


TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|---|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>100.09 m</u> | TEST HOLE NO. <u>101</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | SHEAR STRENGTH - kPa <input type="checkbox"/> UNCONF. <input type="checkbox"/> POCKET PEN. <input checked="" type="checkbox"/> LAB VANE 50 100 150 200 |
| LOGGED BY <u>R. Donahue</u> | | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | SHEAR STRENGTH - kPa | | | | |
|------------|---------|--|-----|--------|-----|----------------------|---------------|--------------|----|-----|
| | | | | | | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | | |
| | | | | | | 10 | 30 | 50 | 70 | 90% |
| 0.05 | ●●●● | ASPHALT | 310 | | | | | | | |
| 0.3 | - - - - | SAND - with gravel | 225 | | | | | | | |
| 1 | - - - - | CLAY - little silt - mottled brown and black - oxidized, calcareous - moist, firm - 1.5 m brown | 60 | | | | | | | |
| 2 | - - - - | - moist, stiff - @ 2.3 m moist, very stiff - fractured | 90 | | | | | | | |
| 3 | - - - - | - salt crystals - @ 7.6 m some silt - silt lenses | 75 | | | | | | | |
| 4 | - - - - | | 45 | | | | | | | |
| 5 | - - - - | | 50 | | | | | | | |
| 6 | - - - - | | 50 | | | | | | | |
| 7 | - - - - | | 50 | | | | | | | |
| 8 | + + + + | SILT - little clay - brown - oxidized, calcareous - moist, soft - @ 8.4 m gray, unoxidized - layered, fractured | 25 | | | | | | | |
| 9 | + + + + | | 60 | | | | | | | |

1500 1500 1700 1900 2100
▲ DRY DENSITY - kg/m³

| | | |
|---|--------------------------------|---|
|  | Clifton Associates Ltd. | PROJECT <u>ESSO TERMINAL 550 McDONALD</u> |
| | | LOCATION <u>REGINA, SASKATCHEWAN</u> |
| | | PROJECT NO. <u>R1087</u> PAGE NO. <u>1 of 2</u> |

TEST HOLE LOG

DATE 27 May 1991
 DRILL Brat 22
 LOGGED BY R. Donahue

GROUND ELEV. 100.09 m
 LOCATION _____

TEST HOLE NO. 101
 SHEAR STRENGTH - kPa
 UNCONF. POCKET PEN. LAB VANE
 50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT | | | WATER CONTENT | | | LIQUID LIMIT | | | | | | |
|------------|--------|--|-----|--------|-----|---------------|----|----|---------------|-----|----|--------------|----|----|-----|--|--|--|
| | | | | | | 10 | 30 | 50 | 70 | 90% | 10 | 30 | 50 | 70 | 90% | | | |
| 10 | + | SILT - continued... - @ 10.3 m little sand | 10 | | | | | | | | | | | | | | | |
| 11 | . | 10.9 SAND - very fine grained, little silt - gray - unoxidized - moist to dry - variable moisture with depth - @ 12.0m dry | 10 | | | | | | | | | | | | | | | |
| 12 | - | 12.1 E.O.H. | 0 | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | |
| 14 | | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. 3) Piezometer installed in Test Hole. | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | |



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PROJECT ESSO TERMINAL 550 McDONALD
 LOCATION REGINA, SASKATCHEWAN
 PROJECT NO. R1087 PAGE NO. 2 of 2



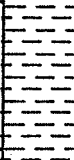
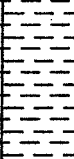
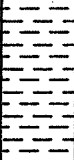

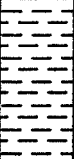


1300 1500 1700 1900 2100
 ▲ DRY DENSITY - kg/m³

TEST HOLE LOG

DATE 27 May 1991
 DRILL Brat 22
 LOGGED BY R. Donahue

GROUND ELEV. 99.53 m
 LOCATION _____

TEST HOLE NO. 102
 SHEAR STRENGTH - kPa
 UNCONF. POCKET PEN. LAB VANE
 50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT | | | WATER CONTENT | | | LIQUID LIMIT | | | | | | |
|------------|---|---|-----|--------|-----|---------------|----|----|---------------|----|----|--------------|-----|--|--|--|--|--|
| | | | | | | 10 | 30 | 50 | 10 | 30 | 50 | 70 | 90% | | | | | |
| 1 |  | 0.05 - ASPHALT | 10 | | | | | | | | | | | | | | | |
| | | 0.3 - SAND - with gravel | | | | | | | | | | | | | | | | |
| 2 |  | CLAY - few silt - dark brown - oxidized, calcareous - laminated, fractured - moist, firm | 50 | | | | | | | | | | | | | | | |
| 3 |  | | 60 | | | | | | | | | | | | | | | |
| 4 |  | | 75 | | | | | | | | | | | | | | | |
| 5 |  | | 75 | | | | | | | | | | | | | | | |
| 6 |  | | 100 | | | | | | | | | | | | | | | |
| 7 |  | | 30 | | | | | | | | | | | | | | | |
| 8 |  | 7.9 - SILT - little clay - gray - unoxidized, calcareous - moist, soft - layered, fractured | 45 | | | | | | | | | | | | | | | |
| 9 |  | - @ 9.1 m dry | 20 | | | | | | | | | | | | | | | |



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PROJECT ESSO TERMINAL 550 McDONALD
 LOCATION REGINA, SASKATCHEWAN
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TEST HOLE LOG

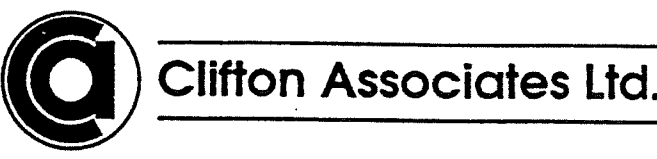
| | | |
|-----------------------------|-----------------------------|--------------------------|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>99.53 m</u> | TEST HOLE NO. <u>102</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | |
| LOGGED BY <u>R. Donahue</u> | | |

SHEAR STRENGTH - kPa

UNCONF. POCKET PEN. LAB VANE
50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | SHEAR STRENGTH - kPa | | | |
|------------|--------|--|-----|--------|-----|----------------------|---------------|--------------|--|
| | | | | | | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | |
| 10 | + | SILT - continued... | 30 | | | | | | |
| 11 | . | 10.4 SAND - very fine grained, little silt - gray - unoxidized, calcareous - variable moisture with depth - soft, loose | 25 | | | | | | |
| 12 | . | 12.2 E.O.H. | 25 | | | | | | |
| 13 | | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. 3) Piezometer installed in Test Hole. | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |

1300 1500 1700 1900 2100
▲ DRY DENSITY - kg/m³



| | |
|-------------|----------------------------|
| PROJECT | ESSO TERMINAL 550 McDONALD |
| LOCATION | REGINA, SASKATCHEWAN |
| PROJECT NO. | R1087 |
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TEST HOLE LOG

DATE 27 May 1991
 DRILL Brat 22
 LOGGED BY R. Donahue

GROUND ELEV. 100.18 m
 LOCATION _____

TEST HOLE NO. 103
 SHEAR STRENGTH - kPa
 UNCONF. POCKET PEN. LAB VANE
 50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT WATER CONTENT LIQUID LIMIT | | | | | | | | |
|------------|--------|--|-----|--------|-----|--|----|----|----|-----|--|--|--|--|
| | | | | | | 10 | 30 | 50 | 70 | 90% | | | | |
| | | 0.05 ASPHALT | 30 | | | | | | | | | | | |
| | | 0.3 SAND - with gravel | | | | | | | | | | | | |
| 1 | | CLAY - few silt - dark grayish brown - oxidized, calcareous - layered, fractured - moist, very stiff - @ 2.3 m brown | 60 | | | | | | | | | | | |
| 2 | | - @ 3.8 m fractured - iron staining - salt crystals - @ 6.8 m some silt - silt lenses | 50 | | | | | | | | | | | |
| 3 | | | 30 | | | | | | | | | | | |
| 4 | | | 40 | | | | | | | | | | | |
| 5 | | | 45 | | | | | | | | | | | |
| 6 | | | 60 | | | | | | | | | | | |
| 7 | | | 45 | | | | | | | | | | | |
| 8 | | 7.3 SILT - little clay - brown - oxidized, calcareous - moist, soft - @ 7.9 m gray, unoxidized - layered, fractured - variable moisture with depth | 55 | | | | | | | | | | | |
| 9 | | - @ 8.8 m till seams | 10 | | | | | | | | | | | |

1300 1500 1700 1900 2100
 ▲ DRY DENSITY - kg/m³




Clifton Associates Ltd.

PROJECT ESSO TERMINAL 550 McDONALD
 LOCATION REGINA, SASKATCHEWAN
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TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|--------------------------|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>100.18 m</u> | TEST HOLE NO. <u>103</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | |
| LOGGED BY <u>R. Donahue</u> | | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | SHEAR STRENGTH - kPa | | | | | | | | |
|------------|--------|--|-----|--------|-----|----------------------|-------------|----------|---------------|---------------|--------------|--|--|--|
| | | | | | | UNCONF. | POCKET PEN. | LAB VANE | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | | | |
| 10 | + | SILT - continued... | 10 | | | | | | | | | | | |
| 10.4 | | | 10 | | | | | | | | | | | |
| 11 | . | SAND - very fine grained, little silt - gray - unoxidized - moist to dry - variable moisture with depth | 10 | | | | | | | | | | | |
| 12 | | | 5 | | | | | | | | | | | |
| 12.2 | | E.O.H. | 25 | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. 3) Piezometer installed in Test Hole. | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |

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|---|--------------------------------|---|
|  | Clifton Associates Ltd. | PROJECT <u>ESSO TERMINAL 550 McDONALD</u> |
| | | LOCATION <u>REGINA, SASKATCHEWAN</u> |
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TEST HOLE LOG

DATE 27 May 1991

GROUND ELEV. 99.68 m

TEST HOLE NO. 104

DRILL Brat 22

LOCATION _____

LOGGED BY R. Donahue

SHEAR STRENGTH - kPa

UNCONF. POCKET PEN. LAB VANE
 50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT | | | WATER CONTENT | | | LIQUID LIMIT | | | | | | |
|------------|----------|---|---|--------|-----|---------------|----|----|---------------|-----|----|--------------|----|----|-----|--|--|--|
| | | | | | | 10 | 30 | 50 | 70 | 90% | 10 | 30 | 50 | 70 | 90% | | | |
| 0.3 | [Symbol] | TOPSOIL- clay - black - moist, soft - rootlets | 40 | | | | | | | | | | | | | | | |
| 1 | [Symbol] | CLAY - few silt - brown - oxidized, calcareous - laminated, fractured - moist, soft - @ 3.0 m very stiff - iron and manganese staining - @ 3.8 m some silt - salt crystals - @ 7.3 m silt seam | 25 | | | | | | | | | | | | | | | |
| 2 | [Symbol] | | 40 | | | | | | | | | | | | | | | |
| 3 | [Symbol] | | 50 | | | | | | | | | | | | | | | |
| 4 | [Symbol] | | 55 | | | | | | | | | | | | | | | |
| 5 | [Symbol] | | 45 | | | | | | | | | | | | | | | |
| 6 | [Symbol] | | 40 | | | | | | | | | | | | | | | |
| 7 | [Symbol] | SILT - little clay - gray - unoxidized - moist, soft | 40 | | | | | | | | | | | | | | | |
| 7.3 | [Symbol] | - layered, fractured - variable moisture with depth | 30 | | | | | | | | | | | | | | | |
| 7.9 | [Symbol] | | SAND - very fine grained, little silt - gray - unoxidized - moist to dry - variable moisture with depth | 20 | | | | | | | | | | | | | | |
| 8 | [Symbol] | | | | | | | | | | | | | | | | | |
| 9 | [Symbol] | | 10 | | | | | | | | | | | | | | | |

1300 1500 1700 1900 2100
 ▲ DRY DENSITY - kg/m³



Clifton Associates Ltd.

PROJECT ESSO TERMINAL 550 McDONALD

LOCATION REGINA, SASKATCHEWAN

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TEST HOLE LOG

| | | |
|-----------------------------|-----------------------------|--------------------------|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>99.68 m</u> | TEST HOLE NO. <u>104</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | |
| LOGGED BY <u>R. Donahue</u> | _____ | |

SHEAR STRENGTH - kPa

UNCONF. POCKET PEN. LAB VANE

50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">PLASTIC LIMIT</td> <td style="text-align: center;">WATER CONTENT</td> <td style="text-align: center;">LIQUID LIMIT</td> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">30</td> <td style="text-align: center;">50</td> </tr> <tr> <td style="text-align: center;">70</td> <td style="text-align: center;">90%</td> <td></td> </tr> </table> | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | 10 | 30 | 50 | 70 | 90% | |
|------------------|--------------------------|--|-----|--------|-----|---|------------------|------------------|-----------------|----|----|----|----|-----|--|
| PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | | | | | | | | | | | | | |
| 10 | 30 | 50 | | | | | | | | | | | | | |
| 70 | 90% | | | | | | | | | | | | | | |
| 10 | [Symbol: Dotted pattern] | SAND - continued... | 25 | | | | | | | | | | | | |
| 11 | | | 10 | | | | | | | | | | | | |
| 12 | | 12.2 E.O.H. | 10 | | | | | | | | | | | | |
| 13 | | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. 3) Piezometer installed in Test Hole. | 25 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |

1300 1500 1700 1900 2100
▲ DRY DENSITY - kg/m³



Clifton Associates Ltd.

| | |
|-------------|-----------------------------------|
| PROJECT | <u>ESSO TERMINAL 550 McDONALD</u> |
| LOCATION | <u>REGINA, SASKATCHEWAN</u> |
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TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|---|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>102.19 m</u> | TEST HOLE NO. <u>105</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | SHEAR STRENGTH - kPa <input type="checkbox"/> UNCONF. <input type="checkbox"/> POCKET PEN <input checked="" type="checkbox"/> LAB VANE <small>50 100 150 200</small> |
| LOGGED BY <u>R. Donahue</u> | | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | SHEAR STRENGTH - kPa | | | | |
|------------|--------|---|-----|--------|-----|----------------------|---------------|--------------|----|-----|
| | | | | | | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | | |
| | | | | | | 10 | 30 | 50 | 70 | 90% |
| | | TOPSOIL- clay | 50 | | | | | | | |
| 1 | | - black - moist, soft - rootlets | 30 | | | | | | | |
| | | CLAY | 50 | | | | | | | |
| 2 | | - few silt - brown - oxidized, calcareous - fractured - moist, stiff - iron and manganese staining | 40 | | | | | | | |
| 3 | | | 40 | | | | | | | |
| 4 | | | 30 | | | | | | | |
| 5 | | | 40 | | | | | | | |
| 6 | | | 40 | | | | | | | |
| | | SILT | 40 | | | | | | | |
| 7 | | - little clay - brown - oxidized, calcareous - moist, soft - @ 9.1 m till seam | 50 | | | | | | | |
| 8 | | | 50 | | | | | | | |
| 9 | | | 50 | | | | | | | |

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| Clifton Associates Ltd. | PROJECT <u>ESSO TERMINAL 550 McDONALD</u> |
| | LOCATION <u>REGINA, SASKATCHEWAN</u> |
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TEST HOLE LOG

| | | |
|----------------------------|------------------------------|---|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>102.19 m</u> | TEST HOLE NO. <u>105</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | SHEAR STRENGTH - kPa <input type="checkbox"/> UNCONF. <input type="checkbox"/> POCKET PEN. <input checked="" type="checkbox"/> LAB VANE 50 100 150 200 |
| LOGGED BY <u>R.Donahue</u> | | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | SHEAR STRENGTH - kPa | | | | |
|------------|--------|--|-----|--------|-----|----------------------|---------------|--------------|----|-----|
| | | | | | | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | | |
| | | | | | | 10 | 30 | 50 | 70 | 90% |
| 10 | + | SILT - continued... - @ 10.9 m few sand - gray, unoxidized | 40 | | | | | | | |
| 11 | + | | 25 | | | | | | | |
| 12 | . | 11.6 SAND - very fine grained with silt - gray - unoxidized 12.2 E.O.H. - variable moisture with depth - loose | 10 | | | | | | | |
| 13 | | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. 3) Piezometer installed in Test Hole. | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |

1300 1500 1700 1900 2100
▲ DRY DENSITY - kg/m³



Clifton Associates Ltd.

| | |
|-------------|----------------------------|
| PROJECT | ESSO TERMINAL 550 McDONALD |
| LOCATION | REGINA, SASKATCHEWAN |
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TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|--------------------------|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>102.12 m</u> | TEST HOLE NO. <u>106</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | |
| LOGGED BY <u>R. Donahue</u> | _____ | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | SHEAR STRENGTH - kPa | | | | |
|------------|----------|---|-----|--------|-----|-----------------------------------|--------------------|------------------------|------|------|
| | | | | | | UNCONF. 50 | POCKET PEN. 100 | LAB VANE 150 200 | | |
| | | | | | | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT | | |
| | | | | | | 10 | 30 | 50 | 70 | 90% |
| 0.3 | [Symbol] | TOPSOIL- clay - black - moist, soft - rootlets | 60 | | | | | | | |
| 1 | [Symbol] | CLAY - few silt - brown - oxidized, calcareous - laminated, fractured - moist, soft | 50 | | | | | | | |
| 2 | [Symbol] | | 25 | | | | | | | |
| 3 | [Symbol] | | 25 | | | | | | | |
| 4 | [Symbol] | | 30 | | | | | | | |
| 5 | [Symbol] | | 40 | | | | | | | |
| 6 | [Symbol] | SILT - little clay - brown - oxidized, calcareous - moist, soft - layered, fractured - variable moisture with depth - @ 8.8 m gray - unoxidized - moist, soft - variable moisture with depth | 40 | | | | | | | |
| 7 | [Symbol] | | 50 | | | | | | | |
| 7.5 | [Symbol] | | 50 | | | | | | | |
| 8 | [Symbol] | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. | 20 | | | | | | | |
| 9 | [Symbol] | | 20 | | | | | | | |
| E.O.H. | | | | | | 1300 | 1500 | 1700 | 1900 | 2100 |
| | | | | | | ▲ DRY DENSITY - kg/m ³ | | | | |



Clifton Associates Ltd.

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|-------------|-----------------------------------|
| PROJECT | <u>ESSO TERMINAL 550 McDONALD</u> |
| LOCATION | <u>REGINA, SASKATCHEWAN</u> |
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TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|--------------------------|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>101.68 m</u> | TEST HOLE NO. <u>107</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | |
| LOGGED BY <u>R. Donahue</u> | | |

SHEAR STRENGTH - kPa

UNCONF. POCKET PEN. LAB VANE
50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT | WATER CONTENT | LIQUID LIMIT |
|------------|--------|---|-----|--------|-----|-----------------------------|---------------|--------------|
| | | | | | | 10 30 50 70 90% | ○ | |
| | 0.4 | TOPSOIL- clay - black - moist, soft - rootlets | 30 | | | | | |
| 1 | | | 25 | | | | | |
| | | CLAY - few silt - brown - oxidized, calcareous - laminated, fractured - moist, stiff - iron and manganese staining - @ 3.8 m silt lenses - @ 5.3 m salt crystals | 25 | | | | | |
| 2 | | | 25 | | | | | |
| 3 | | | 25 | | | | | |
| 4 | | | 25 | | | | | |
| 5 | | | 40 | | | | | |
| 6 | | | 30 | | | | | |
| 7 | | | 40 | | | | | |
| | 7.2 | SILT - little clay - brown - oxidized, calcareous - moist, soft - layered, fractured - @ 8.7 m till seams | 25 | | | | | |
| 8 | | | 40 | | | | | |
| 9 | | | 40 | | | | | |

1300 1500 1700 1900 2100
 ▲ DRY DENSITY - kg/m³



Clifton Associates Ltd.

PROJECT ESSO TERMINAL 550 McDONALD

LOCATION REGINA, SASKATCHEWAN

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TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|---|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>101.68 m</u> | TEST HOLE NO. <u>107</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | SHEAR STRENGTH - kPa <input type="checkbox"/> UNCONF. <input type="checkbox"/> POCKET PEN. <input checked="" type="checkbox"/> LAB VANE 50 100 150 200 |
| LOGGED BY <u>R. Donahue</u> | | |


| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT WATER CONTENT LIQUID LIMIT |
|------------|--------|--|-----|--------|-----|--|
| 10 | + | SILT - continued... - @ 9.4 m gray - unoxidized - moist, soft - variable moisture with depth | 45 | | | |
| 11 | + | | 20 | | | |
| 12 | + | | 40 | | | |
| 13 | . | SAND - very fine grained, little silt - gray - unoxidized - moist to dry - variable moisture with depth | 0 | | | |
| 14 | . | | 10 | | | |
| 15 | . | | 10 | | | |
| 16 | X | TILL - silt with sand - gray - unoxidized - massive - variable moisture with depth | 170 | | | |
| 17 | X | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. 3) Piezometer installed in Test Hole. | 25 | | | |
| 18 | X | 18.4 E.O.H. | 10 | | | |

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| Clifton Associates Ltd. | PROJECT <u>ESSO TERMINAL 550 McDONALD</u> |
| | LOCATION <u>REGINA, SASKATCHEWAN</u> |
| | PROJECT NO. <u>R1087</u> PAGE NO. <u>2 of 2</u> |

TEST HOLE LOG

| | | |
|-----------------------------|-----------------------------|--|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>99.95 m</u> | TEST HOLE NO. <u>108</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | SHEAR STRENGTH - kPa <input type="checkbox"/> UNCONF. <input type="checkbox"/> POCKET PEN. <input checked="" type="checkbox"/> LAB VANE <small>50 100 150 200</small> |
| LOGGED BY <u>R. Donahue</u> | | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT WATER CONTENT LIQUID LIMIT | | | | |
|------------|----------------------------|---|-----|--------|-----|--|----|----|----|-----|
| | | | | | | 10 | 30 | 50 | 70 | 90% |
| 0.15 | [Symbol: Dotted] | TOPSOIL- clay - black - moist, soft - rootlets | 10 | | | | | | | |
| 1 | [Symbol: Horizontal lines] | CLAY - few silt - brown - oxidized, calcareous - laminated, fractured | 30 | | | | | | | |
| 2 | [Symbol: Horizontal lines] | - moist, stiff - iron and manganese staining - silt lenses - salt crystals | 25 | | | | | | | |
| 3 | [Symbol: Horizontal lines] | | 40 | | | | | | | |
| 4 | [Symbol: Horizontal lines] | | 40 | | | | | | | |
| 5 | [Symbol: Horizontal lines] | | 50 | | | | | | | |
| 6 | [Symbol: Horizontal lines] | SILT - little clay - gray - unoxidized - moist, soft - layered, fractured - variable moisture with depth | 50 | | | | | | | |
| 7 | [Symbol: Crosses] | TILL - silt with sand - gray - unoxidized - massive - variable moisture with depth - @ 8.4 m silt seam | 30 | | | | | | | |
| 8 | [Symbol: Crosses] | | | | | | | | | |
| 9 | [Symbol: Diagonal lines] | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. | 10 | | | | | | | |
| 9.1 | [Symbol: Diagonal lines] | E.O.H. | | | | | | | | |

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|---|---|------------------------|
|  | PROJECT <u>ESSO TERMINAL 550 McDONALD</u> | |
| | LOCATION <u>REGINA, SASKATCHEWAN</u> | |
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TEST HOLE LOG

| | | |
|-----------------------------|------------------------------|--|
| DATE <u>27 May 1991</u> | GROUND ELEV. <u>102.79 m</u> | TEST HOLE NO. <u>109</u> |
| DRILL <u>Brat 22</u> | LOCATION _____ | SHEAR STRENGTH - kPa <input type="checkbox"/> UNCONF. <input type="checkbox"/> POCKET PEN <input checked="" type="checkbox"/> LAB VANE 50 100 150 200 |
| LOGGED BY <u>R. Donahue</u> | _____ | |

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT WATER CONTENT LIQUID LIMIT | | | | | |
|------------|--------|---|-----|--------|-----|--|----|----|----|-----|--|
| | | | | | | 10 | 30 | 50 | 70 | 90% | |
| | 0.3 | TOPSOIL- clay - black - moist, soft - rootlets | 40 | | | | | | | | |
| 1 | | CLAY - few silt - brown - oxidized, calcareous - laminated, fractured - moist, soft - @ 2.3 m iron and manganese staining - salt crystals | 25 | | | | | | | | |
| 2 | | | 25 | | | | | | | | |
| 3 | | | 30 | | | | | | | | |
| 4 | | | 30 | | | | | | | | |
| 5 | | | 40 | | | | | | | | |
| 6 | | | 40 | | | | | | | | |
| 7 | 6.7 | SILT - little clay - brown - oxidized, calcareous - moist, soft - @ 8.2 m till seam | 25 | | | | | | | | |
| 8 | | | 30 | | | | | | | | |
| 9 | | | | | | | | | | | |

1300 1500 1700 1900 2100
 ▲ DRY DENSITY - kg/m³



Clifton Associates Ltd.

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| PROJECT | <u>ESSO TERMINAL 550 McDONALD</u> |
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TEST HOLE LOG

DATE 27 May 1991
 DRILL Brat 22
 LOGGED BY R. Donahue

GROUND ELEV. 102.52 m
 LOCATION _____

TEST HOLE NO. 110
 SHEAR STRENGTH - kPa
 UNCONF. POCKET PEN. LAB VANE
 50 100 150 200

| DEPTH m | SYMBOL | DESCRIPTION OF MATERIALS | ppm | SAMPLE | USC | PLASTIC LIMIT | | | WATER CONTENT | | | LIQUID LIMIT | | | | | | |
|------------|-----------|---|-----|--------|-----|---------------|----|----|---------------|-----|----|--------------|----|----|-----|--|--|--|
| | | | | | | 10 | 30 | 50 | 70 | 90% | 10 | 30 | 50 | 70 | 90% | | | |
| 0.3 | [Pattern] | TOPSOIL- clay - black - moist, soft - rootlets | 20 | | | | | | | | | | | | | | | |
| 1 | [Pattern] | CLAY - few silt - brown - oxidized, calcareous - moist, soft - iron and manganese staining | 40 | | | | | | | | | | | | | | | |
| 2 | [Pattern] | | 55 | | | | | | | | | | | | | | | |
| 3 | [Pattern] | | 50 | | | | | | | | | | | | | | | |
| 4 | [Pattern] | | 50 | | | | | | | | | | | | | | | |
| 5 | [Pattern] | | 50 | | | | | | | | | | | | | | | |
| 6.4 | [Pattern] | SILT - little clay - brown - oxidized, calcareous - moist, soft | 30 | | | | | | | | | | | | | | | |
| 7 | [Pattern] | | 40 | | | | | | | | | | | | | | | |
| 8 | [Pattern] | | 40 | | | | | | | | | | | | | | | |
| 9.1 | [Pattern] | Notes: 1) 150 mm diameter continuous flight solid stem auger used. 2) No seepage or sloughing noted during drilling. | 40 | | | | | | | | | | | | | | | |
| | [Pattern] | E.O.H. | | | | | | | | | | | | | | | | |



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