



LAYFIELD

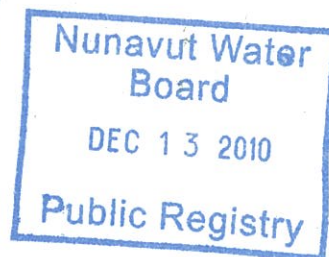
Environmental Solutions with Geosynthetics

Government of Nunavut
c/o Kudlik Construction Ltd.

80mil HDPE

Qikitarjuaq Water Storage Reservoir
Qikitarjuaq, Nunavut

Project Completion Submittal Package



www.geomembranes.com

DESIGN

MANUFACTURE

FABRICATION

INSTALLATION

MAINTENANCE

Layfield Environmental Systems Ltd.

**Project Completion QA/QC Package
for**

Government of Nunavut

c/o Kudlik Construction Ltd.

Qikitarjuaq Water Storage Reservoir

Qikitarjuaq, Nunavut

Supply and Install of HDPE 80mil

Prepared By: Michael Cerilli

Reviewed By: Fred Cross

Date Submitted: August 24, 2009



Layfield Environmental Systems Ltd.

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for

**Government of Nunavut
c/o Kudlik Construction Ltd.**

Qikitarjuaq Water Storage Reservoir

Qikitarjuaq, Nunavut

New Construction

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CERTIFICATE OF ACCEPTANCE OF SOIL SUBGRADE SURFACE

PROJECT NAME: Qikitarjuag 2008 installation
PROJECT NUMBER: 08C-8190
OWNER: Government of Nunavut
LOCATION: Qikitarjuag

I, the undersigned, a duly appointed representative of Layfield Environmental Systems Ltd. (LESL), have visually observed the soil subgrade described below, and found it to be an acceptable surface on which to install geomembrane.

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield Environmental Systems, and LESL makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield Environmental Systems accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield Environmental Systems and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Area Being Accepted: Water reservoir

LAYFIELD ENVIRONMENTAL SYSTEMS REPRESENTATIVE:

Date: aug. 13/08
Signature: [Signature]
Name: Martin Audet
Title: tech.

OWNERS REPRESENTATIVE:

Date: Aug 13/08
Signature: [Signature]
Name: John Fraser
Title: Sup Foreman
Company: K.O.I.K



GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: 08C-G19

PROJECT TITLE: water reservoir

OWNER: Government of Nunavut

CONTRACTOR: Kudlik Const

LOCATION: Qikitajuaq

GEOMEMBRANE SECONDARY PRIMARY CLOSURE OTHER

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: Panel 19 was deployed first, Kudlik DATE: end of July

deployed it before I was on site and SHEET NUMBER: 1

DEPLOYMENT EQUIPMENT: used the wrong liner (40 HDPE) They already

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>19</u>	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER	<u>108117558</u>		
DEPLOYMENT LENGTH	<u>115'</u>		
AMBIENT AIR TEMP.			
VISUAL OBSERVATION	<u>concrete blocks directly on liner.</u>		
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

had the pipes on it and wouldn't take them off. So they want me to weld 80 mil to 40 mil.

SUBMITTED BY: M. Andet
DATE: _____

will mention it on the final acceptance.



GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: 08C-019

PROJECT TITLE: Water reservoir

OWNER: Government of Nunavut

CONTRACTOR: Kudluk Const.

LOCATION: Qikitaijuag

GEOMEMBRANE SECONDARY PRIMARY CLOSURE OTHER _____

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: didn't include anchor trench,
extra 8'.

DATE: aug 14/08

SHEET NUMBER: 2

DEPLOYMENT EQUIPMENT: excavator

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>1</u>
PANEL/ROLL NUMBER	<u>101119389</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>15°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= S= <u>2</u> E= W=

PANEL LOCATION REFERENCE NUMBER <u>5</u>
<u>101119385</u>
<u>170'</u>
<u>15°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>4</u> S= <u>6</u> E= W=

PANEL LOCATION REFERENCE NUMBER _____
N= S=
E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>2</u>
PANEL/ROLL NUMBER	<u>101119389</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>15°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>1</u> S= <u>3</u> E= W=

PANEL LOCATION REFERENCE NUMBER <u>6</u>
<u>101119385</u>
<u>170'</u>
<u>15°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>5</u> S= <u>7</u> E= W=

PANEL LOCATION REFERENCE NUMBER _____
N= S=
E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>3</u>
PANEL/ROLL NUMBER	<u>101119387</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>15°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>2</u> S= <u>4</u> E= W=

PANEL LOCATION REFERENCE NUMBER <u>7</u>
<u>101119392</u>
<u>170'</u>
<u>15°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>6</u> S= <u> </u> E= W=

PANEL LOCATION REFERENCE NUMBER _____
N= S=
E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>4</u>
PANEL/ROLL NUMBER	<u>101119387</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>15°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>3</u> S= <u>5</u> E= W=

PANEL LOCATION REFERENCE NUMBER _____
N= S=
E= W=

PANEL LOCATION REFERENCE NUMBER _____
N= S=
E= W=

SUBMITTED BY: M. Audet

DATE: _____



GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: 08C-019

PROJECT TITLE: Water reservoir

OWNER: Government of Nunavut

CONTRACTOR: Kudlik const.

LOCATION: Qikitarijag

GEOMEMBRANE SECONDARY PRIMARY CLOSURE OTHER _____

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: _____

DATE: aug 15/08

SHEET NUMBER: 3

DEPLOYMENT EQUIPMENT: excavator

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>8</u>
PANEL/ROLL NUMBER	<u>101119392</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>12°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>7</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER <u>12</u>
<u>101119395</u>
<u>170'</u>
<u>12°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>11</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER <u>16</u>
<u>101119380</u>
<u>170'</u>
<u>12°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>15</u> S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>9</u>
PANEL/ROLL NUMBER	<u>101119391</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>12°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>8</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER <u>13</u>
<u>101119381</u>
<u>170'</u>
<u>12°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>12</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER _____
N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>10</u>
PANEL/ROLL NUMBER	<u>101119391</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>12°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>9</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER <u>14</u>
<u>101119381</u>
<u>170'</u>
<u>12°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>13</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER _____
N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>11</u>
PANEL/ROLL NUMBER	<u>101119395</u>
DEPLOYMENT LENGTH	<u>170'</u>
AMBIENT AIR TEMP.	<u>12°C</u>
VISUAL OBSERVATION	<u>OK</u>
OBSERVED OVERLAP	<u>6"</u>
CHECKED BY	<u>MA</u>
ADJACENT PANEL	N= <u>10</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER <u>15</u>
<u>101119380</u>
<u>170'</u>
<u>12°C</u>
<u>OK</u>
<u>6"</u>
<u>MA</u>
N= <u>14</u> S= _____ E= _____ W= _____

PANEL LOCATION REFERENCE NUMBER _____
N= _____ S= _____ E= _____ W= _____

SUBMITTED BY: M. Audet

DATE: _____



GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: 08C-018

PROJECT TITLE: water reservoir

OWNER: Government of Nunavut

CONTRACTOR: Kudluk const.

LOCATION: Qikitarijuaq

GEOMEMBRANE SECONDARY PRIMARY CLOSURE OTHER _____

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: _____

DATE: aug 18/08

SHEET NUMBER: 4

DEPLOYMENT EQUIPMENT: excavator

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>17</u>	PANEL LOCATION REFERENCE NUMBER <u>18</u>	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>101119393</u>	<u>101119393</u>	
DEPLOYMENT LENGTH	<u>115'</u>	<u>115'</u>	
AMBIENT AIR TEMP.	<u>12°C</u>	<u>12°C</u>	
VISUAL OBSERVATION	<u>OK</u>	<u>OK</u>	
OBSERVED OVERLAP	<u>6"</u>	<u>6"</u>	
CHECKED BY	<u>MA</u>	<u>MA</u>	
ADJACENT PANEL	N= <u>14</u> S= _____ E= <u>19</u> W= _____	N= <u>14</u> S= _____ E= _____ W= <u>19</u>	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

SUBMITTED BY: M. A. Act

DATE: _____



GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: 08C-019

PROJECT TITLE: water reservoir

OWNER: Government of Nunavut

CONTRACTOR: Kudlik const.

LOCATION: Akitayugq

GEOMEMBRANE SECONDARY PRIMARY CLOSURE OTHER: _____

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE): _____

REMARKS: _____

DATE: aug 20/08

SHEET NUMBER: 5

DEPLOYMENT EQUIPMENT: _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>20</u>	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>101119393</u>		
DEPLOYMENT LENGTH	<u>150'</u>		
AMBIENT AIR TEMP.	<u>8°C</u>		
VISUAL OBSERVATION	<u>OK</u>		
OBSERVED OVERLAP	<u>6"</u>		
CHECKED BY	<u>MA</u>		
ADJACENT PANEL	N= <u>16</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>21</u>	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>101119393</u>		
DEPLOYMENT LENGTH	<u>150'</u>		
AMBIENT AIR TEMP.	<u>8°C</u>		
VISUAL OBSERVATION	<u>OK</u>		
OBSERVED OVERLAP	<u>6"</u>		
CHECKED BY	<u>MA</u>		
ADJACENT PANEL	N= <u>20</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>22</u>	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>101119399</u>		
DEPLOYMENT LENGTH	<u>150'</u>		
AMBIENT AIR TEMP.	<u>8°C</u>		
VISUAL OBSERVATION	<u>OK</u>		
OBSERVED OVERLAP	<u>6"</u>		
CHECKED BY	<u>MA</u>		
ADJACENT PANEL	N= <u>21</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

SUBMITTED BY: mCudet

DATE: _____



GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: 08C-C19

PROJECT TITLE: water reservoir

OWNER: Government of Nunavut

CONTRACTOR: Kudlik const.

LOCATION: Akitarijuaq

GEOMEMBRANE SECONDARY PRIMARY CLOSURE OTHER _____

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: _____

DATE: aug 21/08

SHEET NUMBER: 6

DEPLOYMENT EQUIPMENT: excavator

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>23</u>	PANEL LOCATION REFERENCE NUMBER <u>27</u>	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>10119399</u>	<u>10119388</u>	
DEPLOYMENT LENGTH	<u>150'</u>	<u>150'</u>	
AMBIENT AIR TEMP.	<u>6°C</u>	<u>6°C</u>	
VISUAL OBSERVATION	<u>OK</u>	<u>OK</u>	
OBSERVED OVERLAP	<u>6"</u>	<u>6"</u>	
CHECKED BY	<u>MA</u>	<u>MA</u>	
ADJACENT PANEL	N= <u>22</u> S= _____ E= _____ W= _____	N= <u>26</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>24</u>	PANEL LOCATION REFERENCE NUMBER <u>28</u>	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>10119393</u>	<u>10119388</u>	
DEPLOYMENT LENGTH	<u>150'</u>	<u>150'</u>	
AMBIENT AIR TEMP.	<u>6°C</u>	<u>6°C</u>	
VISUAL OBSERVATION	<u>OK</u>	<u>OK</u>	
OBSERVED OVERLAP	<u>6"</u>	<u>6"</u>	
CHECKED BY	<u>MA</u>	<u>MA</u>	
ADJACENT PANEL	N= <u>23</u> S= _____ E= _____ W= _____	N= <u>27</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>25</u>	PANEL LOCATION REFERENCE NUMBER <u>29</u>	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>10119397</u>	<u>10119396</u>	
DEPLOYMENT LENGTH	<u>150'</u>	<u>150'</u>	
AMBIENT AIR TEMP.	<u>6°C</u>	<u>6°C</u>	
VISUAL OBSERVATION	<u>OK</u>	<u>OK</u>	
OBSERVED OVERLAP	<u>6"</u>	<u>6"</u>	
CHECKED BY	<u>MA</u>	<u>MA</u>	
ADJACENT PANEL	N= <u>24</u> S= _____ E= _____ W= _____	N= <u>28</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER <u>26</u>	PANEL LOCATION REFERENCE NUMBER <u>30</u>	PANEL LOCATION REFERENCE NUMBER _____
PANEL/ROLL NUMBER	<u>10119397</u>	<u>10119396</u>	
DEPLOYMENT LENGTH	<u>150'</u>	<u>150'</u>	
AMBIENT AIR TEMP.	<u>6°C</u>	<u>6°C</u>	
VISUAL OBSERVATION	<u>OK</u>	<u>OK</u>	
OBSERVED OVERLAP	<u>MA 6"</u>	<u>6"</u>	
CHECKED BY	<u>MA</u>	<u>MA</u>	
ADJACENT PANEL	N= <u>25</u> S= _____ E= _____ W= _____	N= <u>29</u> S= _____ E= _____ W= _____	N= _____ S= _____ E= _____ W= _____

SUBMITTED BY: M. Audet

DATE: _____