August 29, 2016

Marilyn Long, Project Manager
TCEQ Superfund Section, MC-136
P.O. Box 13087
Austin, TX 78711-3087

Re: DRAFT Fiscal Year 2016 Operations and Maintenance Inspections Letter Report
Rockwool Industries, Inc. Federal Superfund Site
1741 Taylors Valley Road, Belton, Bell County, Texas.
TCEQ Site Identification Number SUP033

Dear Ms. Long:

This letter summarizes the operations and maintenance (O&M) inspections performed in March 2016, May 2016, June of 2016, and July 2016 by Daniel B. Stephens & Associates, Inc. (DBS&A) in order to complete the assigned tasks outlined under Texas Commission on Environmental Quality (TCEQ) Contract 582-14-40670, Work Order # 327-0055 at the Rockwool Industries, Inc. (RWI) Federal Superfund Site located in Belton, Bell County, Texas. Specifically, DBS&A performed the work in accordance with the February 11, 2011 Rockwool Industries, Inc. Superfund Site O&M Plan (DBS&A, Feb 2011); the June 11, 2015 Addendum Number 3 (FSP3) to the April 26, 2011 Rockwool Industries, Inc. Federal Superfund Site Field Sampling Plan for Operations & Maintenance Activities (DBS&A, June 2015); and the Wilder Construction Company MatCon® Operation and Maintenance Plan for Rockwool Superfund Site (Wilder, 2006). The site inspection and maintenance activities have been developed in accordance with Texas Administrative Code (TAC) requirements for closure and remediation of industrial solid waste and municipal hazardous waste landfill facilities per 30 TAC §335.8 and the Wilder Construction Company MatCon® Operation and Maintenance Plan for Rockwool Superfund Site (Wilder, 2006).

In support of the 5-year review, inspections were performed at the site to ensure that the containment cells and drainage controls installed in the Geer Property-Cemetery, North Property, and Central Property areas are performing as designed, and to document that regular maintenance and repairs are performed as needed. Specifically, inspections were conducted on the following site features:

- DBS&A inspected the on-site groundwater monitoring wells for any evidence of damage and tampering, and to ensure that the protective steel well casing are securely locked and the well identification numbers are clearly visible. Exterior conditions of the monitoring wells assessed included well visibility and accessibility, casing and well cap condition, signs of unauthorized tampering, and proper operation of the security padlocks.

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- DBS&A, with the support of Braun Intertec Corporation (Braun Intertec), inspected possible erosion occurrences over the capped waste that could threaten the stability of the articulated concrete blocks (ACBs) located along the Leon River Bank (LRB). In addition, the ACBs were inspected to identify displacement or loss of the blocks, the loss of continuity of interlocking blocks, and evidence of instability.

- DBS&A and Braun Intertec inspected the integrity of a concrete storm water outfall for signs of cracks. The outfall is connected to the corrugated metal drain pipe located between the North Shop Pile and capped EVL and traverses to the LRB. This drainage pipe along with the pipes located at the Cemetery Shot Pile were also inspected for signs of blockage.

- In March, May, and July of 2016, DBS&A sampled groundwater seeps originating from the ACB area along the south river bank and submitted those samples for laboratory analysis. The groundwater seeps are located approximately 100 feet north of the capped EVL.

In addition, integrity inspections were conducted on the MatCon Hot Mixed Asphaltic Concrete (HMA) Cover in March, May, and June of 2016. The visual inspections of the HMA cover were performed to document any evidence of settlement, cracking, animal holes, pooled water, erosion, or deep-rooted vegetation, and indications of a dense grass mats. On July 28, 2016, coring and soil sampling activities were performed throughout the MatCon HMA Cover in support of assessing the integrity of cover. The coring assessment activities are presented in this report; however, further information of the assessment is addressed under a separate cover prepared by Braun Intertec.

The maintenance inspections were performed as required in support of the Record of Decision (ROD) for the RWI Federal Superfund Site (EPA, 2004) in order to ensure the continued protectiveness of the selected remedy. Field notes of the inspection activities are provided in **Attachment A**. Photographic documentation of the maintenance and inspection activities (Part I and Part II Site Photographic Logs) are provided in **Attachment B**.

Site Background

In 2010, the TCEQ contracted DBS&A to perform O&M activities in the form of groundwater monitoring and other inspection and maintenance tasks to ensure the continued protectiveness of the selected remedy at the RWI Federal Superfund Site located at 1741 Taylors Valley Road, Belton, Bell County, Texas. **Figure 1** (Site Location Map) of this report presents a map illustrating the location of the RWI facility and the surrounding area.

The RWI Site includes an approximate 100-acre tract of land in a primarily industrial area located one quarter mile east of Interstate 35 in Bell County, Texas. The RWI Site is bordered to the north by the Leon River and to the south and west by Nolan Creek. East Belton Cemetery and other commercial and undeveloped private properties lie to the west of the RWI Site and light industrial properties lie to the east.

The RWI Site is broadly divided into two main areas; the North Property and the Central Property as illustrated in **Figure 2** (Site Map). The North Property and adjoining Geer Property-Cemetery area constitute a 14-acre tract of land on the north side of Taylor's Valley Road. The Central Property includes Operable Unit 2 (OU2) and forms a 47-acre tract of land south of Taylor's Valley Road extending to FM-93. Historically, the RWI Site included a Non-Process tract that covered approximately 40-acres of land located south of FM-93, which traversed southwest to Nolan Creek. During prior remedial investigations, the Non-Process tract was determined to be free of contaminant impacts; therefore, this 40-acre tract of land is no longer considered part of the RWI Site.

The remedial action (RA) at the RWI Site was completed by previously contracted consultants as defined in the ROD. The RA was performed in accordance with the accepted remedial design (RD). The RA consisted of activities utilized to eliminate human and ecological exposure to contaminated waste emanating from the RWI Site. RA processes included drainage improvement activities, waste and soil excavation and removal and the placement of clay and topsoil caps over the contaminated areas. The clay/topsoil covered areas were marked and surveyed for institutional control and replanted with vegetative cover. The RA also consisted of the construction and capping of a containment cell designed to contain excavated waste from areas of the RWI Site. Site inspections conducted by Shaw Environmental, Inc. (Shaw) in June 2013 identified several areas of the site that needed maintenance work, including maintenance issues pertaining to the HMA cover.

From July 28, 2014 through August 8, 2014, DBS&A provided oversight of fence construction activities at the RWI Site. The north side of the Central Property and east side of the North Property were equipped with new fencing. In order to be consistent with the existing surrounding fences, a chain link fence was constructed between the cemetery property and the site on the North property and a barbed wire fence was constructed along the north side of the Central Property. During the fence construction activities, vegetation was cleared to ground surface from a distance of three (3) feet to each side of proposed fence location.

Repair crews mobilized to the site in August 2014 to initiate asphalt repairs for the HMA Cover. General sequence of repair operations included installation of the drainage swale crossing, apron repair, patching, crack sealing, and the application of the seal coat.

Throughout fiscal years 2015 and 2016, DBS&A with the support of Braun Intertec conducted the O&M inspections focusing on documenting the condition of the existing groundwater monitoring wells, ACBs, drainage pipes, storm water outfall, and HMA cover.

Condition of Groundwater Monitoring Wells (FY 2016)

During each groundwater monitoring event in FY 2016 (March, May, and July 2016), DBS&A inspected the on-site groundwater monitoring wells for any evidence of damage and tampering, and to ensure that the protective covers are securely locked and each well identification number is clearly visible. **Figure 2** of this report presents a site map illustrating the RWI site features including the locations of the groundwater monitoring wells. For reference, photographic documentation (Part I - Site Photographic Log) is included in **Attachment A** and field notes are included in **Attachment B**. Well inspection findings identified during the inspection event along with recommendations for well repairs and/or upgrades are presented in **Table 1** below.

Table 1. Condition of Groundwater Monitoring Wells

Well ID	Date Well Inspected	FY 2015 Well Inspection Notes	FY 2016 Well Inspection Notes	Recommendation
MW-7	1/28/2015 & 7/26/2016	**Well is protected by corrugated steel cover; Hinges on steel cover are broken; A tear was observed on one side of the steel cover.**	No change since FY 2015 inspection.	Replace corrugated steel sheet on damaged side and replace damaged hinges.
MW-9	1/28/2015 & 7/26/2016	No repairs needed.	**Well pad and protective casing are slanted/bent; Soil erosion observed underneath well pad.**	Replace well pad and install new protective casing.
MW-10	1/28/2015 & 7/26/2016	No repairs needed.	No change since FY 2015 inspection.	--
MW-11	1/28/2015 & 7/26/2016	**Soil erosion observed underneath well pad.**	No change since FY 2015 inspection.	Backfill areas underneath well pad with soil/gravel.
MW-14	1/28/2015 & 7/26/2016	**Well label missing.**	No change since FY 2015 inspection.	Install new well label.
MW-15	1/28/2015 & 7/26/2016	**Casing obstructed at 19.1 feet below top of casing (silt accumulation?).**	No change since FY 2015 inspection.	MW-15 continues to be dry after several well gauging events. DBS&A recommends to either re-develop, plug and abandon the well, or keep the well and monitor the well for future water accumulation.

Well ID	Date Well Inspected	FY 2015 Well Inspection Notes	FY 2016 Well Inspection Notes	Recommendation
MW-16	1/28/2015 & 7/26/2016	**Well dry after several gauging events.**	No change since FY 2015 inspection.	MW-16 continues to be dry after several well gauging events. DBS&A recommends to either re-develop, plug and abandon, or keep the well (monitor the well for future water accumulation).
MW-18	1/28/2015 & 7/26/2016	**Hinge on well cover is broken; Well not surveyed.**	No change since FY 2015 inspection.	Install new hinge on protective casing and survey the well.
MW-19	1/28/2015 & 7/26/2016	**Well label missing; Soil erosion observed underneath pad**	No change since FY 2015 inspection.	Install new well label. Backfill areas underneath well pad with soil/gravel.
MW-20	1/28/2015 & 7/26/2016	No repairs needed	No change since FY 2015 inspection.	--
MW-21	1/28/2015 & 7/26/2016	**Hinge on well cover is broken; Missing well bollards**	No change since FY 2015 inspection.	Install new hinge on protective casing. Install vehicle bollards around the well pad.
MW-22	1/28/2015 & 7/26/2016	**Missing well bollards**	No change since FY 2015 inspection.	Install vehicle bollards around the well pad.
MW-25	1/28/2015 & 7/26/2016	**Newly discovered well; No well cap and no lock; Well not surveyed; Well casing bent (2-inch diameter bailers or pumps cannot be placed downhole).**	No change since FY 2015 inspection.	DBS&A recommends to plug and abandon the well.
MW-24-90	1/28/2015 & 7/26/2016	**Northwest corner of well pad is damaged.**	**Needs well label**	Repair broken corner of well pad or replace well pad. Install new well label.
MW-27-90	1/28/2015 & 7/26/2016	No repairs needed	No change since FY 2015 inspection.	--
MW-28-90	1/28/2015 & 7/26/2016	No repairs needed	**Needs well label**	Install new well label.
MW-29-90	1/28/2015 & 7/26/2016	No repairs needed	No change since FY 2015 inspection.	--
MW-30-90	1/28/2015 & 7/26/2016	**Well pad corners appear to be chipped.**	**Needs well label**	Monitor for future structural damage. Install new well label.
MW-33-90	1/28/2015 & 7/26/2016	**Well pad and protective casing are slanted/bent; Soil erosion observed underneath well pad.**	No change since FY 2015 inspection.	Replace concrete well pad and install new protective casing.

Well ID	Date Well Inspected	FY 2015 Well Inspection Notes	FY 2016 Well Inspection Notes	Recommendation
MW-34-90	1/28/2015 & 7/26/2016	**Soil erosion observed underneath pad**	**Well pad is slanted; Soil erosion observed underneath well pad.**	Backfill areas underneath well pad with soil/gravel.
MW-35-90	1/28/2015 & 7/26/2016	**Missing well bollards**	No change since FY 2015 inspection.	Install vehicle bollards around the well pad.
MW-36-90	1/28/2015 & 7/26/2016	**Plugged and Abandoned on 5/31/2013.**	No change since FY 2015 inspection.	--
MW-37-90	1/28/2015 & 7/26/2016	**Missing well bollards**	No change since FY 2015 inspection.	Install vehicle bollards around the well pad.
MW-38-90	1/28/2015 & 7/26/2016	**Missing well bollards**	No change since FY 2015 inspection.	Install vehicle bollards around the well pad.

Site Notes:
Monitoring wells MW-01, MW-02, MW-03, MW-04A, MW-05, MW-06, MW-08, MW-12, MW-23, MW-25-90, MW-26-90 and MW-32-90 were

previously plugged and abandoned

Overall, the groundwater monitoring wells located at the RWI were in manageable condition with active wells being accessible. In addition, the majority of monitoring wells appear to be in fair to good condition with most wells having protective metal bollards or metal tubing guard rails.

North Property O&M Inspections

In response to the United States Environmental Protection Agency (USEPA) document titled "First Five-Year Review (Review) for the Rockwool Industries, Inc. Superfund Site, Belton, Bell County, Texas" dated September 2012, DBS&A and Braun Intertec conducted inspections at the North Property to assess the follow-up action items recommended by the USEPA **(Table 2)**.

Table 2. EPA Findings and Recommendations

EPA FINDING	EPA RECOMMENDED ACTION
Drainage corrugated metal pipes (CMPs) are partially clogged at the Cemetery Shot Pile (CSP), and in the stabilized LRB between the North Shop Pile and capped Evaporation Lagoon (EVL).	Clear out all the CMPs at the site.
The concrete outfall to the CMP in the stabilized LRB is cracked. The cracks are sufficiently large to possibly allow water to erode and undermine the outfall.	Patch the cracks in the outfall for the CMP in the stabilized LRB.

EPA FINDING	EPA RECOMMENDED ACTION
There is active erosion near the western edge of the capped EVL. This erosion may be occurring over capped waste, and could also threaten the stability of the ACB in the LRB.	The erosion near the edge of the capped EVL should be repaired and addressed in a manner to reduce or prevent future erosion.

Corrugated Drainage Metal Pipes

One CMP is located between the North Shop Pile and capped EVL (see Part I - Site Photographic Log, photograph #50). At the CSP, two CMPs are located under the stockpiled material to reduce surface erosion (see Part I - Site Photographic Log, photograph #52 and #53). On June 16, 2016, DBS&A and Braun Intertec performed an inspection of the onsite CMPs. At the time of the site inspection, minor vegetation growth and debris were observed at the discharge location of the North Shop Pile and capped EVL CMP; however, the vegetation and debris did not appear to cause an obstruction of water flow within the CMP (see Part I - Site Photographic Log, photograph #50). At the time of the inspection, accumulated vegetation and debris were removed by hand by DBS&A personnel.

RECOMMENDATION: Continue to monitor for signs of obstructions within the CMPs.

Concrete Outfall

The concrete outfall surrounding the CMP located at the stabilized LRB between the North Shop Pile and capped EVL was inspected during the site inspection. Based on observations performed by DBS&A and Braun Intertec, an approximately 2-inch wide crack was identified on each side of the CMP (see Part I - Site Photographic Log, photographs #49 and #50).

RECOMMENDATION: DBS&A recommends sealing the cracks located at the concrete outfall surrounding the CMP utilizing a concrete filler and sealant. In addition, it is recommended that the base of the concrete outfall be supported by a reinforced concrete footing or equivalent to prevent undercutting and erosion occurrences underneath the concrete.

Capped EVL Erosion

A former erosion channel measuring approximately 3-feet wide and 3-feet deep was located approximately 40 feet west of MW-35-90. The channel traversed towards the Leon River embankment and is parallel to the existing underground drainage pipe. In June 2013, gravel and caliche stones (riprap) were placed and graded throughout the eroded channel to stabilize surface soils and prevent future erosion occurrences. During the June 2016 O&M inspections, the riprap appeared to be in good condition and did not require further repairs or controls to stabilize the soils.

RECOMMENDATION: Continue to monitor the riprap for loss of soil and stabilization.

Vegetation Control and Brush Removal

In May 2013, approximately 2.5 acres of vegetation consisting of trees, bushes and weeds were cleared and removed from the ACB area without disturbing the ACBs in place. Grass and weeds were "weedeated" and any trees, brush, and other larger diameter vegetation were removed by cutting them at ACB grade level. Based on observations conducted by DBS&A and Braun Intertec in June 2016, ground cover vegetation (e.g. grass) appeared to be moderately effective in preventing new growth of larger diameter vegetation. However, during the inspections, portions of the ACBs contained new tree and bush growth (see Part I - Site Photographic, Log photographs #47, #48, and #51).

RECOMMENDATION: Cut and remove trees and bushes throughout the ACB; uproot if necessary without damaging the ACB cover.

Groundwater Seep Sampling Events

During the March 2015 O&M inspections, DBS&A and Braun observed groundwater seeps originating from the ACB area along the south river bank, approximately 100 feet north of the capped EVL area. The seeps were identified as an upper area where the sounds of "running water" were audibly observed and a lower area where ponding water was visually observed (see Part I - Site Photographic Log, photographs #25, #26, #27, and #28). Based on the seep findings, DBS&A was authorized in FY15 and FY16 to collect water samples from the seeps for laboratory analysis of the RWI COCs. The objective of the groundwater seep sampling activities is to determine if leaching of RWI COCs via the groundwater seeps to the Leon River are occurring.

In FY15 and FY16, water samples were collected from two (2) upper seep locations (see Part I - Site Photographic Log, photographs #39 and #40) and two (2) lower seep locations in accordance with Addendum No. 3 to the FSP. The flow rate for each seep was measured using a measuring cup and a timer prior to sample collection. The flow rate for the upper and lower seep was measured to be approximately 25 milliliters per minute (ml/min) and 40 ml/min, respectively. No "upper" groundwater seeps were observed during the July 2016 sampling event; therefore, only the "lower" samples were collected. The groundwater seep sampling activities are further discussed in the 2016 Annual Operations & Maintenance Report submitted under a separate cover; and include the laboratory analytical report for the seep samples.

Analytical results from water samples collected from selected seep locations were compared to the human health Preliminary Remediation Goals (PRGs) for the COCs in order to ensure the continued protectiveness of the selected remedy and to determine the level of contamination

originating from the groundwater seeps. The concentrations of the PRGs for the COCs in groundwater, as defined in the FSP are 6 micrograms per liter (µg/L) for antimony, 10 µg/L for arsenic, and 5 µg/L for lead. **Table 3** (Summary of PRG Exceedances - Groundwater Seeps) below presents the cumulative analytical data results for groundwater seep samples collected in in FY15 and FY16.

Table 3 - Summary of PRG Exceedances - Groundwater Seeps

Sample ID	Lab Sample ID	Sample Date	Antimony (mg/L)	Arsenic (mg/L)	Lead (mg/L)
Preliminary Remediation Goals (mg/L)			**0.006**	**0.010**	**0.005**
SP-1 Upper	1506261-24	6/22/2015	**0.306**	**0.0266**	**0.0184**
SP-2 Upper	1506261-25	6/22/2015	**0.341**	**0.0412**	**0.0312**
SP-1 Upper	1603157-01	3/15/2016	**1.73**	**0.0840**	0.00072 J
SP-2 Upper	1603157-01	3/15/2016	**1.76**	**0.0918**	**0.00643**
SP-1 Upper	1605244-26	5/24/2016	**1.18**	**0.104**	**0.0233**
SP-2 Upper	1605244-27	5/24/2016	**1.88**	**0.241**	**0.00701**
SP-1 Lower	1506261-26	6/22/2015	0.00226 J	0.0023 J	<0.000300
SP-2 Lower	1506261-27	6/22/2015	0.000993 J	0.00228 J	0.000305 J
SP-1 Lower	1603157-03	3/15/2016	**1.29**	**0.0618**	0.000382 J
SP-2 Lower	1603157-04	3/15/2016	**1.34**	**0.0599**	0.000574 J
SP-1 Lower	1605244-28	5/24/2016	**1.48**	**0.144**	**0.00603**
SP-2 Lower	1605244-29	5/24/2016	**1.46**	**0.152**	**0.00576**
SP-1 Lower	1607338-15	7/27/2016	**0.243**	**0.540**	0.00353
SP-2 Lower	1607338-16	7/27/2016	**0.428**	**0.680**	**0.0392**

*Values in **bold** indicate results above Preliminary Remediation Goals (PRGs)*

J = Estimated result /analyte detected between SDL and MQL.

During the groundwater seep sampling events in FY16, groundwater seep samples collected from both the upper and lower seep locations demonstrated concentrations of antimony, arsenic, and lead above their respective PRGs with the exception of lead in SP-1 Upper, SP-1 Lower, and SP-2 Lower in March 2016 and SP-1 Lower in July 2016. Based on the analytical report, the exceedances are likely an indication of contaminant leaching from the subsurface soil and waste located at the EVL area.

RECOMMENDATION: Continue to sample and submit seep samples for laboratory chemical analysis in order to evaluate the COC trend of the groundwater seeps.

Central Property O&M Inspections (HMA Cover)

On June 16, 2016, DBS&A and Braun Intertec performed an inspection and assessment of the HMA Cover repairs previously completed in the fall of 2014. The 2014 HMA repair activities have been summarized and provided in a report to the TCEQ under a separate cover. Cracks previously identified throughout the HMA cover were sealed using Martin EZ-7 Cold-Applied Crack Sealant, which is a rubber-asphalt (cold applied) crack sealing compound that complies with TxDOT Specification 300.2 H. On 8/26/2014, approximately 2,800 linear feet of cracks were sealed in general conformance with specifications outlined in the Operation and Maintenance Plan for MatCon HMA Cover. Additionally, cracks sealed were resealed on four separate occasions (9/24/2014, 10/28/2014, 11/10/2014, and 10/19/2015).

During the Fiscal Year 2016 O&M inspections, DBS&A visually identified new cracks as well as previously sealed cracks that have reopened (see Part I - Site Photographic Log, photographs #29 through #46). In FY16, crack measurements collected by DBS&A during two separate occasions indicated the following:

- Approximately 880 feet of new cracks and previously sealed cracks that have reopened were measured on March 29, 2016.
- Approximately 114 feet of new cracks that have formed over a 2 month period since March 2016 were measured on May 26, 2016.
- Approximately 850 feet of cracks were measured at the patch overlay areas on May 26, 2016.

The total number of cracks equates to approximately 1,844 feet of cracks located throughout the MatCon HMA cover. On the June 16, 2016, DBS&A and Braun were accompanied by the TCEQ to evaluate the cracks. Based on site observations, the majority of the cracks were observed on the southern half of the HMA cover.

As a result of the crack reoccurrences throughout the HMA cover, asphalt coring activities were performed on July 28, 2016 in order to conduct a preliminary observation of conditions located underneath the MatCon HMA cover. The coring activities were performed by TCEQ subcontractor Sunbelt Industrial Services (Sunbelt) with oversight by DBS&A and Braun Intertec. The coring activities were performed in a manner following the guidelines set forth in the MatCon® O&M Manual located in Attachment D of the Wilder Construction Company MatCon® Operation and Maintenance Plan prepared for the Rockwool Superfund Site. The MatCon® O&M Manual outlines site inspection and maintenance activities to be conducted in accordance with Texas Administrative Code (TAC) requirements for closure and remediation of industrial solid waste and municipal hazardous waste landfill facilities per 30 TAC §335.8.

In support of the preliminary observations, ten locations were cored using an asphalt coring machine as illustrated on **Figure 3**. Each core was routed to a depth of approximately 4-inches (or to the base of the MatCon cover). Upon removal of the asphalt core, the core hole was inspected to identify any indications of gaps or voids that may exist between the top of the gravel base material and the base of the MatCon cap. Core hole locations were geo-referenced using a global positioning device.

Soil borings were advanced in each core hole to a maximum depth of two feet below the top of the gravel base layer using a hand auger. Coring location C-8, soil boring refusal was encountered at 1.5 feet below the asphalt. Additionally, coring location C-6 was advanced to 4-feet below the asphalt to evaluate the conditions of the waste material. Soil borings activities were performed in accordance with Superfund SOP No. 10.3 (Soil Sampling Using a Hand Auger). Prior to the advancement of each boring, the as-built drawings were reviewed to ensure the bottom liner was located at least 5 feet from the bottom depth of the borehole. Visual observations were recorded in the field logbook, and soil borings were logged in accordance with Superfund SOP No. 3.0 (Geological Observations). Samples from each borehole were obtained and placed in a clean laboratory supplied jar and submitted to the geotechnical laboratory operated by DBS&A for testing of initial gravimetric water content (moisture) by ASTM D2216. **Table 4** (Characteristics of Base and Waste Material) below presents a summary of the depths, soil type, general lithology, and moisture results of the soil samples obtained from the coring activities.

Table 4 - Characteristics of Base and Waste Material

Sample ID	Sample Depth	Sample Date	Soil Type	General Lithology	Initial gravimetric water content (%, g/g)
C-1	1.5’ - 2.0’	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	8.8
C-2	1.5’ - 2.0’	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	10.3
C-3	1.5’ - 2.0’	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	10.6
C-4	1.5’ - 2.0’	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	8.0
C-5	1.5’ - 2.0’	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	10.8

Sample ID	Sample Depth	Sample Date	Soil Type	General Lithology	Initial gravimetric water content (%, g/g)
C-6	3.5' - 4.0'	7/28/2016	Waste Material	Dark brown, sandy clay with waste slag material	22.9
C-7	1.5' - 2.0'	7/28/2016	Waste Material	Dark brown, sandy clay with waste slag material	9.0
C-8	1.25' - 1.5'	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	10.2
C-9	1.5' - 2.0'	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	13
C-10	1.5' - 2.0'	7/28/2016	Base Material	Gravel and caliche mixed with sandy clay soil	13

g/g - gram per gram

The laboratory report, which presents the gravimetric moisture content results for samples C-1 thru C-10, is included in **Attachment C** of this report. Field notes and photographic documentation (Part II - Site Photographic Log) of the coring activities are provided in **Attachment A** and **Attachment B**, respectively.

Upon completion of the coring activities, each borehole was plugged by Sunbelt using a combination of borehole cuttings and a bentonite seal installed from the top of the gravel base layer to the bottom of the borehole. An asphalt patch material was installed from the bottom of the core hole extending to the top of the MatCon cover. A steel tamper was used to compact the asphalt patch flush with the surrounding MatCon cover.

The following conclusions were drawn from the inspection of the cores and soil samples:

1. A total of ten (10) cores were inspected on July 28, 2016 by DBS&A and Braun Intertec. The core sample locations were selected based on information obtained during previous crack inspections. For reference, photographs collected during the cores sampling activities are presented in photographs #1 through #21 of the Part II - Site Photographic Log.

2. The diameter of each core was 4-inches. Each core was drilled to the bottom of the HMA cover. Core sample thickness ranged from 3.5-inches to 5-inches capturing the full extent of the asphalt cap.

3. At each core location, voids or gaps between the top of the clay liner and the bottom of the asphalt cap were not observed and no evidence was gained that suggests that the separation of the MatCon cover and gravel base layer is occurring.

4. Based on the soil boring depths, the gravel base layer appears at least 2-feet thick. However, the waste material was observed at 1.5 feet below the bottom of asphalt at C-7, which indicates that the base material may not be entirely uniform in thickness throughout the cover.

5. Based on the initial gravimetric water content results, the moisture content of the samples was low and resembled slightly moist characteristics. Moisture appears to be present beneath the asphalt; however, no soil saturation was observed.

RECOMMENDATION: Perform MatCon asphalt repairs by sealing the cracks identified during the O&M inspections. Crack sealing activities are to be performed in conformance with the Operation and Maintenance Plan for MatCon HMA Cover. A preliminary observation letter report summarizing historical records pertaining to the containment cell installation activities will be submitted under a separate cover.

Conclusion

Operation and maintenance activities were performed at the RWI Site from March through July 2016. As a result of the inspection findings at the RWI Site, maintenance and repairs presented in this letter report are recommended in order to ensure that the selected remedy remains protective of human health and the environment and to satisfy the maintenance items for the 5-year review. DBS&A also recommends that O&M inspections continue to be conducted on a regular basis at the RWI Site.

DBS&A appreciates the opportunity to be of service to the TCEQ. If you have any questions, please feel free to contact Mr. Ben Camacho at (512) 821-2765.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

Ben Camacho
Project Manager

Reviewed by:
BRAUN INTERTEC CORPORATION

William Gamblin, P.E.
Project Engineer

ATTACHMENTS

Figures

1. Site Location Map
2. Site Map
3. Coring Locations Map

Attachments

A. Field Notes.
B. Photographic Documentation.
C. Initial Gravimetric Water Content Laboratory Report

Figures

N:\Client\TCEQ-AIRS\Rockwool\Maps\Fig1_SiteLocationMap.mxd

EPA ID No. TXD066379645

TCEQ Site ID No. SUP033

N

0 500 1,000 Feet

ROCKWOOL INDUSTRIES, INC.
FEDERAL SUPERFUND SITE
1741 TAYLOR VALLEY ROAD
BELTON, BELL COUNTY, TEXAS

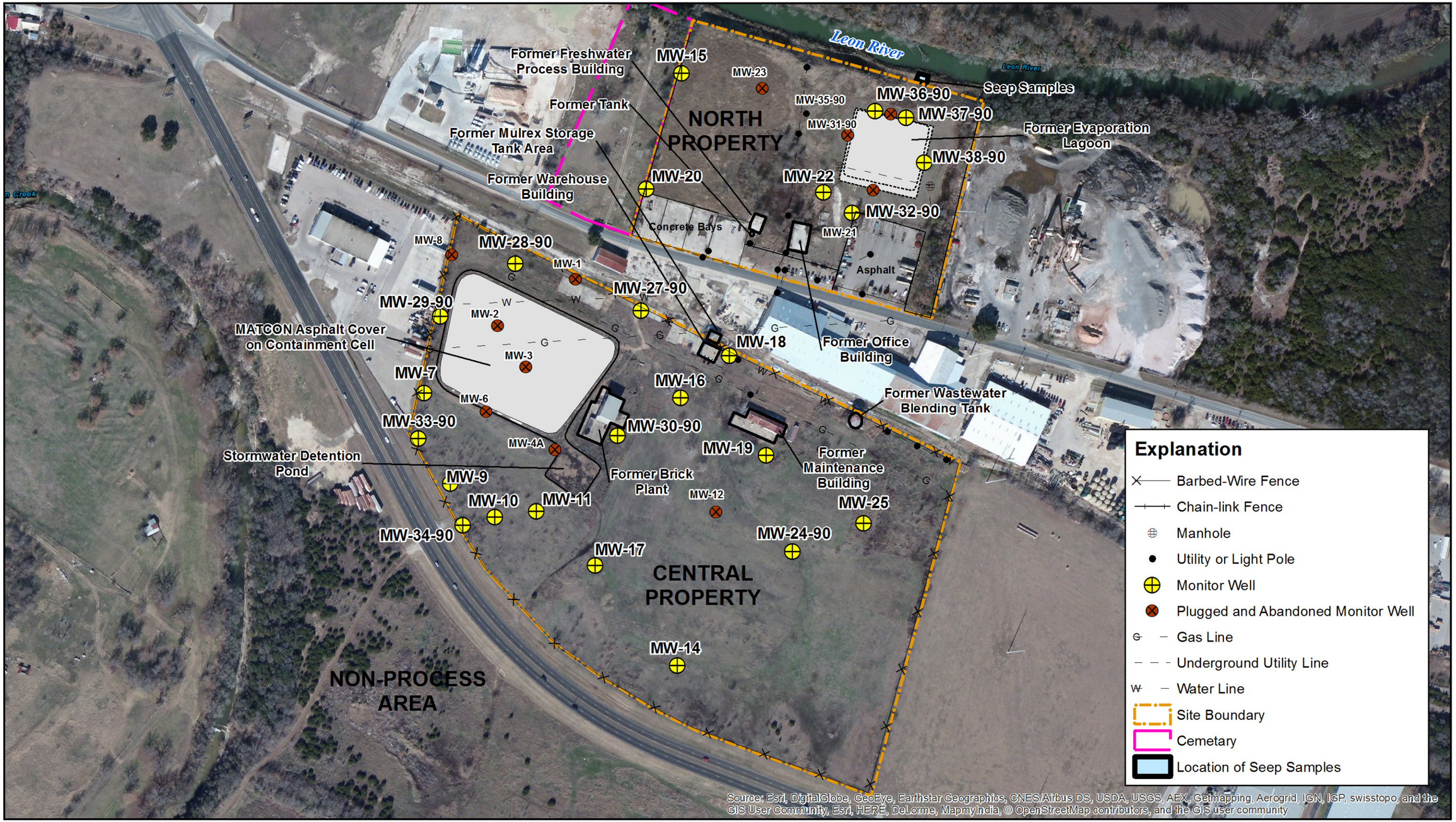
Site Location Map

Figure #1

Daniel B. Stephens & Associates, Inc.

2/3/2015

ES15.AIR0.40



N

0 300 600 Feet

ROCKWOOL INDUSTRIES, INC.
SUPERFUND SITE
1741 TAYLOR'S VALLEY ROAD
BELTON, TEXAS

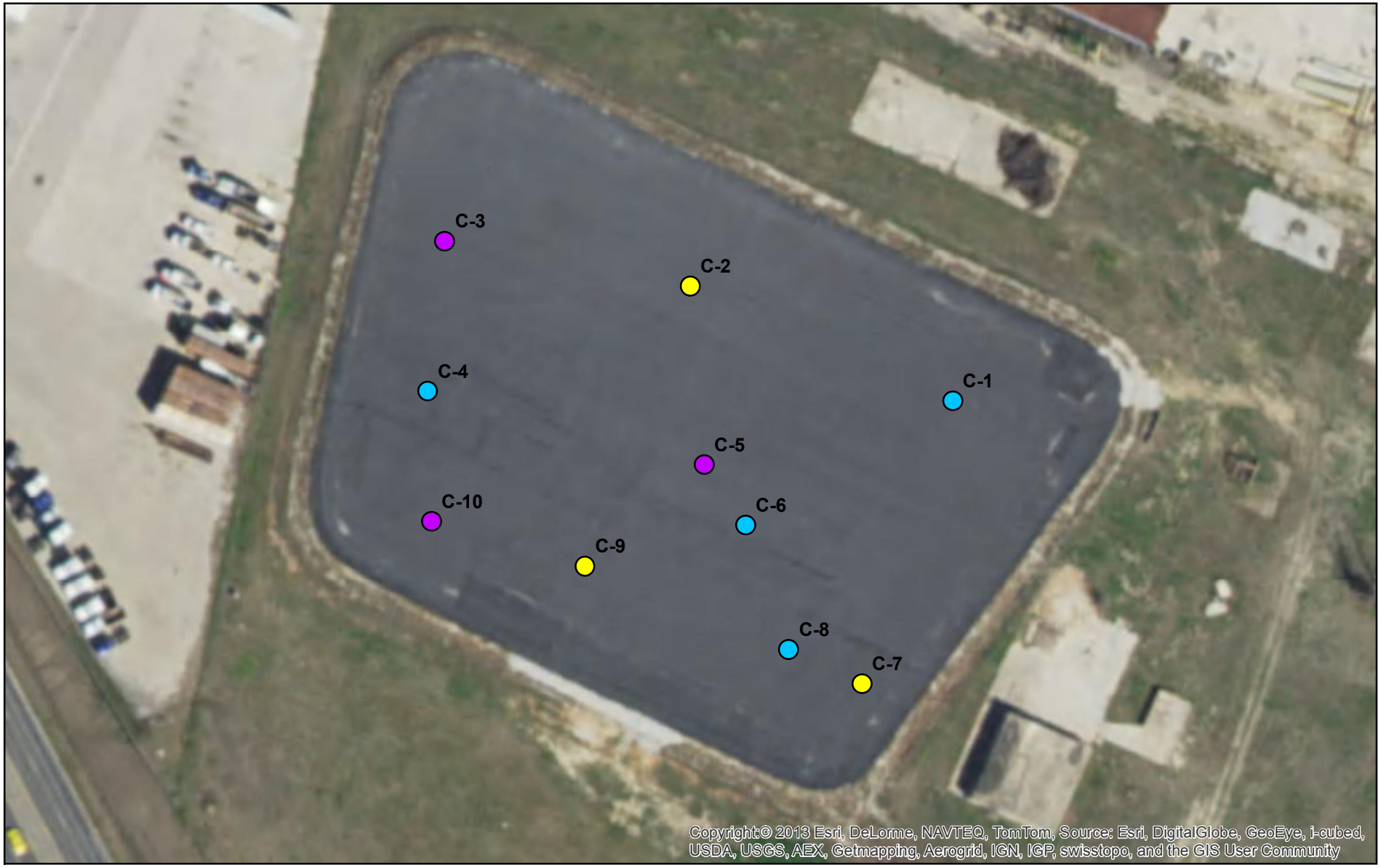
Site Map

Daniel B. Stephens & Associates, Inc.
10/15/2015
JH ES15.AIR0.40

N:\Client\TCEQ-AIRS\Rockwool\GIS\Fig2_Site_Map.mxd

Figure 2

N:\Client\TCEQ-AIRS\Rockwool\GIS\072016_Coring_Locations.mxd



EPA ID No. TXD066379645
TCEQ Site ID No. SUP033

Explanation

- Crack location with no water stain
- Crack location with water stain
- Non-crack location

N

0 50 100 Feet

ROCKWOOL INDUSTRIES, INC.
FEDERAL SUPERFUND SITE
1741 TAYLOR VALLEY ROAD
BELTON, BELL COUNTY, TEXAS

Coring Locations Map

Daniel B. Stephens & Associates, Inc.
8/3/2016
ES15.AIR0.40

Figure #1

Attachments

Attachment A

Field Notes

(156) ES16.A1R0.SS Rockwool 3/29/16

0930- Gabriel Gonzales departs Austin office for Rockwool site. Start mileage: 156740

1045- GG arrives at Rockwool site. Conducts Health & Safety meeting.

1055- GG begins crack measurements on North west Quadrant of cap.

1145- GG starts on NE Quadrant

1220- GG starts on SE Quadrant.

1250- GG starts on SW Quadrant

1340- GG completes crack measurements begins backing up gear.

1350- GG departs site. Heads back to Austin.

1400- GG arrives at Austin office.

*All crack measurements and crack locations on cap and photo log are located in the Rockwool Field Book #3 *

End mileage: 156875

3/29/16

ES16. AIRO.55 Rockwood 3/29/16 GG (1)

(1) Crack length: 2' 7"
(2) Crack length: 11"
(3) Crack length: 2' 10"
(4) Crack length: ~5' 8"
(5) new crack opened up over existing crack and meandered: ~20'
(6) crack length: 2' 6"
(7) crack length: 1' 6"

NW Quad

(8) crack length: ~8'. splits into "Y" leftside: 4' rightside: 3'
(9) crack length: 12'
(10) crack length: 2' 11"
(11) crack length: ~8'

NE Quad

* Note: many of the patch overlays seem to be separating from pre-existing asphalt

(12) crack length: 5' 6"
(13) crack length: 8'

both cracks split off patch overlay

(14) crack length: 13'
(15) crack length: 4' 5"
(16) crack length: 1' 10"
(17) crack length: 2'
(18) crack length: 2' 7"
(19) crack length: 9'
(20) crack length: 6'
(21) crack length: 3' 6"

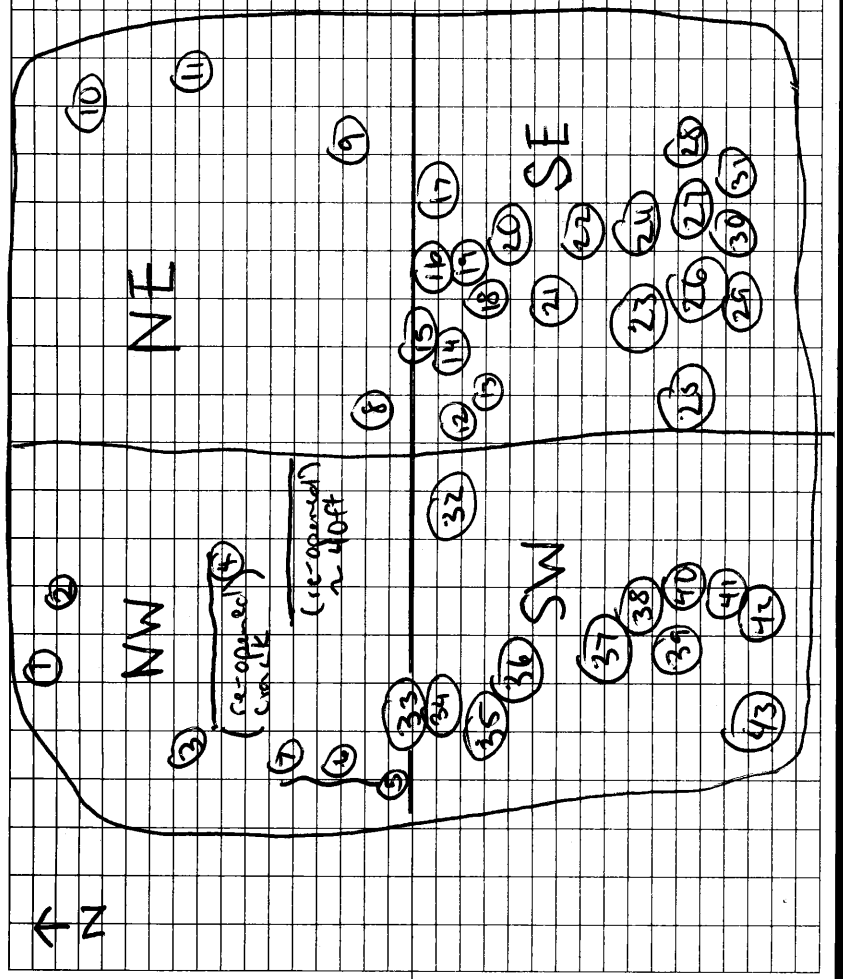
SE Quad

(2) Photo log Rockwool 3/29/16 GG

(1) Crack #1 NW Quadrant
(2) Crack #2 NW Quad.
(3) Crack #3 NW Quad.
(4) > ~40ft crack re-opening
(5) facing E.
(6) Crack #4 NW Quad.
(7) crack #5 NW Quad
(8) crack #6 NW Quad
(9) crack #7 NW Quad
(10) re-opened crack NW Quad
(11) crack #8 NE Quad
(12) crack #9 NE Quad
(13) crack #10 NE Quad
(14) crack #11 NE Quad
15 #16 patch overlay examples
located in NE Quad
(17) crack #12 SE Quad
(18) crack #13 SE Quad
(19) cracks 12+13 facing N.
(20) crack #14 SE Quad
(21) crack #15 SE Quad
(22) crack #16 SE Quad
(23) crack # 17 SE Quad
(24) crack # 18 SE Quad
(25) crack # 19 SE Quad
(26) crack # 20 SE Quad
(27) crack #21 SE Quad

E516.A1RU.55 Rockwool 3/29/16 GG (3)

New crack locations as of 3/29/16
cracks measured by Gabriel Gonzales



Crack measurements continued.

(22) Severe patch overlay cracking area approx. ~40'

(23) crack length : ~5'5" *Note water stain*

(24) crack length: 3'6" *Note water stain*

(25) crack length : 5'5"

(26) crack length : 5'2"

(27) crack length : ~ 6'

(28) crack length : ~ 8'

(29) crack length: ~12' (crack breaks up and meanders.

(30) crack length: 2'10"

(31) severe patch overlay cracking

SE Quad.

(32) crack length: 3'5"

(33) crack length: 5'

(34) crack length : ~ 5'8"

(35) crack length : 4'

(36) crack length : 2'5"

(37) crack length 12'6"

(38) crack length: 3'4"

(39) crack length : 1'10"

(40) crack length : 2'10"

(41) crack length : 4'7"

(42) crack length: ~7'6"

(43) crack length : ~ 9'

SW Quad.

Photo log continued.

(28) - (30) Severe patch overlay cracking

(31) crack #23

(32) crack #24

(33) crack #25

(34) crack #26

(35) crack #27

(36) crack #28

(37) crack #29

(38) crack #30

(39) patch overlay cracking

SE Quad.

(40) crack #31

(41) crack #32

(42) crack #33

(43) Crack #34

(44) crack #35

(45) Crack #36

(46) crack #37

(47) crack #38

(48) crack severely re-opened

(49) continued

(50) crack #39

(51) crack #40

(52) crack #41

(53) crack #42

54-55 crack #43

SW Quad.

ESIG, AIRO.55 Rockwool 5/26/16

Start mileage: 159,745

000 - Gabriel Gonzalez departs Austin, TX heads for Rockwool.

110 - Gabriel Gonzalez arrives on site currently raining on site. GG has lunch while waiting for rain to subside.

218 - Gabriel Gonzalez begins setup for crack measurements. rain has subsided.

1233 - Gabriel Gonzalez begins remarking older crack measurements.

1336 - Called Ben Camacho to discuss cracks. Cracks from march 2016 have not extended further, yet. A large majority of seams around patch overlays have opened up (cracked open).

410 - Gabriel Gonzalez stops measuring due to rain.

1438 - Rain has subsided, GG resumes measuring.

1520 - Gabriel Gonzalez finishes crack measurements. Departs site.

422 - Gabriel Gonzalez arrives in Austin.

(16) ES16.4120.55 Rockwood 5/26/16 QG

NW Quadrant — Photo #

2a - 4ft (new) — 2

3a - 6 ft 10 in (new) + 23' old crack re-opened — 3

reopened crack = 63'6" — 4

4a (west on old crack) = 5' — 5

5a (N on old crack) = 4' — 6

old crack = 53' 6a (west) = 2' 7a (east) = 3' / 1,98

* new cracks are marked on log book map found on pg. 3 of log book.

Patch overlays > 850 ft — 14-28

○ - circles on existing cracks indicate cracks where measured on 5/26/16.

cracks marked in white paint indicate cracks are new as of 5/26/16

NE Quad. — Photo #

1a - 9 ft (new) — 1

old crack - 42' — 10

SE Quad

old crack = 16' — 11

old crack = 38' 8a = 4'10" — 12, 13

9a = 4' 10a = 3' (both off overlay — 29

11a = 4' (new) — 30

12a = 6' (new) — 31

old crack = 13' — 32

old cracks connected = 60' — 33

old crack 75' — 34

Rockwood BC

ES16.A1R0.SS 6/16/16 (19)

0720 at TCEQ to pick up Marilyn Long (ML) Drive to Brown office

0800 pick up Billy Gamblin (BG) at Brown

0840 Arrive at site

0850 Conduct Health and Safety meeting

0900 onsite at central property

0920 inspect HMA cover specifically for cracks.

Note: core D2 ① crack observed in core patch, extending to patch overlay.

Majority of southern portion of CAP observed to have new cracks and cracks that have reopened. Apron appears to be intact but cracks are observed to be a considerable amount within the short amount of time after repairs made.

Water stains observed out of cracks. see - photo log.

1030 BC, ML BG inspect North property

Inspection notes:

① clear vegetation located on ACBs.

(20) Rockwool ES16.A.R0.55 (BC) 6-16-16

(2) drainage pipe at NS and CSP are clogged.

(3) CMP at North shot pile has a considerable crack.

Note: vegetetation high at North property, BC to call the City to check the frequency of mowing events

Also, Flood water from the Leon Rive prevented us from inspecting the base of the ACB.

1130 Break for lunch meeting to discuss path forward action items.

1230 leave Belton drive to Austin

1320 arrive at Braun drop BG off

1400 arrive at TCEQ drop ML off

1445 arrive at DBSA office

— End day —

6-16-16

Rockwool ES16.A.R0.55 BC 6/16/16 (21)

6-16-16 photo log

Photo ID	Direction ~~Photo ID~~ BC 6-16-16	Description
1	west	view of CAP
2	—	view of crack
3	—	view of crack
4	—	view of New crack
5	—	view of crack
6	South	view of debris on CAP
7	SW	view of debris on CAP
8	—	view of water stain
9	—	view of water stain
10	—	view of survey point.
11	SW	view of cap
12	NE	view of ACB area
13	NW	view of ACB area
14	—	view of crack on pipe
15	—	debris on pipe
16	NE	view of ACB on geet
17	—	pipe clean
18	—	pipe clean
19	—	pipe clean

0700 Gabriel Gonzales (GG) departs Austin office for Rockwool site.
0755 - GG arrives at Rockwool site.
0805 A-1 coring on site. 1 personnel
0815 - GG conducts Health & Safety meeting
0820 - A-1 begins setting up equipment.
0840 - A-1 begins coring in the NE section of HMA cap.
0915 - GG sets up on C-1 for sampling
$\boxed{935}$ Sampled C-1 (B)
*Note: There was no separation (gap) between asphalt and base rock on cap
0940 - Billy Gamblin (Brown) and Jake Weems (Sunbelt) on site.
0945 - GG conducts Health & Safety meeting.
0955 - GG sets up on C-2 asphalt has no separation from base rock
$\boxed{1015}$ GG samples C-2 (B)
1030 GG sets up on C-3 (B) no separation between asphalt and base rock.
$\boxed{1050}$ Sampled C-3
1100 Billy Gamblin off site.
1104 GG sets up on C-4. Jake (Sunbelt) starts on C-5. No separation b/w asphalt + base
1130 - Billy G. back on site.
1200 - A-1 off site.

Photo log

(1) C-1 N
(2) C-1 N
(3) (4) C-2 NW
(5) (6) C-3 NW
(7) (8) C-4 NW
(9) (10) C-5 N
(11) (12) C-6 N
(13) (14) C-7.
(15) (16) C-8 (17) soil for C-8 (18)
~~C-9~~ MNR 7/28/16
(19) (20) C-10 soil, hole, close up hole
(21) C-7 soil.
(22) C-6 soil.
(23) (24) (25) Pics of cores filled in.

* Note: No photos for C-9. C-9 coring hole was filled by contractor (Sunbelt) before pictures could be attained. *

ES16.A1R0-55 Rockwool 7/28/16 CG

1125 C-4 sampled (B)

1125 (B) C-5 sampled. Note - no separation b/w asphalt and base rock

1135 CG sets up on C6. Hand auger will go down to 4ft - No separation or voids observed between asphalt and base rock.

0-1' base rock

1'-2' clay / base rock

2'-4* dark soil (loam/clay w/ waste material)

1200 - Jake starts on C-7. No separation b/w asphalt and base.

1225 Sampled C-7(W) stoppage at 18"

Sample mainly consists of waste material

1235 - Set up on C8 Jake sets up on C9

1250 - CG's auger brakes. Have to share with Jake.

1310 - Sampled C-9(B) No separation b/w soil and base

1315 - Set up on C10 No separation b/w asphalt and base.

1335 - Sampled C-10 (B).

Note: Samples in logbook will be marked with a "B" for base material or "W" for waste material.

* forgot to note sample time for C-6 + C8 *

1205 Sampled C-6 (W)

1315 Sampled C-8 (B)

1405 - Billy G, Jake (SmBelt) and CG departs site. CG heads back to Austin

1515 - CG arrives in Austin.

ES16.A1R0-55 Sample Rockwool 7/28/16 CG

Sample #	Depth (ft)	Soil Type	Time
C-1	1.5'-2'	B	935
C-2	1.5'-2'	B	1015
C-3	1.5'-2'	B	1050
C-4	1.5'-2'	B	1125
C-5	1.5'-2'	B	1125
C-6	3.5'-4'	W	1205
C-7	1.5'-2'	W (waste at 16")	1225
C-8	1.25'-1.5'	B	1315
C-9	1.5-2'	B	1310
C-10	1.5'-2'	B	1335

Soil type

B = Base rock

W = Waste material

Attachment B

Photographic Documentation

Photo #1
Date: July 26, 2016
Description: MW-7 - Facing southeast.

Photo #2
Date: July 26, 2016
Description: MW-9 - Facing southeast.

Photo #3
Date: July 26, 2016
Description: MW-10 - Facing southwest.

Photo #4
Date: July 26, 2016
Description: MW-11 - Facing southeast.

Photo #5
Date: July 26, 2016
Description: MW-14 - Facing west.

Photo #6
Date: July 26, 2016
Description: MW-15 - Facing west.

Photo #7
Date: July 26, 2016
Description: MW-16 - Facing north.

Photo #8
Date: July 26, 2016
Description: MW-17 - Facing northeast.

Photo #9
Date: July 26, 2016
Description: MW-18 - Facing east.

Photo #10
Date: July 26, 2016
Description: MW-19 - Facing northeast.

Photo #11
Date: July 26, 2016
Description: MW-20 - Facing northwest.

Photo #12
Date: July 26, 2016
Description: MW-21 - Facing south.

Photo #13
Date: July 26, 2016
Description: MW-22 - Facing east.

Photo #14
Date: July 26, 2016
Description: MW-25 - Facing northeast.

Photo #15
Date: July 26, 2016
Description: MW-24-90 - Facing east.

Photo #16
Date: July 26, 2016
Description: MW-27-90 - Facing northeast.

Photo #17
Date: July 26, 2016
Description: MW-28-90 - Facing north.

Photo #18
Date: July 26, 2016
Description: MW-29-90 - Facing north.

Photo #19
Date: July 26, 2016
Description: MW-30-90 - Facing southeast.

Photo #20
Date: July 26, 2016
Description: MW-33-90 - Facing southwest.

Photo #21
Date: July 26, 2016
Description: MW-34-90 - Facing northeast.

Photo #22
Date: July 26, 2016
Description: MW-35-90 - Facing south.

Photo #23
Date: July 26, 2016
Description: MW-37-90 - Facing south.

Photo #24
Date : July 26, 2016
Description: MW-38-90 - Facing southwest.

Photo #25
Date: March 16, 2016
Description: Groundwater seep sample area (lower and upper). Facing north.

Photo #26
Date: March 16, 2016
Description: Image of Upper seep sample location. Facing south.

Photo #27
Date: May 24, 2016
Description: Image of lower seep sample location. Facing south.

Photo #28
Date: May 24, 2016
Description: Image of lower seep sample location. Facing south.

Photo #29
Date: March 29, 2016
Description: View of new cracks observed on MatCon cover. Located in northeast quadrant of cover. Facing northeast.

Photo #30
Date: March 29, 2016
Description: View of new crack meandering over pre-existing crack. Located in northeast quadrant of cover.

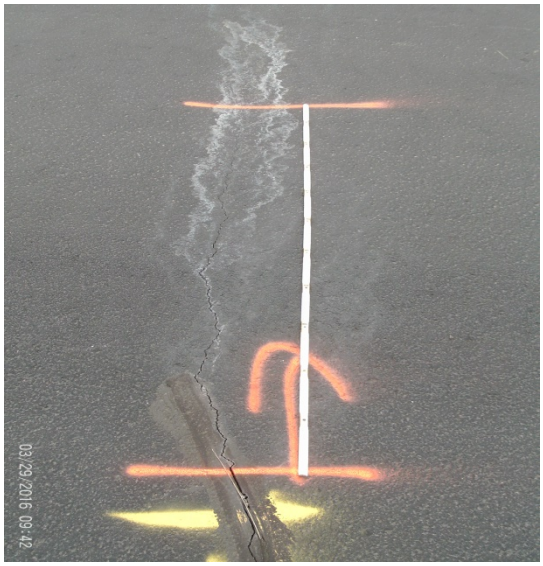


Photo #31
Date: March 29, 2016
Description: View of new crack with water stains. Located in southeast quadrant of cover. Facing west.

Photo #32
Date: March 29, 2016
Description: View of crack observed throughout the patch overlay. Located in southeast quadrant of cover. Facing east.

Photo #33
Date: March 29, 2016
Description: View of new crack deriving from the patch overlay. Located in southwest quadrant of cover. Facing west.

Photo #34
Date: March 29, 2016
Description: View of crack in a previously sealed crack. Located in southwest quadrant of cover. Facing west.

Photo #35
Date: May 26, 2016
Description: View of cracks located at the northeast quadrant of cover. Facing east.

Photo #36
Date: May 26, 2016
Description: View of cracks located at the northeast quadrant of cover. Facing east.

Photo #37
Date: May 26, 2016
Description: View of cracks deriving from the patch overlay located in southeast quadrant of cover. Facing southwest.

Photo #38
Date: May 26, 2016
Description: New crack developed from the patch overlay located in southwest quadrant of cover. Facing southwest.

Photo #39
Date: May 26, 2016
Description: View of crack located in the northwest quadrant of cover. Facing south.

Photo #40
Date: May 26, 2016
Description: View of vegetation growth located in the northeast quadrant of cover. Facing northeast.

Photo #41
Date: June 16, 2016
Description: View of marked cracjk locations located throughout cover. Facing west.

Photo #42
Date: June 16, 2016
Description: View of new crack located in the southeast quadrant of cover.

Photo #43
Date: June 16, 2016
Description: View of accumulated soil located at the southwest corner of the cover. Facing southwest.

Photo #44
Date: June 16, 2016
Description: View of crack and water stain located in the southeast quadrant of cover.

Photo #45
Date: June 16, 2016
Description: View of benchmark survey spike located at the center of the cover. Facing south.

Photo #46
Date: June 16, 2016
Description: View of marked crack locations on southern portion of the cover. Facing southwest.

Photo #47
Date: June 16, 2016
Description: View of vegetative growth at the ACB area. Facing east.

Photo #48
Date: June 16, 2016
Description: View of vegetative growth at the ACB area. Facing west.

Photo #49
Date: June 16, 2016
Description: View of concrete outfall crack left of the CMP.

Photo #50
Date: June 16, 2016
Description: View of CMP located between the North Shot Pile and the capped EVL. Crack extends on both sides of CMP. Facing south.

Photo #51
Date: June 16, 2016
Description: View of vegetative growth at the ACB area. Facing east.

Photo #52
Date: June 16, 2016
Description: View of 1 of 2 CMPs (out-flow view) located at the CSP.

Photo #53
Date: June 16, 2016
Description: View of 2 of 2 CMPs (out-flow view) located at the CSP.

Photo #54
Date: June 16, 2016
Description: View of 2 of 2 CMPs (in-flow view) located at the CSP.

Photo #25
Date: June 16, 2016
Description: Facing northwest, View of 1 of 2 CMPs (in-flow view) located at the CSP.

Photo #1
Date: July 28, 2016
Description: Core hole location C-1 (crack with water stain location). Facing north.

Photo #2
Date: July 28, 2016
Description: Close-up view of C-1 core hole. Facing west.

Photo #3
Date: July 28, 2016
Description: Core hole location C-2 (non-crack location). Facing northeast.

Photo #4
Date: July 28, 2016
Description: Close-up view of C-2 core hole.

Photo #5
Date: July 28, 2016
Description: Core hole location C-3 (crack location). Facing northwest.

Photo #6
Date: July 28, 2016
Description: Close-up view of C-3 core hole.

Photo #7
Date: July 28, 2016
Description: Core hole location C-4 (crack with water stain location). Facing northwest.

Photo #8
Date: July 28, 2016
Description: Close-up view of C-4 core hole.

Photo #9
Date: July 28, 2016
Description: Core hole location C-5 (crack location). Facing northeast.

Photo #10
Date: July 28, 2016
Description: Close-up view of C-5 core hole.

Photo #11
Date: July 28, 2016
Description: Core hole location C-6 (crack with water stain location). Facing northeast.

Photo #12
Date: July 28, 2016
Description: Close-up view of C-6 core hole.

Photo #13
Date: July 28, 2016
Description: Close-up view of C-6 soil sample (waste material).

Photo #14
Date: July 28, 2016
Description: Core hole location C-7 (non-crack location). Facing east.

Photo #15
Date: July 28, 2016
Description: Close-up view of C-7 core hole.

Photo #16
Date: July 28, 2016
Description: Close-up view of C-7 soil sample (waste material).

Photo #17
Date: July 28, 2016
Description: Core hole location C-8 (crack with water stain location). Facing north.

Photo #18
Date: July 28, 2016
Description: Close-up view of C-8 core hole.

Photo #19
Date: July 28, 2016
Description: Close-up view of C-8 soil sample (gravel base material).

Photo #20
Date: July 28, 2016
Description: Core hole location C-10 (crack location). Facing northwest.

 Photo #21 Date: July 28, 2016 Description: Close-up view of C-10 core hole.	 Photo #21 Date: July 28, 2016 Description: View of core hole backfilled with asphalt material.

Attachment C

Initial Gravimetric Water Content Laboratory Report

Laboratory Report for

Daniel B. Stephens & Associates, Inc.

ES16.AIR0.55 Rockwool

August 1, 2016

Daniel B. Stephens & Associates, Inc.

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113

August 1, 2016

Ben Camacho
Daniel B. Stephens & Associates, Inc.
4030 W. Braker Lane, Suite 325
Austin, TX 78759
(512) 651-6019

Re: DBS&A Laboratory Report for the Daniel B. Stephens & Associates, Inc. ES16.AIR0.55 Rockwool Project

Dear Mr. Camacho:

Enclosed is the report for the Daniel B. Stephens & Associates, Inc. ES16.AIR0.55 Rockwool project samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to DBS&A and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.
SOIL TESTING & RESEARCH LABORATORY

Joleen Hines
Laboratory Supervising Manager

Enclosure

Daniel B. Stephens & Associates, Inc.
Soil Testing & Research Laboratory
4400 Alameda Blvd. NE, Suite C
Albuquerque, NM 87113
505-889-7752
FAX 505-889-0258

Summaries

Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties[1]			Saturated Hydraulic Conductivity[2]			Moisture Characteristics[3]								Particle Size[4]			Specific Gravity[5]		Air Perm-eability	Atterberg Limits	Proctor Compaction
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K_{unsat}	DS	WS	H	F	C			
C-1	X																					
C-2	X																					
C-3	X																					
C-4	X																					
C-5	X																					
C-6	X																					
C-7	X																					
C-8	X																					
C-9	X																					
C-10	X																					

[1] G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method
[2] CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall
[3] HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, Kunsat = Calculated Unsaturated Hydraulic Conductivity
[4] DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer
[5] F = Fine (<4.75mm), C = Coarse (>4.75mm)

Notes

Sample Receipt:
Ten samples, each in a 1/4 full to 1/2 full 1-gallon bag, triple bagged, were received on July 29, 2016. All samples were packaged in a 33-gallon bag and a cooler and arrived in good order.

Sample Preparation and Testing Notes:
All samples were subjected to gravimetric water content analysis.

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

	Moisture Content						
	As Received		Remolded		Dry Bulk Density	Wet Bulk Density	Calculated Porosity
Sample Number	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	(g/cm^3)	(g/cm^3)	(%)
C-1	8.8	NA	---	---	NA	NA	NA
C-2	10.3	NA	---	---	NA	NA	NA
C-3	10.6	NA	---	---	NA	NA	NA
C-4	8.0	NA	---	---	NA	NA	NA
C-5	10.8	NA	---	---	NA	NA	NA
C-6	22.9	NA	---	---	NA	NA	NA
C-7	9.0	NA	---	---	NA	NA	NA
C-8	10.2	NA	---	---	NA	NA	NA
C-9	13.0	NA	---	---	NA	NA	NA
C-10	13.0	NA	---	---	NA	NA	NA

NA = Not analyzed

--- = This sample was not remolded

Initial Properties

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

	Moisture Content						
	As Received		Remolded		Dry Bulk Density	Wet Bulk Density	Calculated Porosity
Sample Number	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	(g/cm^3)	(g/cm^3)	(%)
C-1	8.8	NA	---	---	NA	NA	NA
C-2	10.3	NA	---	---	NA	NA	NA
C-3	10.6	NA	---	---	NA	NA	NA
C-4	8.0	NA	---	---	NA	NA	NA
C-5	10.8	NA	---	---	NA	NA	NA
C-6	22.9	NA	---	---	NA	NA	NA
C-7	9.0	NA	---	---	NA	NA	NA
C-8	10.2	NA	---	---	NA	NA	NA
C-9	13.0	NA	---	---	NA	NA	NA
C-10	13.0	NA	---	---	NA	NA	NA

NA = Not analyzed

--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-1
Project: Rockwool
Date/Time Sampled: 7/28/16 935

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	940.43	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	284.27	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	603.35	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	8.8	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-2
Project: Rockwool
Date/Time Sampled: 7/28/16 1015

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	1486.48	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	286.96	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	1087.08	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	10.3	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-3
Project: Rockwool
Date/Time Sampled: 7/28/16 1050

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	1312.25	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	269.35	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	942.77	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	10.6	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-4
Project: Rockwool
Date/Time Sampled: 7/28/16 1125

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	1012.19	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	269.38	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	687.82	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	8.0	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-5
Project: Rockwool
Date/Time Sampled: 7/28/16 1125

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	954.33	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	267.29	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	620.33	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	10.8	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-6
Project: Rockwool
Date/Time Sampled: 7/28/16 1205

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	812.32	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	268.33	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	442.53	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	22.9	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-7
Project: Rockwool
Date/Time Sampled: 7/28/16 1225

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	811.70	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	293.27	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	475.62	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	9.0	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-8
Project: Rockwool
Date/Time Sampled: 7/28/16 1315

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	1362.09	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	289.53	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	973.71	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	10.2	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-9
Project: Rockwool
Date/Time Sampled: 7/28/16 1310

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	1111.51	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	282.25	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	734.01	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	13.0	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Daniel B. Stephens & Associates, Inc.
Job Number: ES16.AIR0.55
Sample Number: C-10
Project: Rockwool
Date/Time Sampled: 7/28/16 1335

	As Received	Remolded
Test Date:	29-Jul-16	---
Field weight of sample* (g):	1149.23	
Tare weight, ring (g):	0.00	
Tare weight, pan/plate (g):	291.59	
Tare weight, other (g):	0.00	
Dry weight of sample (g):	759.03	
Sample volume (cm^3):	NA	
Assumed particle density (g/cm^3):	2.65	
Gravimetric Moisture Content (% g/g):	13.0	
Volumetric Moisture Content (% vol):	NA	
Dry bulk density (g/cm^3):	NA	
Wet bulk density (g/cm^3):	NA	
Calculated Porosity (% vol):	NA	
Percent Saturation:	NA	

Laboratory analysis by: C. Krous
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Laboratory Tests and Methods

Tests and Methods

Moisture Content:	ASTM D2216