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									
<b>B58-2</b>		<b>20/5/14</b>	<b>11h30</b>			<b>4</b>		<b>X X X X</b> <b>~ 300-400 ml</b>																									

Cooler Condition: <b>Good.</b>		P.O. #		Turnaround Time Requested		For Lab Use Only <b>Filters</b> <b>F-01886-F-01935</b>	
Cooler Temperature: <b>15°C.</b>		Billing Information		Normal <input type="checkbox"/>			
Custody Seals: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Bill To:		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		Printed Name		Printed Name		Printed Name		Printed Name	
<b>D. Despoli</b>		<b>Alice Badin</b>									
Firm		Firm		Firm		Firm		Firm		Firm	
<b>SiREM</b>		<b>SiREM</b>									
Date/Time		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
<b>May 26, 14, 12:00pm</b>		<b>May 26, 14, 12:00pm</b>									



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Lab #

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Project Name <u>Rødekro</u>		Project # <u>2188-0324114</u>		Analysis															
Project Manager <u>Alice BADIN / Helle BROHOLT</u>				Preservative <u>0</u> <u>0</u> <u>0</u> <u>0</u>															
Email Address <u>alice.badin@unine.ch / mubra@env.dtu.dk</u>				<div style="display: flex;"> <div style="flex: 1;"> <p>Gene-Trac Dhc</p> <p>Gene-Trac VC</p> <p>Gene-Trac Dhh</p> <p>VerA</p> <p>Pyrolog 454</p> </div> <div style="flex: 1;"> <p>Preservative Key</p> <p>0. None</p> <p>1. HCl</p> <p>2. Other _____</p> <p>3. Other _____</p> </div> </div>															
Company <u>University of Neuchâtel</u>																			
Address _____																			
Phone # <u>0041-79 87 33 884</u>																			
Fax # _____		Sampler's Printed Name <u>ALICE BADIN</u>																	
Sampler's Signature <u>[Signature]</u>																			
Customer Sample ID		Sampling		Matrix		# of Containers		Other Information											
		Date	Time																
<del>B34-4</del>																			
B34-4		20/5/14	12h30	4		4		~300-400 neel											
B34-3		20/5/14	13h20	4		4		~300-400 neel											
B34-2		20/5/14	14h15	4		4		~300-400 neel											
B34-6		20/5/14	15h00	4		4		~300-400 neel											
Bk (Blank)		20/5/14	18h00	2		2		300 neel											

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

Relinquished By:		Received By:		Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature _____		Signature <u>[Signature]</u>		Signature _____		Signature _____		Signature _____		Signature _____	
Printed Name _____		Printed Name <u>D. Despoli</u>		Printed Name _____		Printed Name _____		Printed Name _____		Printed Name _____	
Firm _____		Firm <u>SiREM</u>		Firm _____		Firm _____		Firm _____		Firm _____	
Date/Time _____		Date/Time <u>MAY 26 '14 12:00pm</u>		Date/Time _____		Date/Time _____		Date/Time _____		Date/Time _____	