Prepared By/Date: SJR 3/6/14

Checked By/Date: MBL 3/6/14

**TABLE 2.1**
**TESTING SUMMARY - BORINGS**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Boring Number | Equipment | Depth (ft) | | As-Drilled Coordinates/Elevations | | | Drilling/Sampling | | | Downhole Testing | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drill Rig | Proposed | Actual | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) | SPT (1) | Rock Core | UD(2) | Rock Pressuremeter | Packer Testing | Temperature Conductivity | PS Velocity | Televiewer | Geophysical Suite | Calliper |
| MP-101 | CME-750X(P) | 540 | 540.6 | 570249.6 | 2448355.2 | 800.5 | X | X | | | X | X | X | X | X | X |
| MP-102 | CME-750X(P) | 350 | 350.6 | 570097.9 | 2448404.3 | 797.9 | X | X | | | | | X | X | X | X |
| MP-103 | D-120 (M&W) | 175 | 174.5 | 570287.2 | 2448367.5 | 800.6 | X | X | | | | | | | | |
| MP-104 | CME 55 (TSD) | 175 | 177.2 | 570093.9 | 2448449.1 | 797.7 | X | X | | | | | | | | |
| MP-105 | CME-750X(P) | 175 | 195.2 | 570210.2 | 2448343.5 | 800.2 | X | X | | X | | | | | | |
| MP-106 | CME 550X (PD) | 175 | 174.2 | 570136.4 | 2448377.2 | 798.7 | X | X | | | | | | | | |
| MP-107 | CME 550X (PD) | 175 | 174.6 | 570291.6 | 2448284.8 | 801.6 | X | X | | | | | | | | |
| MP-108 | CME 550X (PD) | 175 | 174.3 | 570051.7 | 2448376.3 | 798.5 | X | X | | | | | | | | |
| MP-109 | CME 550X (PD) | 175 | 174.0 | 570144.6 | 2448295.8 | 799.9 | X | X | | | | | | | | |
| MP-110 | CME 550X (PD) | 175 | 174.0 | 570190.7 | 2448403.3 | 798.7 | X | X | | | | | | | | |
| MP-111 | CME 550X (PD) | 175 | 173.9 | 570328.7 | 2448345.0 | 801.1 | X | X | | | | | X | X | X | X |
| MP-111 PS (7) | Schram T450 BH | 65 | 59.5 | 570345.7 | 2448334.2 | 801.6 | | | | | | | X | | | |
| MP-111 UD | D-120 (M&W) | N/A | 20.0 | 570356.0 | 2448326.4 | 801.7 | | | X | | | | | | | |
| MP-112 (3) | CME 75 (TSD) | 175 | 177.5 | 570261.9 | 2448472.1 | 799.2 | | X | | | | | X | X | X | |
| MP-113 (3) | CME 75 (TSD) | 175 | 178.0 | 570184.9 | 2448486.5 | 797.5 | | X | | | | | X | X | X | |
| MP-114 | CME 75 (TSD) | 175 | 175.2 | 570052.5 | 2448464.6 | 797.2 | X | X | | | | | | | | |
| MP-115 | CME 550X (PD) | 100 | 99.1 | 570094.9 | 2448562.0 | 796.9 | X | X | | | | | | | | |
| MP-116 | CME-750X(P) | 100 | 100.4 | 570202.4 | 2448560.2 | 797.6 | X | X | | | | | | | | |
| MP-117 | CME 550X (PD) | 100 | 99.7 | 570296.0 | 2448520.2 | 800.0 | X | X | | | | | | | | |
| MP-118 | CME 550X (PD) | 100 | 99.1 | 570370.9 | 2448445.5 | 799.8 | X | X | | | | | | | | |
| MP-119 | CME-55LC (CT) | 100 | 100.9 | 570414.6 | 2448544.7 | 802.1 | X | X | | | | | | | | |
| MP-120 | CME 55 (TSD) | 350 | 350.0 | 570319.1 | 2448584.2 | 800.1 | X | X | | | | | X | X | X | X |
| MP-121 | CME-550X(P) | 100 | 100.9 | 570227.9 | 2448623.1 | 797.6 | X | X | | | | | | | | |
| MP-122 | CME-550X(P) | 100 | 99.3 | 570130.4 | 2448654.4 | 796.7 | X | X | | | | | | | | |
| MP-122 PS-A (7) | Schram T450 BH | 50 | 38.7 | 570140.5 | 2448638.2 | 796.7 | | | | | | | X | | | |
| MP-122 PS-B (7) | Schram T450 BH | 50 | 51.0 | 570117.8 | 2448648.1 | 796.6 | | | | | | | X | | | |

Prepared By/Date: SJR 3/6/14

Checked By/Date: MBC 3/6/14

**TABLE 2.1**
**TESTING SUMMARY - BORINGS**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Boring Number | Equipment | Depth (ft) | | As-Drilled Coordinates/Elevations | | | Drilling/Sampling | | | Downhole Testing | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drill Rig | Proposed | Actual | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) | SPT (1) | Rock Core | UD(2) | Rock Pressuremeter | Packer Testing | Temperature Conductivity | PS Velocity | Televiewer | Geophysical Suite | Calliper |
| MP-122 UD-A | D-120 (M&W) | N/A | 14.2 | 570128.9 | 2448643.7 | 796.6 | | | X | | | | | | | |
| MP-122 UD-B | D-120 (M&W) | N/A | 16.6 | 570155.3 | 2448670.6 | 797.0 | | | X | | | | | | | |
| MP-201 | CME-55LC (CT) | 420 | 420.6 | 571083.7 | 2447980.8 | 790.9 | X | X | | | | | X | X | X | X |
| MP-202 | CME-55LC (CT) | 460 | 461.0 | 570922.1 | 2448050.0 | 811.8 | X | X | | | X | X | X | X | X | X |
| MP-203 | CME-55LC (CT) | 225 | 225.6 | 571118.2 | 2448014.3 | 791.5 | X | X | | | | | | | | |
| MP-204 | CME 55 (TSD) | 175 | 176.9 | 570921.7 | 2448097.0 | 812.0 | X | X | | | | | | | | |
| MP-205 | CME 55LC (CT) | 225 | 225.5 | 571025.3 | 2448006.8 | 810.9 | X | X | | X | | | | | | |
| MP-206 | CME-55(CT) | 175 | 176.4 | 570964.0 | 2448025.6 | 811.8 | X | X | | | | | | | | |
| MP-207 | CME-750X(P) | 225 | 225.7 | 571101.6 | 2447930.3 | 779.7 | X | X | | | | | | | | |
| MP-208 | D-120 (M&W) | 175 | 174.6 | 570880.5 | 2448024.1 | 811.9 | X | X | | | | | | | | |
| MP-209 | CME-55LC (CT) | 225 | 225.7 | 570972.7 | 2447945.1 | 807.7 | X | X | | | | | | | | |
| MP-210 | CME 550X (PD) | 175 | 174.4 | 571019.3 | 2448051.2 | 809.9 | X | X | | | | | | | | |
| MP-211 | CME 55 (TSD) | 175 | 176.0 | 571162.0 | 2447986.6 | 779.8 | X | X | | | | | | | | |
| MP-212 (3) | CME 75 (TSD) | 175 | 177.8 | 571093.5 | 2448107.3 | 810.7 | | X | | | | | X | X | X | |
| MP-213 (3) | CME 75 (TSD) | 175 | 177.3 | 571009.3 | 2448148.5 | 813.0 | | X | | | | | X | X | X | |
| MP-214 | CME 55 | 175 | 175.8 | 570881.2 | 2448110.8 | 812.5 | X | X | | | | | | | | |
| MP-215 | CME-750X(P) | 100 | 100.6 | 570924.5 | 2448210.7 | 813.4 | X | X | | | | | | | | |
| MP-216 | CME-55(CT) | 100 | 101.5 | 571031.0 | 2448209.1 | 813.4 | X | X | | | | | | | | |
| MP-217 | D 120 | 100 | 99.3 | 571125.2 | 2448169.2 | 811.6 | X | X | | | | | | | | |
| MP-218 | D-120 (M&W) | 100 | 99.6 | 571176.5 | 2448147.4 | 810.9 | X | X | | | | | | | | |
| MP-219 (4) | CME-55(CT) | 270 | 96.5 | 571223.7 | 2448195.7 | 812.9 | X | X | | | | | | | | |
| MP-219A (5) | CME-55(CT) | 270 | 269.1 | 571254.2 | 2448184.6 | 808.6 | X | X | | | | | X | X | X | X |
| MP-220 | CME-55(CT) | 100 | 101.3 | 571146.9 | 2448232.2 | 813.2 | X | X | | | | | | | | |
| MP-221 | CME-55(CT) | 100 | 101.2 | 571056.6 | 2448270.6 | 813.1 | X | X | | | | | | | | |
| MP-222 | CME-55LC (CT) | 100 | 101.0 | 570965.5 | 2448308.6 | 812.9 | X | X | | | | | | | | |
| MP-401 | D-120 (M&W) | 420 | 419.6 | 571954.2 | 2447605.1 | 817.7 | X | X | | | X | X | X | X | X | X |

Prepared By/Date: SSR 3/6/14

Checked By/Date: MBC 3/6/14

**TABLE 2.1**
**TESTING SUMMARY - BORINGS**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Boring Number | Equipment | Depth (ft) | | As-Drilled Coordinates/Elevations | | | Drilling/Sampling | | | Downhole Testing | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drill Rig | Proposed | Actual | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) | SPT (1) | Rock Core | UD(2) | Rock Pressuremeter | Packer Testing | Temperature Conductivity | PS Velocity | Televiewer | Geophysical Suite | Calliper |
| MP-402 | D-120 (M&W) | 200 | 199.3 | 571941.4 | 2447479.8 | 816.5 | X | X | | | | | | | | |
| MP-403 | D-120 (M&W) | 200 | 199.2 | 571646.0 | 2447607.5 | 836.2 | X | X | | | | | | | | |
| MP-404 | D-120 (M&W) | 200 | 199.8 | 571709.4 | 2447758.1 | 837.1 | X | X | | | | | | | | |
| MP-405 (4) | D-120 (M&W) | 200 | 20.4 | 571979.1 | 2447644.2 | 816.9 | X | X | | | | | | | | |
| MP-405A (5) | D-120 (M&W) | 200 | 199.4 | 571975.7 | 2447647.3 | 817.1 | X | X | | | | | | | | |
| MP-406 | CME 55 (TSD) | 200 | 201.3 | 571775.0 | 2447965.9 | 855.1 | X | X | | | | | | | | |
| MP-407 | CME 55 (TSD) | 200 | 200.2 | 569888.8 | 2447094.2 | 761.5 | X | X | | | | | | | | |
| MP-408 (6) | N/A | N/A | N/A | N/A | N/A | N/A | | | | | | | | | | |
| MP-409 | CME-55(CT) | 200 | 251.5 | 570584.3 | 2448158.9 | 807.0 | X | X | | | | X | | X | X | X |
| MP-410 | CME-55(CT) | 200 | 201.0 | 570774.2 | 2448368.8 | 809.4 | X | X | | | | | | | | |
| MP-411 | D-120(mw2) | 200 | 199.6 | 571500.5 | 2447500.3 | 836.8 | X | X | | | | | | | | |
| MP-412 | CME-750X(P) | 320 | 321.0 | 571424.0 | 2447850.6 | 823.7 | X | X | | | | | X | X | X | X |
| MP-413 | D-120 (M&W) | 200 | 199.2 | 571645.7 | 2446938.7 | 809.0 | X | X | | | | | | | | |
| MP-414 | D-120 (M&W) | 200 | 199.4 | 572070.0 | 2447564.7 | 817.5 | X | X | | | | | | | | |
| MP-415 | CME-55(TSD) | 320 | 320.1 | 569577.1 | 2448164.8 | 784.3 | X | X | | | X | X | X | X | X | X |
| MP-416 | CME-55(CT) | 320 | 321.7 | 569978.3 | 2447520.0 | 809.6 | X | X | | | X | X | X | X | X | X |
| MP-417 | CME-55(TSD) | 320 | 320.1 | 569915.4 | 2446630.3 | 772.7 | X | X | | | X | X | X | X | X | X |
| MP-418 (4) | CME-750X(P) | 320 | 87.8 | 570500.3 | 2447030.2 | 811.6 | X | X | | | | | | | | |
| MP-418A (5) | CME-750X(P) | 320 | 320.6 | 570514.7 | 2447049.6 | 811.1 | X | X | | | X | X | X | X | X | X |
| MP-419 | D-120 (M&W) | 320 | 321.1 | 571269.8 | 2446700.6 | 799.6 | X | X | | | X | X | X | X | X | X |
| MP-420 | D-120 (M&W) | 320 | 319.4 | 572033.0 | 2446918.3 | 803.1 | X | X | | | X | X | X | X | X | X |
| MP-421 | CME 55 (TSD) | 320 | 320.3 | 570532.3 | 2446439.6 | 803.6 | X | X | | | X | X | X | X | X | X |
| MP-422 | D-120 (M&W) | 320 | 320.0 | 570423.7 | 2448732.0 | 799.9 | X | X | | | X | X | X | X | X | X |
| MP-423 | D-120 (M&W) | 320 | 319.3 | 571470.3 | 2448276.4 | 799.0 | X | X | | | X | X | X | X | X | X |
| MP-424 (3) | CME-75(TSD) | 270 | 273.2 | 570450.2 | 2448361.2 | 800.6 | | X | | | | | | | | |
| MP-425 (3) | CME 75 (TSD) | 270 | 272.9 | 570814.6 | 2448199.5 | 811.9 | | X | | | | | X | X | X | |

Prepared By/Date: SJC 3/6/14
Checked By/Date: MBC 3/6/14

**TABLE 2.1**
**TESTING SUMMARY - BORINGS**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Boring Number | Equipment | Depth (ft) | | As-Drilled Coordinates/Elevations | | | Drilling/Sampling | | | Downhole Testing | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drill Rig | Proposed | Actual | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) | SPT (1) | Rock Core | UD(2) | Rock Pressuremeter | Packer Testing | Temperature Conductivity | PS Velocity | Televiewer | Geophysical Suite | Calliper |
| MP-426 (3) | CME 75 (TSD) | 270 | 272.3 | 571764.5 | 2447811.0 | 842.2 | | X | | | | | X | X | X | |
| MP-427 (6) | N/A | N/A | N/A | N/A | N/A | N/A | | | | | | | | | | |
| MP-428 | CME-750X(P) | 250 | 250.7 | 570755.5 | 2448681.6 | 803.8 | X | X | | | | X | | X | X | X |
| MP-429 | D-120 (M&W) | 200 | 199.2 | 569975.5 | 2448591.1 | 796.0 | X | X | | | | X | | X | X | X |
| CC-B1 | CME-55LC (CT) | 350 | 140.6 | 569036.1 | 2449632.4 | 800.3 | X | X | | | | | | | | |
| CC-B2 | CME-750X(P) | 250 | 206.0 | 568891.0 | 2449759.9 | 799.8 | X | X | | | | | | | | |

Horizontal/Vertical Datum: Tennessee State Plane Coordinates (East Zone) NAD 1983/NAVD 1988

(1) SPT - Standard Penetration Test
(2) UD - Undisturbed Sampling (Shelby Tube Sampler)
(3) Angled Core Boring-Inclined approximately 25 degrees from vertical.
(4) Boring terminated early due to mechanical issues. Offset boring drilled.
(5) Offset boring
(6) Boring deleted from program.
(7) Hole drilled with air rotary rig. PVC casing grouted in place for PS Velocity testing.

Prepared By/Date: SJZ 1/13/14
Checked By/Date: BSA 1/13/14

**TABLE 2.2**
**TESTING SUMMARY - TEST PITS**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Test Pit Number | Termination Depth (ft) | Coordinates/Elevations of Corners | | | Sampling |
|---|---|---|---|---|---|
| | | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) | |
| TP-1 | 8 | 570139.2 | 2448648.8 | 796.9 | TP-1 S-1 6.0' to 8.0' |
| | | 570141.5 | 2448650.9 | 796.7 | |
| | | 570137.3 | 2448656.5 | 796.7 | |
| | | 570134.8 | 2448654.1 | 796.8 | |
| TP-2 | 3 | 570932.4 | 2448044.9 | 811.5 | TP - 2 S-1 1.0' to 2.5' |
| | | 570927.4 | 2448048.9 | 811.7 | |
| | | 570925.8 | 2448047.5 | 811.8 | |
| | | 570931.1 | 2448042.7 | 811.4 | |
| TP-3 | 12 | 569034.6 | 2449640.9 | 800.4 | TP - 3 S-1 3.0' to 6.0' |
| | | 569035.7 | 2449643.4 | 800.5 | |
| | | 569024.2 | 2449644.7 | 800.8 | TP - 3 S-2 10.0' to 12.0' |
| | | 569023.5 | 2449642.6 | 800.8 | |

Horizontal/Vertical Datum: Tennessee State Plane Coordinates (East Zone) NAD 1983/NAVD 1988

Each sample consisted of 2-3 five gallon buckets and 2 jar samples.

Prepared By/Date: SJR 1/12/14
Checked By/Date: [illegible] 1/12/14

**TABLE 2.3**
**TESTING SUMMARY - SURFACE GEOPHYSICS**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Point ID | Coordinates/Elevations - Start Point | | | Coordinates/Elevations - End Point | | |
|---|---|---|---|---|---|---|
| | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) | Northing (US ft) | Easting (US ft) | Ground Surface Elevation (ft) |
| Seismic Refraction Line 1 (SRS-1) | 570478.0 | 2448238.1 | 804.4 | 571018.7 | 2448008.3 | 810.2 |
| Seismic Refraction Line 2 (SRS-2) | 570729.1 | 2448337.1 | 808.1 | 571161.5 | 2448152.9 | 810.9 |
| Seismic Refraction Line 3 (SRS-3) | 569842.1 | 2448507.9 | 795.0 | 570382.6 | 2448277.8 | 802.8 |
| Seismic Refraction Line 4 (SRS-4) | 569899.9 | 2448644.7 | 792.8 | 570440.7 | 2448415.1 | 800.9 |
| Seismic Refraction Line 5 (SRS-5) | 570440.0 | 2447999.1 | 807.9 | 570833.9 | 2448435.0 | 810.9 |
| Seismic Refraction Line 6 (SRS-6) | 570381.1 | 2447403.0 | 768.3 | 570867.0 | 2447733.2 | 776.7 |
| | | | | | | |
| Seismic Reflection Line 1 (SRL-1) | 571414.0 | 2448125.9 | 807.5 | 568908.0 | 2449765.8 | 801.0 |
| Seismic Reflection Line 2 (SRL-2) | 570542.5 | 2446421.7 | 801.2 | 569476.7 | 2448346.3 | 780.0 |
| | | | | | | |

For Refraction Lines: start coordinates from as-built survey; end coordinates from seismic refraction report
For Reflection Lines: start and end coordinates from as-built survey
Horizontal/Vertical Datum: Tennessee State Plane Coordinates (East Zone) NAD 1983/NAVD 1988

Prepared By/Date: MAL 5/12/14
Checked By/Date: WBD 5/12/14

**TABLE 3.1**
**OBSERVATION WELL SUMMARY**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Well Number | Well Construction | | | | | As-Drilled Coordinates | | Testing/Sampling | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Riser / Screen Diameter (in) | Elevation Top of Casing (ft) | Depth of Well Cap (feet below Ground Surface) | Elevation Top of Screen (ft) | Elevation Bottom of Screen (ft) | Northing (US ft) | Easting (US ft) | Slug Testing | Long Term Transducer | Groundwater Sampling |
| OW-101U | 2 | 803.72 | 46.5 | 774.6 | 754.6 | 570235.5 | 2448339.3 | X | X | |
| OW-101L | 2 | 803.48 | 158.5 | 662.7 | 642.7 | 570262.0 | 2448370.8 | X | X | X |
| OW-101D | 2 | 803.57 | 251.0 | 570.2 | 550.2 | 570274.9 | 2448386.4 | X | X | |
| OW-202U | 2 | 815.38 | 36.2 | 796.1 | 776.1 | 570946.0 | 2448081.1 | | X | |
| OW-202L | 2 | 815.05 | 171.0 | 661.5 | 641.5 | 570934.2 | 2448064.9 | X | X | X |
| OW-202D | 2 | 815.00 | 296.9 | 535.7 | 515.7 | 570909.7 | 2448033.7 | X | X | |
| OW-401U | 2 | 820.48 | 35.7 | 802.2 | 782.2 | 571967.9 | 2447619.9 | X | | |
| OW-401L | 2 | 820.57 | 155.7 | 682.0 | 662.0 | 571973.8 | 2447628.0 | X | | X |
| OW-401D | 2 | 821.28 | 247.1 | 591.6 | 571.6 | 571941.2 | 2447589.7 | X | | |
| OW-409U | 2 | 809.70 | 75.4 | 752.0 | 732.0 | 570557.1 | 2448130.3 | X | X | X |
| OW-409L | 2 | 809.51 | 109.6 | 717.6 | 697.6 | 570570.8 | 2448143.3 | X | X | X |
| OW-415U | 2 | 787.22 | 48.6 | 756.0 | 736.0 | 569590.2 | 2448180.2 | X | | X |
| OW-415L | 2 | 786.75 | 175.4 | 628.8 | 608.8 | 569564.4 | 2448148.1 | X | | |
| 0W-416U | 2 | 812.82 | 95.9 | 734.1 | 714.1 | 569990.0 | 2447535.9 | X | | |
| OW-416L | 2 | 812.73 | 131.1 | 698.8 | 678.8 | 569965.2 | 2447504.9 | X | | X |
| OW-417U | 2 | 775.03 | 70.5 | 722.2 | 702.2 | 569927.1 | 2446646.9 | X | X | |
| OW-417L | 2 | 775.71 | 115.5 | 677.7 | 657.7 | 569903.0 | 2446614.6 | X | X | X |
| OW-418U | 2 | 812.94 | 105.5 | 715.0 | 705.0 | 570526.8 | 2447065.0 | X | | X |
| OW-418L | 2 | 814.41 | 157.3 | 674.6 | 654.6 | 570506.0 | 2447038.8 | X | | |
| OW-419U | 2 | 803.13 | 77.7 | 742.8 | 722.8 | 571283.4 | 2446716.1 | X | | X |
| OW-419L | 2 | 802.72 | 125.0 | 695.3 | 675.3 | 571257.7 | 2446683.4 | X | | |
| OW-420U | 2 | 805.70 | 46.5 | 776.9 | 756.9 | 572009.6 | 2446886.0 | | | |
| OW-420L | 2 | 806.15 | 151.4 | 672.2 | 652.2 | 572021.1 | 2446902.0 | X | | X |
| OW-421U | 2 | 808.27 | 75.5 | 750.4 | 730.4 | 570557.7 | 2446471.7 | X | | |
| OW-421L | 2 | 807.81 | 125.3 | 700.0 | 680.0 | 570544.2 | 2446455.6 | X | | X |
| OW-421D | 2 | 805.20 | 196.2 | 626.8 | 606.8 | 570520.1 | 2446424.4 | X | | |

Prepared By/Date: NBL 5/12/14
Checked By/Date: WBD 5/12/14

**TABLE 3.1**
**OBSERVATION WELL SUMMARY**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Well Number | Well Construction | | | | | As-Drilled Coordinates | | Testing/Sampling | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Riser / Screen Diameter (in) | Elevation Top of Casing (ft) | Depth of Well Cap (feet below Ground Surface) | Elevation Top of Screen (ft) | Elevation Bottom of Screen (ft) | Northing (US ft) | Easting (US ft) | Slug Testing | Long Term Transducer | Groundwater Sampling |
| OW-422U* | 2 | 804.9 | 41.5 | 781.4 | 761.4 | 570450.2 | 2448763.8 | | | |
| OW-422L* | 2 | 803.7 | 178.5 | 643.7 | 623.7 | 570438.1 | 2448748.1 | | | |
| OW-422D* | 2 | 805.4 | 310.5 | 512.1 | 492.1 | 570444.3 | 2448756.2 | | | |
| OW-423U | 2 | 800.21 | 62.7 | 755.2 | 735.2 | 571494.1 | 2448309.5 | X | X | X |
| OW-423L | 2 | 801.13 | 160.1 | 658.4 | 638.4 | 571481.6 | 2448293.2 | X | X | |
| OW-423D | 2 | 802.86 | 268.6 | 551.8 | 531.8 | 571457.9 | 2448262.0 | X | X | |
| OW-428U | 2 | 807.78 | 60.9 | 763.9 | 743.9 | 570781.4 | 2448710.6 | X | | |
| OW-428L | 2 | 807.06 | 135.7 | 688.7 | 668.7 | 570767.9 | 2448696.6 | X | | |
| OW-428D | 2 | 807.03 | 210.7 | 613.5 | 593.5 | 570741.9 | 2448666.5 | | | |
| OW-429U | 2 | 799.17 | 57.3 | 759.4 | 739.4 | 569989.1 | 2448606.2 | X | | |
| OW-429L | 2 | 799.49 | 165.6 | 651.2 | 631.2 | 569965.3 | 2448576.5 | | | |
| PT-OW-U1 | 2 | 801.52 | 62.3 | 756.8 | 736.8 | 571512.5 | 2448235.3 | | | |
| PT-OW-L1 | 2 | 803.13 | 160.2 | 660.1 | 640.1 | 571493.2 | 2448235.2 | | | |
| PT-OW-U2 | 2 | 805.31 | 62.5 | 760.2 | 740.2 | 571489.5 | 2448182.4 | | | |
| PT-OW-L2 | 2 | 804.32 | 160.3 | 661.1 | 641.1 | 571478.7 | 2448192.1 | | | |
| PT-OW-U3 | 2 | 801.65 | 63.1 | 756.6 | 736.6 | 571418.4 | 2448310.6 | | | |
| PT-OW-L3 | 2 | 803.12 | 161.0 | 659.6 | 639.6 | 571420.6 | 2448290.2 | | | |
| PT-PW | 6 | 804.03 | 171.8 | 762.8 | 632.8 | 571432.2 | 2448229.1 | | | |

* Well installation dimensions are approximate due to access limitation for AMEC survey personnel.
Horizontal/Vertical Datum: Tennessee State Plane Coordinates (East Zone) NAD 1983/NAVD 1988
=Revised for Rev. 2 per Bechtel comments

Prepared By/Date: 4/9/14

Checked By/Date: CDT 4/9/14

# TABLE 3.2
## FIELD PARAMETER SUMMARY - GROUNDWATER SAMPLING
## CLINCH RIVER SMR PROJECT
## OAK RIDGE, TENNESSEE
## AMEC PROJECT NO. 6468-13-1072

| Well Number | | Parameter (1) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Date | pH (std units) | Specific Conductance (mS/cm) | Turbidity (ntu) | Dissolved Oxygen (mg/L) | Temperature (°C) (2) | Redox potential (± mv) | Purge Water Appearance |
| OW-101L | 11/19/2013 | 7.17 | 0.620 | 3.86 | 0.05 | 16.5 | -152.5 | Clear, faint sulphur odor |
| OW-202L (3) | 11/19/2013 | 9.58 | 0.978 | 193.00 | 5.16 | 17.0 | -116.9 | Red, purged dry |
| OW-401L | 11/21/2013 | 7.78 | 0.340 | 14.30 | 4.21 | 19.5 | 9.7 | Clear |
| OW-409U | 11/19/2013 | 7.10 | 0.672 | 49.70 | 45.30 | 17.2 | 186.2 | Clear |
| OW-409L | 11/18/2013 | 7.80 | 0.849 | 25.20 | 3.31 | 16.0 | 30.5 | Clear |
| OW-415U | 11/20/2013 | 7.24 | 0.598 | 122.00 | 3.61 | 17.3 | 75.7 | Clear to slightly cloudy |
| OW-416L | 11/21/2013 | 7.04 | 0.694 | 1.07 | 0.25 | 17.4 | -188.1 | Clear, sulphur odor |
| OW-417L | 11/21/2013 | 7.21 | 0.609 | 2.55 | 1.51 | 16.3 | 53.4 | Clear |
| OW-418U | 11/19/2013 | 7.47 | 0.517 | 2.84 | 1.18 | 18.8 | 119.8 | Clear |
| OW-419U | 11/20/2013 | 6.97 | 0.532 | 1.27 | 1.15 | 16.3 | 63.0 | Clear |
| OW-420L | 11/22/2013 | 7.56 | 0.472 | 69.90 | 9.21 | 17.7 | 57.5 | Clear |
| OW-421L | 11/22/2013 | 8.00 | 0.400 | 17.50 | 8.53 | 17.0 | 44.3 | Clear |
| OW-423U | 11/19/2013 | 6.99 | 0.599 | 5.82 | 4.70 | 16.7 | 90.6 | Clear |
| | | | | | | | | |

(1) Parameter values shown are at time of sampling unless otherwise noted
(2) Values rounded to nearest tenth
(3) Well purged dry; insufficient water for field parameter testing at time of sampling. Values are last before purged dry.

Prepared By/Date: SJR 1/13/14

Checked By/Date: RSA 1/13/14

**TABLE 4.1**
**SAMPLES PREPARED FOR Kd ADSORPTION TESTING**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Soil/Rock Samples | | | Water Samples | |
|---|---|---|---|---|
| Boring Number | Sample Type | Sample Depth | Well Number | Sample Type |
| MP-101 | Rock 1mm | 147.4-148.6 | OW-101L | Water - 2 liters |
| MP-101 | Rock 1cm | 147.4-148.6 | OW-202L | Water - 4 liters |
| MP-202 | Rock 1mm | 156.4-157.8 | OW-409U | Water - 2 liters |
| MP-202 | Rock 1cm | 156.4-157.8 | OW-409L | Water - 2 liters |
| MP-202 | Rock 1mm | 231.0-232.3 | OW-415U | Water - 2 liters |
| MP-202 | Rock 1cm | 231.0-232.3 | OW-416L | Water - 4 liters |
| MP-409 | Rock 1mm | 193.6-194.1 | OW-418U | Water - 2 liters |
| MP-409 | Rock 1cm | 193.6-194.1 | OW-419U | Water - 2 liters |
| MP-415 | Rock 1mm | 27.6-28.4 | OW-420L | Water - 2 liters |
| MP-415 | Rock 1cm | 27.6-28.4 | OW-423U | Water - 2 liters |
| MP-415 | Rock 1mm | 32.8-33.6 | | |
| MP-415 | Rock 1cm | 32.8-33.6 | | |
| MP-416 | Rock 1mm | 66.0-71.5 | | |
| MP-416 | Rock 1cm | 66.0-71.5 | | |
| MP-416 | Rock 1mm | 111.5-113.8 | | |
| MP-416 | Rock 1cm | 111.5-113.8 | | |
| MP-418A | Rock 1mm | 78.3-80.7 | | |
| MP-418A | Rock 1cm | 78.3-80.7 | | |
| MP-418A | Rock 1mm | 83.2-84.0 | | |
| MP-418A | Rock 1cm | 83.2-84.0 | | |
| MP-419 | Rock 1mm | 56.1-57.4 | | |
| MP-419 | Rock 1cm | 56.1-57.4 | | |
| MP-420 | Rock 1mm | 136.4-137.8 | | |
| MP-420 | Rock 1cm | 136.4-137.8 | | |
| MP-423 | Rock 1mm | 69.4-70.9 | | |
| MP-423 | Rock 1cm | 69.4-70.9 | | |
| MP409 | Soil | 48.4-49.6 | | |
| | | | | |

Samples shipped to Argonne National Laboratory for Kd testing directed by Bechtel

Prepared By/Date: SJR 1/13/14
Checked By/Date: RSA 1/13/14

**TABLE 4.2**
**ROCK SAMPLES SHIPPED FOR**
**LETTIS CONSULTANTS INTERNATIONAL**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Boring Number | Sample Depth | Sample Type | Sample ID Number |
|---|---|---|---|
| MP-202 | 50.1' to 50.7' | Rock Core | L6-01 |
| MP-202 | 261.0' to 261.6' | Rock Core | L6-07 |
| MP-202 | 329.9' to 330.8' | Rock Core | L6-08 |
| MP-101 | 39.1' to 40.0' | Rock Core | L6-10 |
| MP-101 | 275.6' to 276.6' | Rock Core | L6-14 |

Samples shipped by AMEC to CTL Group, Skokie, IL under AMEC Chain of Custody

Testing of samples is at the direction and supervision of Lettis Consultants International, Walnut Creek, CA

Prepared By/Date: 1/13/14 SJR

Checked By/Date: RSA 1/13/14

**TABLE 4.3**
**ROCK SAMPLES PREPARED WITH "SPECIAL CARE" PROCEDURES**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Boring Number | Samples Prepared with "Special Care" (1) | | Samples Prepared with Standard Method (2) | |
|---|---|---|---|---|
| | Sample Depth | Sample Type | Sample Depth | Sample Type |
| MP-218 | 66.7 to 67.7 | Rock Core | 67.8 to 68.8 | Rock Core |
| MP-218 | 71.3 to 72.3 | Rock Core | 72.3 to 73.3 | Rock Core |
| MP-218 | 79.5 to 80.5 | Rock Core | 80.5 to 81.5 | Rock Core |
| MP-218 | 85.3 to 86.3 | Rock Core | 86.3 to 87.3 | Rock Core |
| MP-218 | 90.3 to 91.3 | Rock Core | 91.3 to 92.3 | Rock Core |
| MP-218 | 60.3 to 61.3 | Rock Core | N/A | N/A |
| MP-218 | 74.3 to 75.3 | Rock Core | N/A | N/A |

(1) Prepared in Accordance with ASTM 5079-08 Section 7.5.2.2

(2) Corresponding Adjacent Samples Prepared as Described in Report Section 4.2.1

Prepared By/Date: 1/13/14

Checked By/Date: SSR 1/13/14

**TABLE 5.1**
**SUMMARY OF LABORATORY ORGANIZATIONS AND TESTING**
**CLINCH RIVER SMR PROJECT**
**OAK RIDGE, TENNESSEE**
**AMEC PROJECT NO. 6468-13-1072**

| Laboratory Organization | Tests Performed |
|---|---|
| AMEC - Durham, NC | Soil Testing on Disturbed Samples: Moisture content, particle size distribution, Atterberg limits, Proctor compaction |
| AMEC - Charlotte, NC | Rock Core Testing: Unit weight, specific gravity, moisture content, unconfined compressive strength (with and without stress strain) |
| AMEC - Atlanta, GA | Soil Testing on Intact Samples: Moisture content, particle size distribution, Atterberg limits, triaxial shear strength, resonant column/torsional shear |
| GeoTesting Express - Acton, MA | Rock Core Testing: Unit weight, specific gravity, slake durability, direct shear strength |
| TestAmerica, Inc. - St. Louis, MO | Geochemical Testing on Water Samples: Cations, total dissolvedsSolids,inorganic ions, alkalinity, ammonia, nitrate/nitrite |

Prepared By 3/5/14
Checked By 3/5/14

# TABLE 5.2
## SUMMARY OF SOIL INDEX TEST RESULTS
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample Number | Depth (ft) (1) | Sample Type | Gravel(2) (%) | Sand(2) (%) | Fines(3) (%) | Silt(2) (%) | 0.005mm Clay(2) (%) | USCS Symbol | Natural Moisture (%) | LL (%) | PI (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-111UD | ST-3 | 9.9-11.9 | UD | 19.8 | 12.8 | 67.4 | 17.4 | 50.0 | CH | 26.2 | 57 | 32 |
| MP-111UD | ST-5 | 17.4-19.4 | UD | 15.3 | 17.9 | 66.8 | 20.4 | 46.4 | CH | 31.0 | 56 | 32 |
| MP-114 | SS-2 | 2.5-4.0 | SS | 8.8 | 11.0 | 80.2 | 10.7 | 69.5 | CH | 29.9 | 66 | 42 |
| MP-116 | SS-9 | 23.9-25.4 | SS | 0.0 | 2.5 | 97.5 | 31.7 | 65.8 | CH | 26.5 | 62 | 40 |
| MP-117 | SS-4 | 8.8-10.0 | SS | 0.8 | 11.1 | 88.1 | 24.0 | 64.1 | CH | 32.0 | 72 | 46 |
| MP-117 | SS-7 | 19.5-21.0 | SS | 0.0 | 13.2 | 86.8 | 27.3 | 59.5 | CH | 27.1 | 68 | 46 |
| MP-122 | SS-5 | 11.1-12.6 | SS | 11.4 | 8.4 | 80.2 | 14.4 | 65.8 | ND | ND | ND | ND |
| MP-122UDA | ST-2 | 7.1-9.3 | UD | 16.6 | 8.6 | 74.8 | 20.2 | 54.6 | CH | 27.8 | 63 | 33 |
| MP-122UDA | ST-3 | 9.7-11.7 | UD | 15.5 | 7.4 | 77.1 | 16.0 | 61.1 | CH | 28.1 | 69 | 40 |
| MP-122UDA | ST-4 | 12.2-14.2 | UD | 4.9 | 9.4 | 85.7 | 15.4 | 70.3 | CH | 32.7 | 70 | 42 |
| MP-122UDB | ST-1 | 3.3-5.3 | UD | 2.7 | 4.3 | 93.0 | 20.2 | 72.8 | CH | 29.1 | 64 | 36 |
| MP-122UDB | ST-3 | 9.2-11.2 | UD | | | | | | | 39.0 | 69 | 41 |
| MP-122UDB | ST-5 | 14.6-16.6 | UD | 17.4 | 7.3 | 75.3 | 19.6 | 55.7 | CH | 27.7 | 59 | 32 |
| MP-203 | SS-3 | 5.1-6.6 | SS | 24.4 | 10.6 | 65.0 | 15.8 | 49.2 | CH | 34.3 | 56 | 35 |
| MP-207 | SS-4 | 8.6-10.1 | SS | 0.1 | 15.3 | 84.6 | 50.3 | 34.3 | CL | 10.9 | 31 | 13 |
| MP-210 | SS-4 | 8.4-9.9 | SS | 6.9 | 17.9 | 75.2 | 16.6 | 58.6 | CH | 20.3 | 51 | 31 |
| MP-217 | SS-12 | 36-37.5 | SS | 42.4 | 28.9 | 28.7 | 13.7 | 15.0 | ND | ND | ND | ND |
| MP-402 | SS-4 | 7.4-8.9 | SS | 13.1 | 16.3 | 70.6 | 8.3 | 62.3 | CH | 31.9 | 74 | 48 |
| MP-409 | SS-2 | 3.2-4.7 | SS | 11.6 | 16.2 | 72.2 | 23.4 | 48.8 | CH | 24.1 | 51 | 30 |
| MP-409 | SS-9 | 23.4-24.9 | SS | 46.2 | 25.0 | 28.8 | 12.9 | 15.9 | ND | ND | ND | ND |
| MP- 409 | SS-12 | 38.4-39.9 | SS | 0.0 | 0.6 | 99.4 | 17.5 | 81.9 | CH | 45.7 | 62 | 42 |
| MP-412 | SS-2 | 3.6-5.1 | SS | 23.7 | 3.1 | 73.2 | 7.2 | 66.0 | CH | 58.1 | 109 | 78 |
| MP-418A | SS-16 | 60.6-61.5 | SS | 4.0 | 6.5 | 89.5 | 23.8 | 65.7 | ND | ND | ND | ND |
| MP-419 | SS-13 | 44.6-46.6 | SS | 4.5 | 5.8 | 89.7 | 14.5 | 75.2 | ND | ND | ND | ND |

(1) Depth typically reported as length of drive or tube push
(2) Due to computer roundoff, particle size fractions may total 100 ± 1
(3) Fines include silt plus clay
(4) Shaded cells indicate that no test for that parameter assigned or test results not yet available
ND = Not determined; INS = Insufficient material for testing.

Prepared By 3/5/14
Checked By 3/5/14

# TABLE 5.2
## SUMMARY OF SOIL INDEX TEST RESULTS
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample Number | Depth (ft) (1) | Sample Type | Gravel(2) (%) | Sand(2) (%) | Fines(3) (%) | Silt(2) (%) | 0.005mm Clay(2) (%) | USCS Symbol | Natural Moisture (%) | LL | PI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-421 | SS-7 | 15.0-16.5 | SS | 1.0 | 8.8 | 90.2 | 8.8 | 81.4 | CH | 37.3 | 75 | 48 |
| MP-421 | SS-11 | 34.3-35.8 | SS | 0.0 | 1.1 | 98.9 | 8.8 | 90.1 | CH | 39.7 | 75 | 54 |
| MP-421 | SS-12 | 39.3-40.8 | SS | 0.0 | 2.9 | 97.1 | 6.6 | 90.5 | ND | ND | ND | ND |
| MP-423 | SS-6 | 12.4-13.9 | SS | 0.4 | 7.9 | 91.7 | 30.2 | 61.5 | CH | 21.9 | 67 | 42 |
| MP-423 | SS-9 | 25.1-26.6 | SS | 0.0 | 18.8 | 81.2 | 45.9 | 35.3 | CL | 19.0 | 45 | 24 |
| MP-423 | SS-10 | 30.1-31.6 | SS | 0.1 | 11.5 | 88.4 | 59.0 | 29.4 | ND | ND | ND | ND |
| MP-424 | SS-8 | 21.5-23.0 | SS | 7.8 | 13.9 | 78.3 | 27.9 | 50.4 | ND | ND | ND | ND |
| MP-424 | SS-10 | 31.5-33.0 | SS | 14.8 | 15.8 | 69.4 | 23.9 | 45.5 | ND | ND | ND | ND |
| MP-424 | NA | 138.4-139.6 | Core | 0.0 | 1.5 | 98.5 | 20.3 | 78.2 | ND | ND | ND | ND |
| MP-424 | NA | 154.1-155.0 | Core | 6.1 | 4.9 | 89.0 | 13.2 | 75.8 | ND | ND | ND | ND |
| CC-B1 | SS-3 | 5.9-7.4 | SS | 41.8 | 39.6 | 18.6 | ND | ND | ND | 20.1 | INS | INS |
| CC-B1 | SS-5 | 11.3-12.8 | SS | 0.0 | 19.9 | 80.1 | ND | ND | ML | 41.5 | 40 | 11 |
| CC-B1 | SS-8 | 24.1-25.6 | SS | 0.0 | 17.2 | 82.8 | 60.9 | 21.9 | ML | 28.5 | 34 | 9 |
| CC-B2 | SS-4 | 8.7-10.2 | SS | 0.0 | 31.3 | 68.7 | 37.1 | 31.6 | CL | 24.5 | 36 | 16 |
| CC-B2 | SS-7 | 16.7-18.2 | SS | 0.0 | 32.5 | 67.5 | 39.7 | 27.8 | ML | 41.8 | 44 | 17 |
| TP-1 | S-1 | 6.0-8.0 | Bulk | 16.1 | 6.2 | 77.7 | 14.2 | 63.5 | CH | 32.2 | 61 | 37 |
| TP-2 | S-1 | 1 -2.5 | Bulk | 21.1 | 19.8 | 59.1 | 26.2 | 32.9 | CL | 16.5 | 46 | 27 |
| TP-3 | S-1 | 3.0-6.0 | Bulk | 25.0 | 34.0 | 41.0 | ND | ND | SC | 20.9 | 58 | 31 |

(1) Depth typically reported as length of drive or tube push
(2) Due to computer roundoff, particle size fractions may total 100 ± 1
(3) Fines include silt plus clay
(4) Shaded cells indicate that no test for that parameter assigned or test results not yet available
ND = Not determined; INS = Insufficient material for testing.

Prepared By: JAJ 3/5/14
Checked By: JSA 3/5/14

# TABLE 5.3
## SUMMARY OF UNCONSOLIDATED UNDRAINED TEST RESULTS - SOIL
### CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Source of Sample | Sample No. | Sample Depth (ft) (1) | Sample Type | Atterberg Limits (2) | | USCS Symbol (2) | Specific Gravity (2) | Dry Unit Weight (pcf) | Moisture Content (%) | Test Data | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LL | PI | | | | | $\sigma_c$ (3) (psi) | $\varepsilon_f$ (4) (%) | Strength(5) (psi) |
| MP-111UD | ST-4 | 15.5 - 17.5 | UD | NA(6) | NA | NA | 2.75 | 100.7 | 26.8 | 14 | 15.0 | 3.988 |
| MP-122UDA | ST-4 | 12.2-14.2 | UD | 70 | 42 | CH | 2.75 | 85.5 | 36.1 | 14 | 6.7 | 10.85 |
| MP-122UDB | ST-1 | 3.3 - 5.3 | UD | 64 | 36 | CH | 2.75 | 91.9 | 29.9 | 14 | 15.0 | 14.25 |
| MP-122UDB | ST-3 | 9.2-11.2 | UD | 69 | 41 | CH | 2.75 | 87.0 | 34.0 | 14 | 9.6 | 7.354 |

(1) Sample depth shown reflects the depth of start of push plus the length of the recovered sample
(2) Atterberg Limits, USCS Symbol, and Specific Gravity are also reported in Table 5.2.; specific gravity value estimated.
(3) Confining pressure as assigned by Bechtel
(4) Strain at failure at strain rate of 1% per minute or at maximum 15% strain.
(5) Strength = Undrained Shear Strength
(6) NA = Not assigned
(7) Sample MP-122UDB ST-5, assigned for UU testing and CU testing, had insufficient material for both tests; Bechtel deleted UU testing.

Prepared By: 3/5/14
Checked By: 3/5/14

# TABLE 5.4
## SUMMARY OF CONSOLIDATED UNDRAINED TRIAXIAL TEST RESULTS - SOIL
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Source of Sample | Sample No. (4) | Sample Depth (ft) (1) | Sample Type | Atterberg Limits (2), (3) | | USCS Symbol (2) | Specific Gravity (2) | Dry Unit Weight(3) (pcf) | Moisture Content (3) (%) | Triaxial Test Data (CU) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LL | PI | | | | | c (psi) | Φ (degree) | c' (psi) | Φ' (degree) |
| MP-111UD | ST-3 | 9.9-11.9 | Tube | 57 | 32 | CH | 2.75 | 93.3 | 30.0 | 2.7 | 12.1 | 1.3 | 21.7 |
| | | | | | | | | 94.8 | 28.9 | | | | |
| MP-122UDA | ST-3 | 9.7-11.7 | Tube | 69 | 40 | CH | 2.75 | 91.0 | 29.7 | 2.2 | 16.4 | 0.9 | 26.8 |
| | ST-4 | 12.2-14.2 | | 70 | 42 | | | 93.0 | 28.6 | | | | |
| | ST-3 | 9.7-11.7 | | 69 | 40 | | | 94.4 | 28.3 | | | | |
| MP-122UDB | ST-5 | 14.6-16.6 | Tube | 59 | 32 | CH | 2.75 | 86.1 | 35.0 | 3 | 13.3 | 2 | 20.1 |
| | ST-3 | 9.2-11.2 | | 69 | 41 | | | 88.7 | 33.2 | | | | |
| | ST-5 | 14.6-16.6 | | 59 | 32 | | | 97.1 | 27.5 | | | | |

(1) Sample depth shown reflects the depth of start of push plus the length of the recovered sample
(2) Atterberg Limits, USCS Symbol, and Specific Gravity are also reported in Table 5.2.
(3) Values shown are for each point prior to beginning test procedure.
(4) Where more than one tube is listed, samples were taken from similar tubes to provide sufficient sample for testing with Bechtel approval.

# TABLE 5.5

## SUMMARY OF MOISTURE-DENSITY TEST RESULTS
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT NO. 6468131072

| Source of Sample | Sample No. | Atterberg Limits (3) | | Natural Moisture (1, 3) | Percent Passing No. 200 Sieve | USCS Classification | Moisture-Density Relationship Data (2) | |
|---|---|---|---|---|---|---|---|---|
| | | Liquid Limit (LL) | Plasticity Index (PI) | (%) | (%) | | Maximum Dry Density (pcf) | Optimum Moisture (%) |
| Test Pit TP-1, 6 - 8 ft | S-1 | 61 | 37 | 32.2 | 77.7 | CH | 109.0[A] | 16.7[A] |
| Test Pit TP-2, 1 - 2.5 ft | S-1 | 46 | 27 | 16.5 | 59.1 | CL | 120.6[B] | 10.9[B] |
| | | | | | | | 122.7[C] | 10.3[C] |
| Test Pit TP-3, 3 - 6 ft | S-1 | 58 | 31 | 20.9 | 41.0 | SC | 105.4 [A] | 17.4 [A] |

NOTES:

(1) Natural moisture content tests performed on jar samples obtained at same time as bulk sample.

(2) Proctor compaction tests performed as indicated by letter superscript:

A. ASTM D1557-12 Modified Method C

B. ASTM D 1557-12 Modified Method C with no oversize correction applied.

C. ASTM D 1557-12 Modified Method C with oversize correction [ASTM D 4718-87 (2007)] applied.

(3) Atterberg limits and moisture content are also reported on Table 5.2.

Prepared By: JCA 3/6/14

Checked By: RSA 3/6/14

Prepared By: 4/3/14
Checked By: RSA 4/3/14

# TABLE 5 .6
## SUMMARY OF DIRECT SHEAR TEST RESULTS - ROCK
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT No. 6468131072

| Boring No. | Sample ID | Sample Depth(1) (ft) | Test Type (2) | Rock Information(3) | | Test Normal Stress(6) (psi) | Shear Stress Parameters(7) | | Strength Parameters (Sliding Test) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Peak | | Post-Peak | |
| | | | | Type(4) | Formation(5) | | Peak (psi) | Post-Peak (psi) | c (psi) | Φ (degree) | c (psi) | Φ (degree) |
| MP-101 | L5-1 | 112.2-112.7 | Sliding | Siltstone | Benbolt (UE) | 100, 150, 200 | 118, 97, 123 | 79, 86, 104 | 18.0 | 27.7 | 32.0 | 19.8 |
| MP-101 | L5-4 | 118.30-118.56 | Intact | Limestone (W/M/G) | Benbolt (UE) | 115 | 150 | 81 | NA | NA | NA | NA |
| MP-101 | L5-5 | 121.26-121.51 | Intact | Limestone (W/M/G) | Benbolt (UE) | 115 | 152 | 80 | NA | NA | NA | NA |
| MP-101 | L5-2 | 135.20-135.47 | Sliding | Limestone (G) | Rockdell (UD) | 110, 150 200, | 104, 126, 170 | 97, 122, 140 | 19.3 | 36.6 | 47.1 | 25.3 |
| MP-201 | L5-11 | 28.40-28.65 | Sliding | Siltstone | Fleanor (UB) | 100, 150, 200 | 90, 100, 125 | 61, 92, 121 | 52.4 | 19.3 | 1.3 | 31.0 |
| MP-201 | L5-12 | 53.62-53.85 | Intact | Siltstone | Fleanor (UB) | 115 | 239 | 126 | NA | NA | NA | NA |
| MP-201 | L5-13 | 73.35-73.65 | Intact | Siltstone | Fleanor (UB) | 115 | 105 | 79 | NA | NA | NA | NA |
| MP-201 | L5-14 | 114.15-114.37 | Sliding | Limestone (M) | Eidson(UA) | 100, 150, 200 | 75, 102, 131 | 68, 92, 121 | 19.3 | 29.1 | 14.2 | 27.9 |
| MP-201 | L5-15 | 148.80-149.05 | Intact | Limestone (M) | Eidson(UA) | 120 | 228 | 96 | NA | NA | NA | NA |

(1) Sample depth is based on lab measurements made along edge of sample due to irregular shapes, and may not exactly match field designation which is measured on centerline of core.
(2) Tested in accordance with ASTM D 5607-08 with approved deviations as noted on test reports. Tested at as-received moisture condition and not soaked.
(3) Information from boring logs.
(4) Rock types are: Wackestone/Micrite/Grainstone (WMG); Grainstone (G); Micrite (M); Siltstone
(5) Formation, Unit designation (UA, etc.). Fleanor and Eidson are Members of the Lincolnshire Formation.
(6) Intact test done at one normal pressure; Sliding test done at three normal pressures.
(7) Values for sliding test presented in same order as normal pressures.

# TABLE 5.7
## SUMMARY OF SLAKE DURABILITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Sample Depth (feet) | Rock Type (1) | Formation | As-received Moisture Content, % | Slake Durability Index, % (2) | Description of Fragments (3) |
|---|---|---|---|---|---|---|---|
| MP-103 | L3-2 | 130.5-131.5 | M/W | Rockdell,Unit D | 0.1 | 99.2 | Type II |
| MP-105 | L3-6 | 127.0-127.7 | CS | Benbolt, Unit E | 1.0 | 97.2 | Type II |
| MP-105 | L3-8 | 161.7-162.6 | M/W | Rockdell,Unit D | 0.5 | 97.9 | Type II |
| MP-106 | L3-12 | 127.7-128.6 | W/M | Benbolt, Unit E | 0.1 | 99.1 | Type I/Type II |
| MP-107 | L3-14 | 139.6-140.8 | MWP | Rockdell,Unit D | 0.1 | 99.4 | Type I/Type II |
| MP-115 | L3-23 | 60.7-62.0 | Micrite | Benbolt, Unit E | 0.2 | 99.2 | Type I/Type II |
| MP-118 | L3-28 | 62.0-63.3 | CS | Benbolt, Unit E | 1.2 | 92.8 | Type II |
| MP-207 | L3-41 | 157.1-157.6 | CS | Upper Blackford | 1.8 | 94.4 | Type II |
| MP-214 | L3-42 | 80.5-81.3 | CS | Lincolnshire, Fleanor Unit B | 0.6 | 96.9 | Type II |
| MP-217 | L3-44 | 74.2-75.3 | CS | Lincolnshire, Fleanor Unit B | 0.7 | 98.4 | Type II |

(1) Rock Types: Micrite; Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Calcareous Siltstone (CS)
(2) Test Method ASTM D4644-08 with deviations approved by Bechtel
(3) Following terminology of ASTM D 4644-08

Prepared By [illegible] 3/5/14
Checked By [illegible] 3/6/14

Prepared By [illegible] 6/12/14
Checked By COT 6-17-14
By SJR with Permission

# TABLE 5.8
## SUMMARY OF UNCONFINED COMPRESSION TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Unconfined Compressive Strength (psi) (5) (7) | Type of Break | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-101 | L1-1 | L1-1 BG | 48.6-50.1 | M/W | Benbolt UE | 167 | (8) | 2.67 | 2,300 | COL | |
| MP-101 | L1-2 | L1-2 G | 66.1-67.3 | M/W | Benbolt UE | | | | 5,660 | COL | |
| MP-101 | L1-4 | L1-4 G | 127.2-128.1 | W/M | Benbolt UE | | | | 2,380 | S | |
| MP-101 | L1-5 | L1-5 BCG | 148.7-149.7 | Micrite | Rockdell UD | 168 | | 2.69 | 7,000 | COL | |
| MP-101 | L1-6 | L1-6 G | 186.6-187.5 | M/W | Rockdell UD | | | | 3,830 | S | |
| MP-101 | L1-8 | L1-8 BG | 251.8-253.6 | Micrite | Rockdell UD | NA | | | 12,680 | COL | |
| MP-101 | L1-9 | L1-9 G | 272.9-273.6 | Micrite | Rockdell UD | | | | 15,990 | COL | |
| MP-101 | L1-11 | L1-11 BG | 351.9-353.1 | M/W | Rockdell UC | 168 | | 2.70 | 11,440 | COL | |
| MP-101 | L1-12 | L1-12 G | 396.9-397.9 | M/W | Rockdell UD | | | | 5,120 | COL | slight S |
| MP-101 | L1-14 | L1-14 BG | 498.2-499.0 | Siltstone | Fleanor UB | 169 | | 2.71 | 5,200 | COL | |
| MP-106 | L3-11 | L3-11-BG | 96.3-96.8 | W/M | Rockdell UC | ***167*** | | ***2.69*** | note (***6***) | | |
| MP-106 | L3-13 | L3-13-BCG | 163.4-164.0 | Siltstone | Fleanor UB | ***167*** | | ***2.69*** | note (***6***) | | |
| MP-107 | L3-15 | L3-15-BG | 159.6-160.7 | M/W | Rockdell UD | 168 | | 2.69 | 8,100 | COL | |
| MP-109 | L3-16 | L3-16-BG | 88.0-88.8 | M/W | Benbolt UE | 168 | | 2.70 | 6,380 | S w/COL | |
| MP-109 | L3-18 | L3-18-BG | 151.8-152.8 | M/W | Benbolt UE | 169 | | 2.71 | 7,240 | S w/COL | |
| MP-110 | L2-2 | L2-2 BCG | 76.7-77.5 | M/W | Benbolt UE | 169 | | 2.71 | 4,880 | S/COL | COL between planes |
| MP-110 | L2-3 | L2-3 BG | 119.0-120.9 | Siltstone | Benbolt UE | 169 | | 2.72 | 6,300 | COL | S on planes |
| MP-113 | L2-5 | L2-5 BCG | 51.1-51.7 | Siltstone | Benbolt UE | 168 | | 2.70 | 9,660 | S | |
| MP-121 | L2-10 | L2-10 BG | 80.6-81.8 | M/W | Benbolt UE | 167 | | 2.68 | 2,420 | S | |
| MP-122 | L3-30 | L3-30-BG | 63.1-64.3 | Micrite | Benbolt UE | 170 | | 2.72 | 6,880 | COL | w/slight S |
| MP-201 | L2-15 | L2-15 BG | 268.8-269.5 | Siltstone | Upper Blackford UA | 166 | | 2.66 | 4,770 | C | |
| MP-201 | L2-17 | L2-17 BCG | 366.4-367.5 | Dolomite | Newala | 176 | | 2.82 | 16,290 | C | Gypsum capped |
| MP-202 | L1-16 | L1-16 BG | 31.6-32.6 | Siltstone | Fleanor UB | 168 | | 2.70 | 7,310 | COL | |

Tests performend using ASTM D7012-10, Method C (with Deviations per SDDR.33)
NA for L1-8 Indicates that sample was not weighed prior to test therefore the unit weight test not performed.
(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear
(5) Due to core conditions, it was not possible to meet dimensional tolerances of ASTM 4543 for some of rock cores. See lab sheets in Appendix G.6 for actual dimensions.
(6) Unable to perform assigned unconfined test due to core breaking during shipping, handling, or trimming; unit weight and specific gravity test performed.
(7) UC values rounded to nearest 10.
(8) Shaded cells indicate that test not assigned.

Prepared By JOJ 6/17/14
Checked By CDT 6-17-14

# TABLE 5.8
## SUMMARY OF UNCONFINED COMPRESSION TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Unconfined Compressive Strength (psi) (5) (7) | Type of Break | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-202 | L1-18 | L1-18 G | 67.0-67.9 | Siltstone | Fleanor UB | | (8) | | 2,870 | S | along planes |
| MP-202 | L1-20 | L1-20 BG | 91.7-93.3 | Siltstone | Fleanor UB | 169 | | 2.71 | 9,780 | COL | |
| MP-202 | L1-21 | L1-21 BCG | 111.7-112.9 | Siltstone | Fleanor UB | 167 | | 2.68 | 4,180 | COL | slight shear |
| MP-202 | L1-25 | L1-25 BCG | 217.7-218.7 | Micrite | Eidson UA | 168 | | 2.70 | 3,920 | COL | |
| MP-202 | L1-26 | L1-26 BG | 238.1-239.5 | Micrite | Eidson UA | 167 | | 2.68 | 5,320 | COL | some shear on planes |
| MP-202 | L1-27 | L1-27 G | 258.6-259.6 | Micrite | Eidson UA | | | | 18,310 | C/COL | Gypsum capped |
| MP-202 | L1-29 | L1-29 BG | 288.9-289.8 | Micrite | Eidson UA | 168 | | 2.70 | 4,400 | COL/S | |
| MP-202 | L1-30 | L1-30 G | 299.0-299.7 | Micrite | Eidson UA | | | | 7,390 | COL | |
| MP-202 | L1-32 | L1-32 BG | 348.4-349.8 | Siltstone | Upper Blackford UA | 168 | | 2.70 | 10,250 | COL | |
| MP-202 | L1-33 | L1-33 G | 363.0-364.3 | Siltstone | Upper Blackford UA | | | | 1,340 | S | |
| MP-202 | L1-34 | L1-34 BG | 411.0-412.3 | Siltstone | Upper Blackford UA | 169 | | 2.71 | 4,690 | COL | |
| MP-205 | L3-35 | L3-35-BG | 144.7-145.5 | Micrite | Eidson UA | 169 | | 2.71 | 7,370 | S w/COL | |
| MP-206 | L2-19 | L2-19 BCG | 76.8-78.0 | Siltstone | Fleanor UB | 168 | | 2.69 | 7,950 | S | |
| MP-206 | L2-22 | L2-22 BG | 153.3-154.2 | Siltstone | Fleanor UB | 169 | | 2.71 | 4,630 | S | |
| MP-207 | L3-38 | L3-38-BG | 96.8-97.8 | M/W | Eidson UA | 167 | | 2.69 | 9820 | COL | w/shear crack |
| MP-209 | L2-24 | L2-24 BG | 81.8-82.3 | Siltstone | Fleanor UB | 168 | | 2.70 | 9,910 | S | |
| MP-209 | L2-25 | L2-25 BCG | 106.9-107.4 | Siltstone | Fleanor UB | 168 | | 2.70 | 5,150 | S | |
| MP-209 | L2-27 | L2-27 BCG | 181.3-182.2 | M/W | Eidson UA | 168 | | 2.70 | 8,150 | S | |
| MP-209 | L2-28 | L2-28 BG | 206.0-206.5 | Micrite | Eidson UA | 167 | | 2.69 | 11,810 | COL | |
| MP-209 | L2-29 | L2-29 BCG | 223.7-224.7 | Micrite | Eidson UA | 167 | | 2.69 | 5,170 | C/S | |
| MP-215 | L2-30 | L2-30 BG | 17.1-18.0 | W/M | Rockdell UC | 167 | | 2.68 | 5,120 | S | |
| MP-215 | L2-33 | L2-33 BG | 93.3-94.1 | Siltstone | Fleanor UB | 168 | | 2.70 | 6,960 | S | |

Tests performend using ASTM D7012-10, Method C (with Deviations per SDDR.33)

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite

(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.

(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.

(4) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear

(5) Due to core conditions, it was not possible to meet dimensional tolerances of ASTM 4543 for some of rock cores. See lab sheets in Appendix G.6 for actual dimensions.

(6) Unable to perform assigned unconfined test due to core breaking during shipping, handling, or trimming; unit weight and specific gravity test performed.

(7) UC values rounded to nearest 10.

(8) Shaded cells indicate that test not assigned.

Prepared By [illegible] 6/21/0
Checked By CDT 6-17-14

# TABLE 5.8
## SUMMARY OF UNCONFINED COMPRESSION TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Unconfined Compressive Strength (psi) (5) (7) | Type of Break | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-218 | CL9-1 | CL9-1-ABG | 66.7-67.7 | Siltstone | Fleanor UB | 169 | 0.6 | 2.71 | 4,090 | COL | Special Care Handling |
| MP-218 | CL9-6 | CL9-6-ABG | 67.8-68.8 | Siltstone | Fleanor UB | 167 | 1.0 | 2.68 | 3,170 | S | |
| MP-218 | CL9-2 | CL9-2-ABG | 71.3-72.3 | Siltstone | Fleanor UB | 166 | 1.6 | 2.67 | 2,930 | COL | Special Care Handling |
| MP-218 | CL9-7 | CL9-7-ABG | 72.3-73.3 | Siltstone | Fleanor UB | 169 | 1.1 | 2.71 | 4,480 | S | slight columnar |
| MP-218 | CL9-3 | CL9-3-ABG | 79.5-80.5 | Siltstone | Fleanor UB | 168 | 1.7 | 2.70 | 1,130 | S | Special Care Handling |
| MP-218 | CL9-8 | CL9-8-ABG | 80.5-81.5 | Siltstone | Fleanor UB | 168 | 1.4 | 2.69 | 2,050 | S | |
| MP-218 | CL9-4 | CL9-4-ABG | 85.3-86.3 | Siltstone | Fleanor UB | 169 | 1.1 | 2.72 | 3,900 | COL | Special Care Handling |
| MP-218 | CL9-9 | CL9-9-ABG | 86.3-87.3 | Siltstone | Fleanor UB | 169 | 1.0 | 2.71 | 5,830 | COL | |
| MP-218 | CL9-5 | CL9-5-ABG | 90.3-91.3 | Siltstone | Fleanor UB | 168 | 1.4 | 2.69 | 3,070 | COL | Special Care Handling - slight shear |
| MP-218 | CL9-10 | CL9-10-ABG | 91.3-92.3 | Siltstone | Fleanor UB | 167 | 1.4 | 2.69 | 3,580 | COL | |
| MP-219A | L3-51 | L3-51-BG | 134.1-134.7 | Micrite | Eidson UA | 168 | (8) | 2.69 | 3,500 | S | |
| MP-219A | L3-54 | L3-54-BG | 219.1-219.6 | Siltstone | Upper Blackford UA | 166 | | 2.66 | note (5) | | |
| MP-220 | L2-36 | L2-36 BG | 81.3-82.7 | Siltstone | Fleanor UB | 166 | | 2.67 | 5,430 | COL/S | |
| MP-401 | L3-59 | L3-59-BG | 148.4-149.8 | Dolomite | Newala | 175 | | 2.82 | 30,780 | Complete break | |
| MP-415 | L3-61 | L3-61-BG | 23.3-24.1 | Siltstone | Bowen UF | 160 | | 2.57 | 4,080 | S | |
| MP-415 | L3-65 | L3-65-BG | 113.5-114.5 | Micrite | Benbolt UE | 167 | | 2.68 | 3,490 | COL/S | |
| MP-416 | L3-70 | L3-70-BG | 215.4-216.4 | W/M | Rockdell UC | 169 | | 2.71 | 5,460 | S | |

Tests performend using ASTM D7012-10, Method C (with Deviations per SDDR.33)

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite

(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.

(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.

(4) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear

(5) Due to core conditions, it was not possible to meet dimensional tolerances of ASTM 4543 for some of rock cores. See lab sheets in Appendix G.6 for actual dimensions.

(6) Unable to perform assigned unconfined test due to core breaking during shipping, handling, or trimming; unit weight and specific gravity test performed.

(7) UC values rounded to nearest 10.

(8) Shaded cells indicate that test not assigned.

Prepared By JDJ 6/17/14
Checked By CDT 6-17-14

# TABLE 5.8
## SUMMARY OF UNCONFINED COMPRESSION TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Unconfined Compressive Strength (psi) (5) (7) | Type of Break | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-419 | L2-37 | L2-37 BCG | 115.6-116.4 | Dolomite | Newala | 176 | (8) | 2.82 | 16,660 | COL | |
| MP-419 | L2-39 | L2-39 BG | 170.1-170.6 | Dolomite | Newala | 177 | | 2.84 | 18,670 | No pieces | Shattered |
| MP-423 | L7-29 | L7-29-BG | 65.2-66.1 | Micrite | Eidson UA | 164 | | 2.64 | 7570 | S | along planes |
| MP-423 | L7-30 | L7-30-BG | 72.6-73.5 | Micrite | Eidson UA | 165 | | 2.65 | 8,000 | S | |
| MP-423 | L7-33 | L7-33-BCG | 121.5-122.6 | Micrite | Eidson UA | 167 | | 2.69 | 9,870 | S | |
| MP-423 | L7-34 | L7-34-BG | 134.2-135.2 | Grainstone/M | Blackford UA | 168 | | 2.69 | 4,460 | S | along planes |
| MP-423 | L7-35 | L7-35-BG | 182.6-183.1 | Siltstone | Blackford UA | 166 | | 2.67 | note (5) | | |
| MP-423 | L7-36 | L7-36-BG | 213.6-214.1 | W | Blackford UA | 165 | | 2.65 | note (5) | | |
| MP-423 | L7-37 | L7-37-BG | 299.3-300.7 | Dolomite | Newala | 176 | | 2.83 | 22,900 | complete break | |
| CC B2 | L7-38 | L7-38-BG | 121.3-122.0 | Siltstone | Rome | 164 | | 2.63 | note (5) | | |
| CC B2 | L7-39 | L7-39-BG | 161.6-162.4 | Siltstone | Rome | 163 | | 2.62 | 790 | S | along planes |

Tests performend using ASTM D7012-10, Method C (with Deviations per SDDR.33)

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear
(5) Due to core conditions, it was not possible to meet dimensional tolerances of ASTM 4543 for some of rock cores. See lab sheets in Appendix G.6 for actual dimensions.
(6) Unable to perform assigned unconfined test due to core breaking during shipping, handling, or trimming; unit weight and specific gravity test performed.
(7) UC values rounded to nearest 10.
(8) Shaded cells indicate that test not assigned.

Prepared By JAS 4/9/14
Checked By CDT 4/10/14

# TABLE 5.9
## SUMMARY OF UNCONFINED COMPRESSION TEST TESULTS WITH STRESS STRAIN - ROCK CORE
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT No. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Unconfined Compressive Strength (psi)(4) | Poisson's Ratio | Type of Break (5) | Young's Modulus (ksi) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-101 | L1-3 | L1-3-BCG | 92.7-93.5 | Siltstone | Benbolt UE | 167 | (7) | 2.69 | Note (6) | Note (6) | Note (6) | Note (6) | |
| MP-101 | L1-7 | L1-7-BCH | 216.4-217.6 | Micrite | Rockdell UD | 167 | | 2.68 | 14,880 | 0.13 | COL | 13,660 | |
| MP-101 | L1-10 | L1-10-BCH | 302.3-303.3 | Micrite | Rockdell UD | 166 | | 2.67 | 8,660 | 0.25 | COL | 8,410 | |
| MP-101 | L1-13 | L1-13-BCH | 451.4-452.4 | Siltstone | Fleanor UB | 170 | | 2.73 | 6,100 | 0.30 | COL | 4,820 | |
| MP-103 | L3-3 | L3-3-BH | 163.5-164.3 | M/W | Rockdell UD | 168 | | 2.70 | 4,950 | 0.11 | S | 1,920 | S on planes |
| MP-105 | L3-5 | L3-5-BH | 82.7-83.3 | W/M | Benbolt UE | 168 | | 2.70 | 6,700 | 0.32 | COL | 10,510 | |
| MP-105 | L3-7 | L3-7-BH | 138.1-138.9 | W/G/M | Benbolt UE | 169 | | 2.71 | 6,800 | 0.19 | S | 8,230 | |
| MP-105 | L3-9 | L3-9-BH | 186.6-187.2 | M/W | Rockdell UD | 166 | | 2.67 | 13,100 | 0.25 | S | 9,880 | |
| MP-111 | L3-19 | L3-19-BH | 118.9-119.5 | Micrite | Rockdell UD | 167 | | 2.69 | 5,690 | 0.19 | S | 6,240 | |
| MP-111 | L3-21 | L3-21-BH | 159.2-160.2 | Micrite | Rockdell UD | 167 | | 2.68 | Note (6) | Note (6) | Note (6) | Note (5) | |
| MP-115 | L3-24 | L3-24-BH | 69.4-70.6 | Micrite | Benbolt UE | 168 | | 2.70 | 4,210 | 0.18 | S | 5,270 | |
| MP-118 | L3-29 | L3-29-BH | 97.6-99.0 | W/M | Benbolt UE | 168 | | 2.70 | 4,870 | 0.20 | S | 2,490 | |
| MP-122 | L3-31 | L3-31-BCH | 79.3-80.6 | Micrite | Benbolt UE | 169 | | 2.71 | 12,430 | 0.22 | COL | 5,550 | |
| MP-201 | L2-13 | L2-13-BCH | 130.6-131.8 | W/P | Eidson UA | 168 | | 2.69 | 5,000 | 0.29 | S | 11,080 | |
| MP-201 | L2-14 | L2-14-BCH | 186.2-186.6 | W/P | Upper Blackford UA | 168 | | 2.70 | 9,900 | 0.22 | S | 3,700 | |
| MP-201 | L2-16 | L2-16-BCH | 338.3-339.7 | Dolomite | Newala | 173 | | 2.78 | 21,910 | 0.30 | COL | 12,840 | |
| MP-202 | L1-17 | L1-17-BCH | 58.0-58.6 | Siltstone | Fleanor UB | 168 | | 2.70 | 5,880 | 0.18 | S | 2,560 | |
| MP-202 | L1-24 | L1-24-BCH | 161.7-163.3 | Siltstone | Fleanor UB | 168 | | 2.69 | 3,130 | 0.03 | S | 930 | |
| MP-202 | L1-31 | L1-31-BCH | 327.7-328.8 | Siltstone | Upper Blackford UA | 166 | | 2.67 | 4,040 | 0.10 | C/S | 5,700 | |
| MP-202 | L1-35 | L1-35-BCH | 436.0-436.9 | Siltstone | Upper Blackford UA | 166 | | 2.67 | Note (6) | Note (6) | Note (6) | Note (5) | |
| MP-203 | L7-1 | L7-1-BH | 70.6-71.1 | Siltstone | Fleanor UB | 176 | | 2.83 | 6,350 | 0.14 | COL | 2,360 | |
| MP-203 | L7-2 | L7-2-BCH | 98.9-99.9 | W/M | Eidson UA | 169 | | 2.71 | 9,320 | 0.19 | COL | 5,010 | |
| MP-203 | L7-3 | L7-3-BH | 121.7-122.7 | W/M | Eidson UA | 167 | | 2.68 | 9,190 | 0.14 | complete Break | 2,620 | |
| MP-205 | L3-32 | L3-32-BH | 72.7-73.5 | Siltstone | Fleanor UB | 167 | | 2.69 | 6,890 | 0.09 | COL | 2,370 | complete |
| MP-205 | L7-4 | L7-4-BH | 76.0-77.0 | W/M | Fleanor UB | 169 | | 2.71 | Note (6) | Note (6) | Note (6) | Note (5) | |
| MP-205 | L3-36 | L3-36-BCH | 162.6-163.4 | M/W | Eidson UA | 168 | | 2.70 | 7,130 | 0.20 | COL | 4,650 | Slight S |
| MP-205 | L3-37 | L3-37-BH | 208.5-209.0 | Micrite | Eidson UA | 168 | | 2.70 | 15,310 | 0.28 | S | 9,530 | w/columnar |
| MP-207 | L7-6 | L7-6-BH | 70.7-71.7 | M/W | Eidson UA | 167 | | 2.69 | 5,970 | 0.18 | COL | 4,040 | Slight S |
| MP-207 | L7-8 | L7-8-BCH | 122.2-122.9 | M/W | Eidson UA | 169 | | 2.71 | 9,020 | Note (8) | COL | 10,470 | |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite

(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.

(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.

(4) Due to core conditions, it was not possible to meet dimensional tolerances of ASTM 4543 for some of the rock cores. See dimension sheets in Appendix G.6 for details.

(5) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear

(6) Unable to perform assigned unconfined test due to core breaking during shipping, handling, or trimming; unit weight and specific gravity test performed.

(7) Shaded cells indicate that test not assigned.

(8) A strain gage problem prevented reliable lateral strain measurements.

Prepared By 4/9/14
Checked By 4/10/14

# TABLE 5.9
## SUMMARY OF UNCONFINED COMPRESSION TEST TESULTS WITH STRESS STRAIN - ROCK CORE
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT No. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Unconfined Compressive Strength (psi)(4) | Poisson's Ratio | Type of Break (5) | Young's Modulus (ksi) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP-210 | L7-9 | L7-9-BH | 114.0-114.6 | Siltstone | Fleanor UB | 167 | (7) | 2.68 | Note (6) | Note (6) | Note (6) | Note (5) | |
| MP-218 | L3-47 | L3-47-BH | 74.5-75.3 | Siltstone | Fleanor UB | 167 | | 2.68 | Note (6) | Note (6) | Note (6) | Note (5) | |
| MP-219A | L3-50 | L3-50-BH | 103.3-104.0 | Siltstone | Fleanor UB | 167 | | 2.69 | Note (6) | Note (6) | Note (6) | Note (5) | |
| MP-219A | L3-53 | L3-53-BH | 199.1-200.1 | Micrite | Eidson UA | 167 | | 2.68 | 6,240 | 0.20 | COL | 4,980 | |
| MP-220 | L2-35 | L2-35-BH | 74.0-74.6 | Siltstone | Fleanor UB | 169 | | 2.71 | 6,640 | 0.21 | S | 2,290 | |
| MP-222 | L3-56 | L3-56-BH | 66.0-67.3 | Siltstone | Fleanor UB | 168 | | 2.70 | 7,910 | 0.25 | S | 1,730 | |
| MP-402 | L7-11 | L7-11-BH | 52.1-53.2 | Dolomite | Newala | 175 | | 2.81 | 32,540 | 0.27 | complete Break | 11,540 | |
| MP-402 | L7-12 | L7-12-H | 109.3-110.5 | Micrite | Newala | 167 | | | 22,100 | 0.18 | S | 8,260 | |
| MP-402 | L7-13 | L7-13-BCH | 144.3-145.1 | Dolomite | Newala | 175 | | 2.81 | 19,820 | 0.22 | COL | 9,560 | |
| MP-403 | L7-14 | L7-14-H | 23.2-24.1 | Micrite | Lower Blackford UA | 168 | | | 8,680 | 0.23 | COL | 7,260 | |
| MP-403 | L7-15 | L7-15-BH | 70.2-71.0 | Dolomite | Newala | 176 | | 2.82 | 29,590 | 0.28 | Complete Break | 12,600 | |
| MP-403 | L7-16 | L7-16-H | 114.2-115.3 | Dolomite | Newala | 177 | | | 33,110 | 0.31 | Complete Break | 13,980 | |
| MP-410 | L7-20 | L7-20-BH | 67.4-67.9 | Grainstone | Rockdell UD | 160 | | 2.57 | 4,000 | 0.26 | S | 1,930 | S on plane |
| MP-410 | L7-23 | L7-23-BH | 166.0-167.0 | Siltstone | Fleanor UB | 168 | | 2.70 | 6,960 | 0.25 | S | 5,950 | |
| MP-412 | L7-19 | L7-19-BH | 166.4-166.9 | Siltstone | Upper Blackford UA | 167 | | 2.68 | 7,990 | 0.21 | COL | 3,150 | |
| MP-415 | L3-66 | L3-66-BCH | 133.9-134.9 | Micrite | Benbolt UE | 168 | | 2.70 | 12,340 | 0.26 | Complete Break | 8,270 | |
| MP-416 | L3-69 | L3-69-BH | 179.7-180.6 | W/M | Rockdell UC | 169 | | 2.71 | 13,400 | 0.43 | COL | 10,200 | |
| MP-416 | L3-71 | L3-71-BH | 255.1-255.7 | Siltstone | Fleanor UB | 169 | | 2.72 | 9,240 | 0.16 | S | 2,680 | |
| MP-419 | L2-38 | L2-38-BH | 157.1-157.8 | Micrite | Newala | 169 | | 2.71 | 16,830 | 0.35 | COL | 12,910 | |
| MP-419 | L2-40 | L2-40-BCH | 173.4-174.1 | Chert/Sandstone | Newala | 161 | | 2.59 | 5,810 | 0.45 | COL | 2,360 | |
| MP-421 | L7-26 | L7-26-BCH | 175.5-178.3 | Dolomite | Newala | 176 | | 2.83 | 12,510 | 0.05 | S | 9,040 | |
| MP-421 | L7-27 | L7-27-H | 225.6-226.2 | Dolomite | Newala | 175 | | | 21,790 | 0.30 | COL | 11,290 | |
| MP-423 | L7-31 | L7-31-BH | 81.5-82.5 | Micrite | Eidson UA | 166 | | 2.66 | 6,960 | 0.16 | COL | 1,620 | |
| | | | | | | | | | | | | | |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite

(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.

(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.

(4) Due to core conditions, it was not possible to meet dimensional tolerances of ASTM 4543 for some of the rock cores. See dimension sheets in Appendix G.6 for details.

(5) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear

(6) Unable to perform assigned unconfined test due to core breaking during shipping, handling, or trimming; unit weight and specific gravity test performed.

(7) Shaded cells indicate that test not assigned.

Prepared By JGJ 4/3/14
Checked By CDT 4/3/14

# TABLE 5.10
## COMPARISON OF ROCK PRESSUREMETER SHEAR MODULUS AND UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS CLINCH RIVER SMR PROJECT

| Boring Number | Pressuremeter Test No. | Pressuremeter Test Tip Depth (ft) | Pressuremeter Test Interval (ft) | Unconfined Test Rock Core Sample Depth (ft) | Rock Type (1) | Formation | Pressuremeter Shear Modulus Values | | | | Unconfined Strength -Lab Test (4) (ksi) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Initial Modulus (2) (ksi) | Unload-Reload Modulus (500)(3) (ksi) | Unload-Reload Modulus (1000)(3) (ksi) | Unload-Reload Modulus (1500)(3) (ksi) | |
| MP-105 | PM105-1B | 83.7 | 81.8-83.2 | 82.7-83.3 | W/M | Benbolt UE | 376.5 | 201.5 | 646.6 | 1118.4 | 6.7 |
| MP-105 | PM105-2B | 139.8 | 137.9-139.3 | 138.1-138.9 | W/G/M | Benbolt UE | 414.0 | 370.0 | 957.0 | 1372.0 | 6.8 |
| MP-105 | PM105-3B | 188.6 | 186.7-188.1 | 186.6-187.2 | M/W | Rockdell UD | 340.0 | 220.0 | 530.0 | 713.0 | 13.1 |
| MP-205 | PM205-1B | 73.7 | 71.8-73.2 | 72.7-73.5 | Siltstone | Fleanor UB | 316.0 | 466.0 | 866.0 | 1176.0 | 6.9 |
| MP-205 | PM205-2B | 163.5 | 161.6-163.0 | 162.6-163.4 | M/W | Eidson UA | 365.0 | 276.0 | 506.0 | 725.0 | 7.1 |
| MP-205 | PM205-3A | 210.4 | 208.5-209.9 | 208.5-209.0 | Micrite | Eidson UA | 82.0 | 252.0 | 366.0 | 404.0 | 15.3 |
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(1) Rock Types: Micrite; Micrite/Wackestone (M/W); Wackestone/Grainstone/Micrite (W/G/M); Wackestone/Micrite (W/M); Siltstone
(2) Tangent modulus at 1000 psi
(3) Test run at approximate stress level (in psi) indicated.
(4) From Table 5.9

Prepared By 4/4/14
Checked By CDT 4/4/14

# TABLE 5.11
## SUMMARY OF CARBONATE CONTENT TESTING - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Sample Depth (feet) | Rock Type (1) | Formation (2) | Calcite Equivalent (%) |
|---|---|---|---|---|---|
| MP-101 | L6-11 | 90.9-91.5 | Siltstone | Benbolt UE | 27 |
| MP-101 | L6-12 | 144.6-145.1 | Grainstone | Rockdell UD | 75 |
| MP-101 | L1-5 | 148.7-149.7 | Grainstone | Rockdell UD | 62 |
| MP-101 | L6-13 | 184.6-185.2 | M/W | Rockdell UD | 45 |
| MP-101 | L6-15 | 378.9-379.6 | Micrite | Rockdell UC | 48 |
| MP-101 | L1-13 | 451.4-452.4 | Micrite | Fleanor UB | 45 |
| MP-202 | L6-2 | 78.5-79.1 | Siltstone | Fleanor UB | 28 |
| MP-202 | L6-3 | 113.1-113.7 | Siltstone | Fleanor UB | 40 |
| MP-202 | L1-22 | 148.7-149.6 | Siltstone | Fleanor UB | 28 |
| MP-202 | L6-4 | 195.8-197.9 | Micrite | Fleanor UB | 28 |
| MP-202 | L6-5 | 241.0-242.4 | Micrite | Eidson UA | 51 |
| MP-202 | L6-6 | 247.8-249 | Micrite | Eidson UA | 54 |
| MP-202 | L6-9 | 385.2-385.9 | Siltstone | Upper Blackford UA | 39 |
| MP-401 | L6-19 | 79.0-79.6 | Dolomite | Newala | 77 |
| MP-401 | L6-20 | 216.4-216.9 | Dolomite | Newala | 90 |
| MP-415 | L6-17 | 25.1-25.7 | Siltstone | Bowen UF | 57 |
| MP-415 | L6-16 | 28.5-28.9 | Siltstone | Bowen UF | 88 |
| MP-415 | L6-18 | 38.6-39.1 | Siltstone | Bowen UF | 26 |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (MWP); Wackestone/Micrite (W/M); Siltstone; Grainstone; Dolomite

(2) Formation, Unit Designation (UA, etc.). Fleanor and Eidson are Members of the Lincolnshire Formation.

Prepared By [illegible] 4/4/14
Checked By CDT 4/9/14

# TABLE 5.12
## SUMMARY OF UNIT WEIGHT, MOISTURE CONTENT, AND SPECIFIC GRAVITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| MP-101 | L1-1 | L1-1 BG | 48.6-50.1 | M/W | Benbolt UE | 167 | (4) | 2.68 | |
| MP-101 | L1-3 | L1-3-BCG | 92.7-93.5 | Siltstone | Benbolt UE | 167 | | 2.69 | M/W interbeds |
| MP-101 | L1-5 | L1-5 BCG | 148.7-149.7 | Micrite | Rockdell UD | 168 | | 2.69 | Siltstone interbeds |
| MP-101 | L1-7 | L1-7-BCH | 216.4-217.6 | Micrite | Rockdell UD | 167 | | 2.68 | |
| MP-101 | L1-8 | L1-8-BG | 251.8-253.6 | Micrite | Rockdell UD | ND | | ND | see note (5) |
| MP-101 | L1-10 | L1-10-BCH | 302.3-303.3 | Micrite | Rockdell UD | 166 | | 2.67 | Siltstone interbeds |
| MP-101 | L1-11 | L1-11 BG | 351.9-353.1 | M/W | Rockdell UC | 168 | | 2.70 | |
| MP-101 | L1-13 | L1-13-BCEH | 451.4-452.4 | Siltstone | Fleanor UB | 170 | | 2.73 | |
| MP-101 | L1-14 | L1-14 BG | 498.2-499.0 | Micrite | Fleanor UB | 169 | | 2.71 | |
| MP-103 | L3-2 | L3-2 | 130.6-131.0 | M/W | Rockdell UD | 168 | | 2.69 | Siltstone and W/P interbeds |
| MP-103 | L3-3 | L3-3-BH | 163.5-164.3 | M/W | Rockdell UD | 168 | | 2.70 | Siltstone and W/P interbeds |
| MP-105 | L3-5 | L3-5-BH | 82.7-83.3 | W/M | Benbolt UE | 168 | | 2.70 | |
| MP-105 | L3-6 | L3-6 | 127.4-127.6 | Siltstone | Benbolt UE | 168 | | 2.69 | M/W interbeds |
| MP-105 | L3-7 | L3-7-BH | 138.1-138.9 | W/G/M | Benbolt UE | 169 | | 2.71 | |
| MP-105 | L3-8 | L3-8 | 161.7-162.1 | M/W | Rockdell UD | 168 | | 2.69 | |
| MP-105 | L3-9 | L3-9-BH | 186.6-187.2 | M/W | Rockdell UD | 166 | | 2.67 | |
| MP-106 | L3-11 | L3-11-BG | 96.3-96.8 | W/M | Benbolt UE | 167 | | 2.69 | |
| MP-106 | L3-12 | L3-12 | 127.8-128.2 | WM | Benbolt UE | 169 | | 2.71 | |
| MP-106 | L3-13 | L3-13-BCG | 163.4-164.0 | Siltstone | Benbolt UE | 167 | | 2.69 | |
| MP-107 | L3-14 | L3-14 | 139.6-140.0 | M/W/P | Rockdell UD | 168 | | 2.70 | |
| MP-107 | L3-15 | L3-15-BG | 159.6-160.7 | M/W | Rockdell UD | 168 | | 2.69 | |
| MP-109 | L3-16 | L3-16-BG | 88.0-88.8 | M/W | Benbolt UE | 168 | | 2.70 | Siltstone interbeds |
| MP-109 | L3-18 | L3-18-BG | 151.8-152.8 | M/W | Benbolt UE | 169 | | 2.71 | Siltstone interbeds |
| MP-110 | L2-1 | L2-1-B | 56.0-58.0 | M/W | Benbolt UE | 170 | | 2.72 | |
| MP-110 | L2-2 | L2-2 BCG | 76.7-77.5 | M/W | Benbolt UE | 169 | | 2.71 | |
| MP-110 | L2-3 | L2-3-BG | 119.0-120.9 | Siltstone | Benbolt UE | 169 | | 2.72 | |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Shaded cells indicate that test not assigned.
(5) ND indicates test not performed - sample not weighed prior to UC test.

Prepared By JDJ 4/4/14
Checked By CDT 4/4/14

# TABLE 5.12
## SUMMARY OF UNIT WEIGHT, MOISTURE CONTENT, AND SPECIFIC GRAVITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| MP-110 | L2-4 | L2-4B | 162.6-164.0 | M/W | Benbolt UE | 168 | (4) | 2.70 | |
| MP-111 | L3-19 | L3-19-BH | 118.9-119.5 | Micrite | Rockdell UD | 167 | | 2.69 | Siltstone interbeds |
| MP-111 | L3-21 | L3-21-BH | 159.2-160.2 | Micrite | Rockdell UD | 167 | | 2.68 | Siltstone interbeds |
| MP-113 | L2-5 | L2-5-BCG | 51.1-51.7 | M/W | Benbolt UE | 168 | | 2.70 | |
| MP-113 | L2-6 | L2-6-B | 60.4-60.9 | M/W | Benbolt UE | 167 | | 2.69 | |
| MP-113 | L2-7 | L2-7-B | 78.7-79.2 | M/W | Benbolt UE | 168 | | 2.70 | |
| MP-115 | L3-23 | L3-23 | 61.2-61.8 | Micrite | Benbolt UE | 168 | | 2.70 | |
| MP-115 | L3-24 | L3-24-BH | 69.4-70.6 | Micrite | Benbolt UE | 168 | | 2.70 | |
| MP-117 | L3-26 | L3-26-BH | 96.5-97.0 | M/W | Benbolt UE | 167 | | 2.68 | Siltstone interbeds |
| MP-118 | L3-28 | L3-28 | 62.8-63.2 | W/M/G | Benbolt UE | 167 | | 2.68 | Siltstone interbeds |
| MP-118 | L3-29 | L3-29-BH | 97.6-99.0 | W/M | Benbolt UE | 168 | | 2.70 | Siltstone interbeds |
| MP-121 | L2-9 | L2-9-B | 51.0-51.5 | Micrite | Benbolt UE | 163 | | 2.62 | Siltstone interbeds |
| MP-121 | L2-10 | L2-10-BG | 80.6-81.8 | M/W | Benbolt UE | 167 | | 2.68 | Siltstone interbeds |
| MP-122 | L3-30 | L3-30-BG | 63.1-64.3 | Micrite | Benbolt UE | 170 | | 2.72 | |
| MP-122 | L3-31 | L3-31-BCH | 79.3-80.6 | Micrite | Benbolt UE | 169 | | 2.71 | Siltstone interbeds |
| MP-201 | L2-12 | L2-12-B | 116.2-116.9 | Micrite | Eidson UA | 167 | | 2.68 | Siltstone interbeds |
| MP-201 | L2-13 | L2-13-BCH | 130.6-131.8 | W/P | Eidson UA | 168 | | 2.69 | Siltstone interbeds |
| MP-201 | L2-14 | L2-14-BCH | 186.2-186.6 | W/P | Upper Blackford UA | 168 | | 2.70 | |
| MP-201 | L2-15 | L2-15-BG | 268.8-269.5 | Siltstone | Upper Blackford UA | 166 | | 2.66 | M/W/P interbeds |
| MP-201 | L2-16 | L2-16-BH | 338.3-339.7 | Dolomite | Newala | 173 | | 2.78 | |
| MP-201 | L2-17 | L2-17-BCG | 366.4-367.5 | Dolomite | Newala | 176 | | 2.82 | |
| MP-202 | L1-16 | L1-16 BG | 31.6-32.6 | Siltstone | Fleanor UB | 168 | | 2.70 | |
| MP-202 | L1-17 | L1-17-BCH | 58.0-58.6 | Siltstone | Fleanor UB | 168 | | 2.70 | Siltstone interbeds |
| MP-202 | L1-20 | L1-20-BG | 91.7-93.3 | Siltstone | Fleanor UB | 169 | | 2.71 | M/W interbeds |
| MP-202 | L1-21 | L1-21-BCG | 111.7-112.9 | Siltstone | Fleanor UB | 167 | | 2.68 | Micrite interbeds |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Shaded cells indicate that test not assigned.

Prepared By JCB 4/4/14
Checked By CDT 4/4/14

# TABLE 5.12
## SUMMARY OF UNIT WEIGHT, MOISTURE CONTENT, AND SPECIFIC GRAVITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| MP-202 | L1-22 | L1-22-BCEG | 148.7-149.6 | Siltstone | Fleanor UB | 169 | (4) | 2.71 | M/W interbeds |
| MP-202 | L1-24 | L1-24-BCH | 161.7-163.3 | Siltstone | Fleanor UB | 168 | | 2.69 | M/W interbeds |
| MP-202 | L1-25 | L1-25-BCG | 217.7-218.7 | Micrite | Eidson UA | 168 | | 2.70 | Siltstone interbeds |
| MP-202 | L1-26 | L1-26-BG | 238.1-239.5 | Micrite | Eidson UA | 167 | | 2.68 | Siltstone interbeds |
| MP-202 | L1-28 | L1-28-BC | 280.2-280.7 | Micrite | Eidson UA | 164 | | 2.64 | Siltstone partings |
| MP-202 | L1-29 | L1-29 BG | 288.9-289.8 | Micrite | Eidson UA | 168 | | 2.70 | Siltstone partings |
| MP-202 | L1-31 | L1-31-BCH | 327.7-328.8 | Siltstone | Upper Blackford UA | 166 | | 2.67 | M/W/P interbeds |
| MP-202 | L1-32 | L1-32-BG | 348.4-349.8 | Siltstone | Upper Blackford UA | 168 | | 2.70 | M/W/P interbeds |
| MP-202 | L1-34 | L1-34-BG | 411.0-412.3 | Siltstone | Upper Blackford UA | 169 | | 2.71 | M/W/P interbeds |
| MP-202 | L1-35 | L1-35-BCH | 436.0-436.9 | Siltstone | Upper Blackford UA | 166 | | 2.67 | M/W/P interbeds |
| MP-202 | L1-36 | L1-36-BG | 457.0-457.7 | Grainstone/W/M | Upper Blackford UA | 169 | | 2.71 | Siltstone interbeds |
| MP-203 | L7-1 | L7-1-BH | 70.6-71.1 | Siltstone | Fleanor UB | 176 | | 2.83 | M/W interbeds |
| MP-203 | L7-2 | L7-2-BCH | 98.9-99.9 | W/M | Eidson UA | 169 | | 2.71 | Siltstone interbeds |
| MP-203 | L7-3 | L7-3-BH | 121.7-122.7 | W/M | Eidson UA | 167 | | 2.68 | Siltstone interbeds |
| MP-205 | L3-32 | L3-32-BH | 72.7-73.5 | Siltstone | Fleanor UB | 167 | | 2.69 | M/W interbeds |
| MP-205 | L7-4 | L7-4-BH | 76.0-77.0 | W/M | Fleanor UB | 169 | | 2.71 | |
| MP-205 | L3-35 | L3-35-BG | 144.7-145.5 | Micrite | Eidson UA | 169 | | 2.71 | Siltstone interbeds |
| MP-205 | L3-36 | L3-36-BCH | 162.6-163.4 | M/W | Eidson UA | 168 | | 2.70 | Siltstone interbeds |
| MP-205 | L3-37 | L3-37-BH | 208.5-209.0 | Micrite | Eidson UA | 168 | | 2.70 | Siltstone interbeds |
| MP-206 | L2-18 | L2-18-B | 57.7-58.9 | Siltstone | Fleanor UB | 168 | | 2.70 | M/W interbeds |
| MP-206 | L2-19 | L2-19-BCG | 76.8-78.0 | Siltstone | Fleanor UB | 168 | | 2.69 | M/W interbeds |
| MP-206 | L2-20 | L2-20-B | 121.8-122.2 | Siltstone | Fleanor UB | 169 | | 2.72 | M/W interbeds |
| MP-206 | L2-21 | L2-21-B | 126.8-127.5 | Micrite | Fleanor UB | 168 | | 2.70 | Siltstone interbeds |
| MP-206 | L2-22 | L2-22-BG | 153.3-154.2 | Siltstone | Fleanor UB | 169 | | 2.71 | M/W interbeds |
| MP-206 | L2-23 | L2-23-B | 168.7-169.2 | Siltstone | Fleanor UB | 167 | | 2.68 | M/W interbeds |
| MP-207 | L7-6 | L7-6-BH | 70.7-71.7 | M/W | Eidson UA | 167 | | 2.69 | Siltstone interbeds |
| MP-207 | L3-38 | L3-38-BG | 96.8-97.8 | M/W | Eidson UA | 167 | | 2.69 | Siltstone interbeds |
| MP-207 | L7-8 | L7-8-BCH | 122.2-122.9 | M/W | Eidson UA | 169 | | 2.71 | Siltstone interbeds |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Shaded cells indicate that test not assigned.

Prepared By 4/4/14
Checked By CDT 4/4/14

# TABLE 5.12
## SUMMARY OF UNIT WEIGHT, MOISTURE CONTENT, AND SPECIFIC GRAVITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| MP-207 | L3-41 | L3-41 | 157.1-157.5 | Siltstone | Upper Blackford UA | 167 | (4) | 2.68 | M/W interbeds |
| MP-209 | L2-24 | L2-24-BG | 81.8-82.3 | Siltstone | Fleanor UB | 168 | | 2.70 | Wackestone interbeds |
| MP-209 | L2-25 | L2-25-BCG | 106.9-107.4 | Siltstone | Fleanor UB | 168 | | 2.70 | Wackestone interbeds |
| MP-209 | L2-27 | L2-27-BCG | 181.3-182.2 | M/W | Eidson UA | 168 | | 2.70 | Siltstone interbeds |
| MP-209 | L2-28 | L2-28-BG | 206.0-206.5 | Micrite | Eidson UA | 167 | | 2.69 | Siltstone interbeds |
| MP-209 | L2-29 | L2-29-BCG | 223.7-224.7 | Micrite | Eidson UA | 167 | | 2.69 | Siltstone interbeds |
| MP-210 | L7-9 | L7-9-BH | 114.0-114.6 | Siltstone | Fleanor UB | 167 | | 2.68 | Wackestone interbeds |
| MP-214 | L3-42 | L3-42 | 80.85-81.25 | Siltstone | Fleanor UB | 167 | | 2.68 | M/W interbeds |
| MP-215 | L2-30 | L2-30-BG | 17.1-18.0 | W/M | Rockdell UC | 167 | | 2.68 | |
| MP-215 | L2-31 | L2-31-C | 36.5-37.1 | Siltstone | Fleanor UB | 167 | | 2.68 | |
| MP-215 | L2-32 | L2-32-B | 79.2-80.1 | Siltstone | Fleanor UB | 169 | | 2.71 | |
| MP-215 | L2-33 | L2-33-BG | 93.3-94.1 | Siltstone | Fleanor UB | 168 | | 2.70 | |
| MP-217 | L3-44 | L3-44 | 74.30-74.70 | Siltstone | Fleanor UB | 168 | | 2.69 | |
| MP-218 | L3-47 | L3-47-BH | 74.5-75.3 | Siltstone | Fleanor UB | 167 | | 2.68 | M/W interbeds |
| MP-218 | CL9-1 | CL9-1-ABG | 66.7-67.7 | Siltstone | Fleanor UB | 169 | 0.6 | 2.71 | M/W interbeds (Special Care) |
| MP-218 | CL9-6 | CL9-6-ABG | 67.8-68.8 | Siltstone | Fleanor UB | 167 | 1.0 | 2.68 | M/W interbeds (Ordinary Care) |
| MP-218 | CL9-2 | CL9-2-ABG | 71.3-72.3 | Siltstone | Fleanor UB | 166 | 1.6 | 2.67 | M/W interbeds (Special Care) |
| MP-218 | CL9-7 | CL9-7-ABG | 72.3-73.3 | Siltstone | Fleanor UB | 169 | 1.1 | 2.71 | M/W interbeds (Ordinary Care) |
| MP-218 | CL9-3 | CL9-3-ABG | 79.5-80.5 | Siltstone | Fleanor UB | 168 | 1.7 | 2.70 | M/W interbeds (Special Care) |
| MP-218 | CL9-8 | CL9-8-ABG | 80.5-81.5 | Siltstone | Fleanor UB | 168 | 1.4 | 2.69 | M/W interbeds (Ordinary Care) |
| MP-218 | CL9-4 | CL9-4-ABG | 85.3-86.3 | Siltstone | Fleanor UB | 169 | 1.1 | 2.72 | M/W interbeds (Special Care) |
| MP-218 | CL9-9 | CL9-9-ABG | 86.3-87.3 | Siltstone | Fleanor UB | 169 | 1.0 | 2.71 | M/W interbeds (Ordinary Care) |
| MP-218 | CL9-5 | CL9-5-ABG | 90.3-91.3 | Siltstone | Fleanor UB | 168 | 1.4 | 2.69 | M/W interbeds (Special Care) |
| MP-218 | CL9-10 | CL9-10-ABG | 91.3-92.3 | Siltstone | Fleanor UB | 167 | 1.4 | 2.69 | M/W interbeds (Ordinary Care) |
| MP-219A | L3-50 | L3-50-BH | 103.3-104.0 | Siltstone | Fleanor UB | 167 | | 2.69 | Wackestone interbeds |
| MP-219A | L3-51 | L3-51-BG | 134.1-134.7 | Micrite | Eidson UA | 168 | | 2.69 | Siltstone interbeds |
| MP-219A | L3-52 | L3-52-B | 167.6-168.1 | Micrite | Eidson UA | 166 | | 2.66 | Siltstone interbeds |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Shaded cells indicate that test not assigned.

Prepared By JPS 4/4/14
Checked By CDT 4/4/14

# TABLE 5.12
## SUMMARY OF UNIT WEIGHT, MOISTURE CONTENT, AND SPECIFIC GRAVITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation (2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| MP-219A | L3-53 | L3-53-BH | 199.1-200.1 | Micrite | Eidson UA | 167 | (4) | 2.68 | Siltstone interbeds |
| MP-219A | L3-54 | L3-54-BG | 219.1-219.6 | Siltstone | Upper Blackford UA | 166 | | 2.66 | M/W interbeds |
| MP-220 | L2-34 | L2-34-C | 57.9-59.0 | Siltstone | Fleanor UB | 168 | | 2.70 | W/M interbeds |
| MP-220 | L2-35 | L2-35-BH | 74.0-74.6 | Siltstone | Fleanor UB | 169 | | 2.71 | W/M interbeds |
| MP-220 | L2-36 | L2-36 BG | 81.3-82.7 | Siltstone | Fleanor UB | 166 | | 2.67 | W/M interbeds |
| MP-222 | L3-55 | L3-55-B | 37.4-38.0 | W/G/M | Rockdell UC | 167 | | 2.68 | Siltstone interbeds |
| MP-222 | L3-56 | L3-56-BH | 66.0-67.3 | Siltstone | Fleanor UB | 168 | | 2.70 | Micrite interbeds |
| MP-401 | L3-58 | L3-58-B | 90.2-91.2 | Dolomite | Newala | 177 | | 2.84 | |
| MP-401 | L3-59 | L3-59-BG | 148.4-149.8 | Dolomite | Newala | 175 | | 2.82 | |
| MP-401 | L3-60 | L3-60-B | 213.5-214.6 | Dolomite | Newala | 172 | | 2.77 | |
| MP-402 | L7-11 | L7-11-BH | 52.1-53.2 | Dolomite | Newala | 175 | | 2.81 | |
| MP-402 | L7-13 | L7-13-BCH | 144.3-145.1 | Dolomite | Newala | 175 | | 2.81 | |
| MP-403 | L7-15 | L7-15-BH | 70.2-71.0 | Dolomite | Newala | 176 | | 2.82 | |
| MP-410 | L7-20 | L7-20-BH | 67.4-67.9 | Grainstone | Rockdell UD | 160 | | 2.57 | |
| MP-410 | L7-21 | L7-21-B | 87.1-87.8 | Siltstone | Rockdell UC | 168 | | 2.70 | |
| MP-410 | L7-23 | L7-23-BH | 166.0-167.0 | Siltstone | Fleanor UB | 168 | | 2.70 | M/W interbeds |
| MP-410 | L7-24 | L7-24-B | 186.5-187.2 | Siltstone | Fleanor UB | 169 | | 2.72 | M/W interbeds |
| MP-412 | L7-17 | L7-17-B | 51.0-51.6 | Siltstone | Upper Blackford UA | 164 | | 2.64 | M/W interbeds |
| MP-412 | L7-19 | L7-19-BH | 166.4-166.9 | Siltstone | Upper Blackford UA | 167 | | 2.68 | M/W interbeds |
| MP-415 | L3-61 | L3-61-BG | 23.3-24.1 | Siltstone | Bowen UF | 160 | | 2.57 | M/W interbeds |
| MP-415 | L3-62 | L3-62-B | 35.1-35.5 | Siltstone | Bowen UF | 163 | | 2.62 | M/W interbeds |
| MP-415 | L3-63 | L3-63-B | 52.9-53.8 | M/W | Benbolt UE | 169 | | 2.71 | Siltstone interbeds |
| MP-415 | L3-64 | L3-64-B | 93.1-94.1 | Micrite | Benbolt UE | 168 | | 2.70 | Siltstone interbeds |
| MP-415 | L3-65 | L3-65-BG | 113.5-114.5 | Micrite | Benbolt UE | 167 | | 2.68 | Siltstone interbeds |
| MP-415 | L3-66 | L3-66-BH | 133.9-134.9 | Micrite | Benbolt UE | 168 | | 2.70 | Siltstone interbeds |
| MP-416 | L3-67 | L3-67-B | 37.2-38.1 | Micrite | Rockdell UD | 169 | | 2.71 | |
| MP-416 | L3-68 | L3-68-B | 166.5-167.6 | Micrite | Rockdell UC | 169 | | 2.71 | Siltstone interbeds |
| MP-416 | L3-69 | L3-69-BH | 179.7-180.6 | W/M | Rockdell UC | 169 | | 2.71 | Siltstone interbeds |
| MP-416 | L3-70 | L3-70-BG | 215.4-216.4 | W/M | Rockdell UC | 169 | | 2.71 | Siltstone interbeds |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Shaded cells indicate that test not assigned.

Prepared By 4/4/14
Checked By CDT 4/4/14

# TABLE 5.12
## SUMMARY OF UNIT WEIGHT, MOISTURE CONTENT, AND SPECIFIC GRAVITY TEST RESULTS - ROCK CORE
## CLINCH RIVER SMR PROJECT
### AMEC PROJECT NO. 6468131072

| Boring Number | Sample ID | Lab ID No. | Sample Depth (feet) | Rock Type (1) | Formation(2) | Unit Weight (pcf) (3) | Moisture Content (%) | Specific Gravity (3) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| MP-416 | L3-71 | L3-71-BH | 255.1-255.7 | Siltstone | Fleanor UB | 169 | (4) | 2.72 | Siltstone interbeds |
| MP-419 | L2-37 | L2-37 BCG | 115.6-116.4 | Dolomite | Newala | 176 | | 2.82 | |
| MP-419 | L2-38 | L2-38-BH | 157.1-157.8 | Micrite | Newala | 169 | | 2.71 | |
| MP-419 | L2-39 | L2-39-BG | 170.1-170.6 | Dolomite | Newala | 177 | | 2.84 | |
| MP-419 | L2-40 | L2-40-BCH | 173.4-174.1 | Chert/Sandstone | Newala | 161 | | 2.59 | Appx. 2 foot bed |
| MP-421 | L7-25 | L7-25-BC | 85.2-86.1 | M/M/W | Upper Blackford UA | 168 | | 2.70 | |
| MP-421 | L7-26 | L7-26-BCH | 175.5-178.3 | Dolomite | Newala | 176 | | 2.83 | |
| MP-421 | L7-28 | L7-28-BC | 305.2-305.7 | Micrite | Newala | 176 | | 2.82 | |
| MP-423 | L7-29 | L7-29-BG | 65.2-66.1 | Micrite | Eidson UA | 164 | | 2.64 | |
| MP-423 | L7-30 | L7-30-BG | 72.6-73.5 | Micrite | Eidson UA | 165 | | 2.65 | |
| MP-423 | L7-31 | L7-31-BH | 81.5-82.5 | Micrite | Eidson UA | 166 | | 2.66 | |
| MP-423 | L7-32 | L7-32-B | 102.5-103.4 | Micrite | Eidson UA | 169 | | 2.71 | |
| MP-423 | L7-33 | L7-33-BCG | 121.5-122.6 | Micrite | Eidson UA | 167 | | 2.69 | |
| MP-423 | L7-34 | L7-34-BG | 134.2-135.2 | Grainstone/M | Upper Blackford UA | 168 | | 2.69 | |
| MP-423 | L7-35 | L7-35-BG | 182.6-183.1 | Siltstone | Upper Blackford UA | 166 | | 2.67 | |
| MP-423 | L7-36 | L7-36-BG | 213.6-214.1 | W | Upper Blackford UA | 165 | | 2.65 | |
| MP-423 | L7-37 | L7-37-BG | 299.3-300.7 | Dolomite | Newala | 176 | | 2.83 | |
| CC-B2 | L7-38 | L7-38-BG | 121.3-122.0 | Siltstone | Rome | 164 | | 2.63 | Micrite interbeds |
| CC-B2 | L7-39 | L7-39-BG | 161.6-162.4 | Siltstone | Rome | 163 | | 2.62 | Micrite interbeds |

(1) Rock Types: Dolomitic Limestone (DL); Micrite; Micrite/Mudstone (M/M); Micrite/Wackestone (M/W); Micrite/Wackestone/Packstone (M/W/P); Wackestone/Micrite (W/M);Siltstone;Grainstone;Dolomite
(2) Formation, Unit Designation (UA, etc). Fleanor and Eidson are Members of the Lincolnshire Formation.
(3) Unit weight and specific gravity based on as-received moisture conditions. Unit weight reported to nearest pound.
(4) Shaded cells indicate that test not assigned.

# TABLE 5.13
## SUMMARY OF VALIDATED GEOCHEMISTRY TEST RESULTS
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT No. 6468131072

| Method | Parameter | Units | OW-101L 11/19/2013 Result | Qual | OW-101L DUP 11/19/2013 Result | Qual | OW-202L 11/22/2013 Result | Qual | OW-401L 11/21/2013 Result | Qual | OW-409U 11/19/2013 Result | Qual | OW-409L 11/19/2013 Result | Qual | OW-415U 11/20/2013 Result | Qual | OW-416L 11/21/2013 Result | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Anions** | | | | | | | | | | | | | | | | | |
| 300.0 | Nitrate as N | mg/L | 0.0054 | JQ | 0.0099 | JQ | 0.028 | | 0.15 | | 0.88 | | 0.12 | | 0.90 | | 0.20 | |
| 300.0 | Nitrite as N | mg/L | <0.020 | U | <0.020 | U | <0.020 | UL | <0.020 | UL | <0.020 | U | 0.0052 | JQ | <0.020 | UL | <0.020 | U |
| 300.0 | Fluoride | mg/L | 0.22 | | 0.19 | | 7.4 | | 0.20 | JH | 0.25 | | 0.37 | | 0.13 | | 0.39 | |
| 300.0 | Chloride | mg/L | 2.1 | | 2.1 | | 24 | | 1.4 | | 1.8 | | 2.2 | | 8.8 | | 7.6 | |
| 300.0 | Bromide | mg/L | 0.038 | JQ | 0.04 | JQ | 0.17 | JQ | <0.25 | U | <0.25 | U | <0.25 | U | 0.053 | JQ | 0.071 | JQ |
| 300.0 | Sulfate | mg/L | 42 | | 43 | | 93 | | 6.9 | | 83 | | 150 | | 36 | | 63 | |
| | **Alkalinity** | | | | | | | | | | | | | | | | | |
| 310.1 | Total Alkalinity | mg/L | 300 | | 290 | | 680 | | 180 | | 270 | | 300 | | 270 | | 300 | |
| 310.1 | Bicarbonate Alk as $CaCO_3$ | mg/L | 300 | | 290 | | 600 | | 180 | | 270 | | 300 | | 270 | | 300 | |
| 310.1 | Carbonate Alk as $CaCO_3$ | mg/L | <5.0 | U | <5.0 | U | 78 | | <5.0 | U | <5.0 | U | <5.0 | U | <5.0 | U | <5.0 | U |
| | **Ammonia** | | | | | | | | | | | | | | | | | |
| 350.1 | Ammonia | mg/L | 0.310 | J | 0.350 | J | 0.580 | J | 0.140 | J | 0.099 | J | 0.710 | J | 0.140 | J | 0.120 | J |
| | **Total Dissolved Solids** | | | | | | | | | | | | | | | | | |
| | TDS | mg/L | 370 | | 370 | | 1100 | | 190 | | 410 | | 520 | | 370 | | 420 | |
| | **Total Metals** | | | | | | | | | | | | | | | | | |
| SW6020A | Calcium | mg/L | 130 | J | 99 | J | 23 | | 40 | | 140 | | 46 | | 150 | | 99 | |
| SW6020A | Iron | mg/L | 0.33 | | 0.31 | | 19 | | 0.14 | | 0.22 | | 0.068 | | 0.39 | | 0.072 | |
| SW6020A | Potassium | mg/L | 2.1 | | 2.1 | | 14 | | 1.8 | | 1.2 | | 8.1 | | 2.4 | | 0.77 | |
| SW6020A | Magnesium | mg/L | 23 | | 22 | | 9.9 | | 22 | | 23 | | 31 | | 13 | | 13 | |
| SW6020A | Manganese | mg/L | 0.05 | | 0.048 | | 0.16 | | 0.008 | | 0.011 | | 0.017 | | 0.046 | | 0.020 | |
| SW6020A | Sodium | mg/L | 7.8 | | 7.6 | | 280 | | 0.91 | | 4.8 | | 99 | | 5.2 | | 29 | |
| SW6020A | Silicon | mg/L | 3.9 | | 4.2 | | 82 | | 4.7 | | 7.6 | | 4.6 | | 7.6 | | 5 | |
| SW6020A | Silica | mg/L | 8.3 | | 9 | | 170 | | 10 | | 16 | | 9.9 | | 16 | | 11 | |
| | **Cation/Anion Balance** | | | | | | | | | | | | | | | | | |
| SM1030F | Sum of Anions | meq/L | 6.9 | | 6.8 | | 17 | | 3.8 | | 7.2 | | 9.2 | | 6.5 | | 7.6 | |
| SM1030F | Sum of Cations | meq/L | 8.8 | | 7.2 | | 16 | | 3.9 | | 9.1 | | 9.4 | | 8.9 | | 7.3 | |
| SM1030F | Cation/Anion Balance | % | 12 | | 3.0 | | -3.2 | | 1.4 | | 12 | | 1.1 | | 16 | | -1.7 | |
| SM1030F | % Error | % | 12 | | 3.0 | | -3.2 | | 1.4 | | 12 | | 1.1 | | 16 | | -1.7 | |

**Notes:**
meq/L = milliequivalents per liter
mg/L = milligrams per liter
% = percent

**Data Qualifier Definitions**
J = Estimated quantitation based on associated QC data
JQ = Estimated quantitation; value is between the reporting limit and the detection limit
JH = Estimated quantitation; possibly biased high based on QC data
JL = Estimated quantitation; possibly biased low based on QC data
U = Undetected.
UJ = Undetected; the reporting detection limit is considered imprecise.
UL = Undetected; data biased low: the reporting detection limit is higher than indicated.

# TABLE 5.13
## SUMMARY OF VALIDATED GEOCHEMISTRY TEST RESULTS
## CLINCH RIVER SMR PROJECT
## AMEC PROJECT No. 6468131072

| Method | Parameter | Units | OW-417L 11/21/2013 Result | Qual | OW-418U 11/20/2013 Result | Qual | OW-419U 11/20/2013 Result | Qual | OW-420L 11/22/2013 Result | Qual | OW-420L DUP 11/22/2013 Result | Qual | OW-421L 11/22/2013 Result | Qual | OW-423U 11/19/2013 Result | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Anions** | | | | | | | | | | | | | | | |
| 300.0 | Nitrate as N | mg/L | <0.020 | U | 0.68 | | 0.43 | | 0.36 | J | 0.25 | J | 1.6 | | 0.14 | |
| 300.0 | Nitrite as N | mg/L | <0.020 | U | <0.020 | U | <0.020 | U | <0.020 | UL | <0.020 | UL | <0.020 | UL | <0.020 | U |
| 300.0 | Fluoride | mg/L | 0.18 | | 0.3 | | 0.16 | | 0.31 | JH | 0.35 | | 0.58 | | 0.090 | JQ |
| 300.0 | Chloride | mg/L | 2.8 | | 2.7 | | 1.3 | | 2.1 | J | 2.6 | J | 2.6 | | 2.7 | |
| 300.0 | Bromide | mg/L | 0.048 | JQ | <0.25 | U | <0.25 | U | <0.25 | U | <0.25 | U | <0.25 | U | <0.25 | U |
| 300.0 | Sulfate | mg/L | 13 | | 20 | | 17 | | 14 | | 15 | | 8.3 | | 24 | |
| | **Alkalinity** | | | | | | | | | | | | | | | |
| 310.1 | Total Alkalinity | mg/L | 320 | | 270 | | 270 | | 230 | | 240 | | 210 | | 290 | |
| 310.1 | Bicarbonate Alk as $CaCO_3$ | mg/L | 320 | | 270 | | 270 | | 230 | | 240 | | 210 | | 290 | |
| 310.1 | Carbonate Alk as $CaCO_3$ | mg/L | <5.0 | U | <5.0 | U | <5.0 | U | <5.0 | U | <5.0 | U | <5.0 | U | <5.0 | U |
| | **Ammonia** | | | | | | | | | | | | | | | |
| 350.1 | Ammonia | mg/L | 0.140 | J | 0.059 | J | 0.140 | J | 0.110 | J | 0.140 | J | <0.050 | UL | 0.083 | J |
| | **Total Dissolved Solids** | | | | | | | | | | | | | | | |
| | TDS | mg/L | 340 | | 300 | | 290 | | 270 | | 280 | | 230 | | 340 | |
| | **Total Metals** | | | | | | | | | | | | | | | |
| SW6020A | Calcium | mg/L | 61 | | 52 | | 72 | | 59 | | 59 | | 38 | | 99 | |
| SW6020A | Iron | mg/L | 0.041 | JQ | 0.055 | | 0.023 | JQ | 0.25 | | 0.29 | | 0.23 | | 0.076 | |
| SW6020A | Potassium | mg/L | 3.4 | | 2.7 | | 1.5 | | 1.8 | | 1.9 | | 12 | | 1.3 | |
| SW6020A | Magnesium | mg/L | 31 | | 19 | | 29 | | 26 | | 26 | | 27 | | 19 | |
| SW6020A | Manganese | mg/L | 0.021 | | 0.0037 | | 0.0023 | | 0.033 | | 0.032 | | 0.01 | | 0.051 | |
| SW6020A | Sodium | mg/L | 22 | | 40 | | 0.91 | | 1.2 | | 1.3 | | 12 | | 8.7 | |
| SW6020A | Silicon | mg/L | 6.1 | | 8.7 | | 3.2 | | 4.2 | | 4.4 | | 6 | | 7.2 | |
| SW6020A | Silica | mg/L | 13 | | 19 | | 6.8 | | 9 | | 9.4 | | 13 | | 15 | |
| | **Cation/Anion Balance** | | | | | | | | | | | | | | | |
| SM1030F | Sum of Anions | meq/L | 6.8 | | 6.0 | | 5.8 | | 5.0 | | 5.2 | | 4.6 | | 6.4 | |
| SM1030F | Sum of Cations | meq/L | 6.7 | | 6.0 | | 6.1 | | 5.2 | | 5.2 | | 5.0 | | 6.9 | |
| SM1030F | Cation/Anion Balance | % | -0.76 | | 0.019 | | 2.0 | | 2.1 | | -0.019 | | 3.9 | | 4.1 | |
| SM1030F | % Error | % | -0.76 | | 0.019 | | 2.0 | | 2.1 | | -0.019 | | 3.9 | | 4.1 | |

**Notes:**
meq/L = milliequivalents per liter
mg/L = milligrams per liter
% = percent

**Data Qualifier Definitions**
J = Estimated quantitation based on associated QC data
JQ = Estimated quantitation; value is between the reporting limit and the detection limit
JH = Estimated quantitation; possibly biased high based on QC data
JL = Estimated quantitation; possibly biased low based on QC data
U = Undetected.
UJ = Undetected; the reporting detection limit is considered imprecise.
UL = Undetected; data biased low: the reporting detection limit is higher than indicated.

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Reviewed JAH 4/10/14