

29 January 2008

Mr. Brian Rakvica, P.E.  
Nevada Division of Environmental Protection  
Bureau of Corrective Actions  
2030 E. Flamingo Road, Suite 230  
Las Vegas, NV 89119

**Subject: Response to Interim CAMU Design Review Report No. 3  
BMI Industrial Complex Remediation Design Review  
Henderson, Nevada  
Geosyntec Project: SC0313**

Dear Mr. Rakvica,

On behalf of Basic Remediation Company (BRC), Geosyntec Consultants (Geosyntec) hereby responds to the 22 January 2008 letter written by Applied Soil Water Technologies, LLC (ASW) to Nevada Department of Environmental Protection (NDEP) regarding the Interim CAMU Design Review. The ASW review focused on the following aspects of the CAMU design:

- Earthworks;
- Fills;
- Waste Placement Plan;
- Interim Cover Specifications;
- Technical Specifications;
- Construction Quality Assurance (CQA) Plan; and
- Design Drawings.

For ease of review, the ASW's discussion will be repeated in italics with Geosyntec's response following.

***Earthworks, Fills***

*A review of the earthworks, pertaining to fill material, was performed.*

**Documents Reviewed**

*Technical Specifications for the BRC East Side Common Area Soils Remediation, Henderson, Nevada, October 2007*

Discussion

*Waste placement in the CAMU during construction is critical in supporting the overall design premise to minimize the production of leachate within the facility. This includes the placement of the 2-foot-thick operations layer overlain by the 4-foot-thick compacted contaminated material to be placed before the introduction of Silt Trench Contaminated material.*

Operations Layer

*According to the technical specifications, the operations layer will consist of Eastside Area or Western Ditch materials meeting the specification of Engineered fill. Additional placement specifications include minimum top surface grade, moisture conditioning, and compaction. The Eastside Geotech Sampling Report, dated 1 October 2007, prepared by GES for Basic Remediation Company, presents various soils material testing results of samples obtained during the field exploration. Moisture contents well above the laboratory determined optimum moisture, as determined by ASTM D1557, were reported for the Eastside Area soils. Therefore, the handling and processing of these soils in preparation of placement of the operations layer is a critical path item. The technical specifications do address these components in various sections of the specifications. Due to the critical nature of this facility component, it is our opinion that a summary be presented in a single location that outlines the critical path items associated with material selection, processing and placement of the operations layer.*

Compacted Contaminated Material Overlying Operations Layer

*Based on our review of the current version of the technical specifications, it is not clear how the compacted contaminated material will be placed. It is our understanding that an updated version of the specification, regarding the placement of 4-feet of waste material overlying the operations layer prior to placement of Slit Trench waste materials, will be provided by Geosyntec with the response to Interim Report #2.*

Section 02205.3.11 of the Technical Specifications details soil-like material placement within the CAMU.

Slit Trench Backfill

*According to the technical specifications Section 02200.3.08.B, Soil used for the Slit Trench Backfill shall be on-site materials meeting the requirements of Subpart 2.01, Slit Trench Backfill shall consist of "...earthen materials excavated from the slit trenches that are separated and earthen materials adjacent to the slit trenches." Section 02205.2.01.B states that the Slit Trench Cover Soil is to be composed of clean soil materials. ASW suggests that clarification be made in Section 02200 that the Slit Trench Backfill be clean or non-contaminated materials for consistency.*

All impacted slit trench materials are to be excavated, to the maximum extent possible. Given that, NDEP agreed that the adjacent soils can be used as backfill within the slit trench excavation since the area was being capped by both the base liner and final cover systems of the CAMU. Therefore, the qualifier "clean" in Section 02200.3.08.B has been removed.

### **Waste (Material) Placement**

*A review of the material placement specifications for the CAMU was performed.*

#### **Documents Reviewed**

*Technical Specifications for the BRC East Side Common Area Soils Remediation, Henderson, Nevada, October 2007*

#### **Discussion**

*As previously noted, the placement of the various material components in the CAMU is critical to the overall design. The various material specifications regarding type, moisture conditioning and placement are provided within the technical specifications. However, due to the critical nature of these construction components we recommend that references be included, within the subpart 2.01 of Section 02205, that direct the reader to the critical components associated with waste material specifications.*

*As mentioned in other areas of this report, liner system separation distances, both side slope and base liner, are not clear. Clarification should be made, perhaps in the form of a table or figure.*

A table has been added to clarify the issue of waste placement separation distances.

### **Interim Cover**

*A review of the interim cover specifications for the CAMU was performed.*

#### **Documents Reviewed**

*Technical Specifications for the BRC East Side Common Area Soils Remediation, Henderson, Nevada, October 2007*

#### **Discussion**

*Upon review of the Interim Cover specifications, provision should be provided for wind ballast for the standard 6 mil visqueen required to cover interim slopes between phases.*

The following has been added to Section 02205.3.08.B: "The visqueen shall be nailed and/or sufficiently weighted to prevent wind uplift."

*Section 02205.3.06.d specifies an interim cover placement compaction specification of 85% (minimum) of ASTM D1557 maximum dry density. Due to the fact that a minimum of 1-foot of interim cover is specified to be placed beneath the entire final cover, the designer should justify the adequacy of the lower than typical compaction requirement.*

The compaction specification has been changed to 90%.

### **Technical Specifications**

*A review of the technical specifications was performed.*

#### **Documents Reviewed**

*Technical Specifications for the BRC East Side Common Area Soils Remediation, Henderson, Nevada, October 2007*

Discussion

*The following comments were made regarding certain sections of the technical specifications.*

**SECTION 01010 - SUMMARY OF WORK**

**1.02 A.** *...final CAMU cover system and associated storm water management features will be held as Option Scope...*

*Is this correct that the final cover may not be constructed under this contract?*

*This statement occurs in numerous sections in the Technical Specifications.  
Please clarify.*

The final cover and associated storm water features will be held as option scope for this contract. A cover will be placed over the CAMU; however, a different contractor may be contracted to build it.

**B.2.a.** *Regarding placement of interim cover*

*Listed as Option Scope; is this correct that placement of interim cover may not be a part of this contract? It is described as being placed at the end of each day of waste placement under certain circumstances. Please clarify.*

Through addendums with bidders and subsequent revisions of the Technical Specifications and bid package, the interim cover is now a bid item with the base bid package. It will be measured by in-place cubic yards and will be the responsibility of the Contractor to place during waste placement.

**SECTION 01050 - FIELD ENGINEERING**

**3.01 A. 9.** *Consider destructive seam sample locations be incorporated on As-built drawings also.*

Each destructive seam sample will be repaired and as such documented on the as-built drawing.

**SECTION 01500 - CONSTRUCTION FACILITIES**

**1.24 A. 5.** *Monitor leachate levels within the sumps and at no time allow levels within sump to exceed 3 feet in depth*

*Need to specify where the depth is measure from, i.e. the top of the geomembrane.*

Section 01500.1.24.A.5 has been revised to state: "Monitor leachate levels within the sumps and at no time allow levels within sumps to exceed 3 feet in depth as measured from the top of the geomembrane."

## **SECTION 02200 - EARTHWORK**

**1.04 C.** *Regarding; "...laboratory test data for cover soils demonstrating shear strength cohesion"*

*Need to provide more detailed requirements, i.e. testing parameters and required values.*

Section 02200.1.04.C has been revised to include "Shear strength tests shall be conducted at 90% maximum dry density."

Required shear strength values are not necessary because they will not be criteria for acceptance or rejection of cover soil materials. It is for informational purposes to be included with the CQA report.

**2.01 B.** *Regarding remolded shear strength requirements;*

*Need to provide test method, normal loads, saturated conditions if applicable and frequency.*

Section 02200.2.01.B has been revised to state "Cover soil shall have a remolded minimum shear strength of 32 degrees and 500 psf cohesion at 90% compaction, based on Modified Proctor, at optimum moisture content, as measured by ASTM D3080."

*Please note that suggested changes are provided below and can be identified by the underlining.*

**3.06 B.** *Stockpiles shall be sealed by tracking ~~parallel~~ perpendicular? to slope... Please clarify.*

Section 02200.3.06.B has been revised to state "Stockpiles shall be sealed by tracking parallel with the direction of the slope".

**3.08 E.** *compaction specification should have moisture specification as well as density*

Section 02200.3.08.E. has been revised to state "the Contractor shall compact each lift to at least 90 percent of its modified Proctor maximum dry density (ASTM D 1557) at a moisture content between -4% and +4% of the optimum moisture content for the soil.

**3.10 A.** *place only when ... and approved by construction manager*

Section 02200.3.10.A has been revised to include the suggested change.

*D. This seems to indicate that only the top of the top lift will be compacted. Is this correct? Please clarify.*

Section 02200.3.10.D. has been revised to state “the Contractor shall compact each lift of final cover soil to at least 90 percent of its modified Proctor maximum dry density (ASTM D 1557) at a moisture content between -4% and +4% of the optimum moisture content for the soil.

***SECTION 02205 - REMEDIAL EXCAVATING AND FILLING***

***2.01 F. Interim slopes between phases shall be covered with standard 6 mil visqueen***

*ASW Comment: May want to require wind ballast.*

The following has been added to Section 02205.3.08.B: “The visqueen shall be nailed and/or sufficiently weighted to prevent wind uplift.”

*Interim slopes shall be covered prior to forecasted precipitation events.*

*ASW Comment: May want to specify with what.*

Section 02205.3.08.B states: “Visqueen shall be placed when precipitation is forecasted.”

***3.07 A. place only when...and approved by construction manager***

Section 02205.3.07.A has been revised to include the recommended change.

***L. “...maintain less than 3 feet of fluid levels in the leachate collection system sump.”***

*ASW Comment: Need to specify where the depth is measure from, i.e. the top of the geomembrane.*

Section 02205.3.11.L has been revised to state: “...maintain less than 3 feet of fluid levels in the leachate collection system sump as measured from the top of the geomembrane.”

***M. 3. Specifies “...4-foot thick layer of compacted contaminated material must be placed across the CAMU bottom ahead of the working face of Slit Trench contaminated material ...”***

*Does the 2-feet of Operations layer count as part of the 4-feet?  
What is the minimum set-back from the side slopes?*

Section 02205.3.11.M has been revised to state: “A minimum of a 150-foot-wide, 4-foot-thick layer of compacted contaminated material above the 2-foot thick operations layer, for a total of 6-feet of compacted contaminated material must be placed across the CAMU bottom ahead of the working face of Slit Trench contaminated material subsequently placed in the CAMU.”

Section 02205.3.11.Q.a states: "All materials placed from the outer extent (CAMU side) of the operational protective layer to a point 15 feet (measured laterally) from the CAMU liner or final cover system shall have a maximum particle size of 6 inches. No other debris or oversized material with particle dimensions greater than 6 inches may be placed within this zone."

*O. 1. b. Is there a minimum distance from bottom?*

Section 02205.3.11.M has been revised to state: "A minimum of a 150-foot-wide, 4-foot-thick layer of compacted contaminated material above the 2-foot thick operations layer, for a total of 6-feet of compacted contaminated material must be placed across the CAMU bottom ahead of the working face of Slit Trench contaminated material subsequently placed in the CAMU."

*Q. 1. a. Is there a minimum distance from bottom?*

Section 02205.3.11.M has been revised to state: "A minimum of a 150-foot-wide, 4-foot-thick layer of compacted contaminated material above the 2-foot thick operations layer, for a total of 6-feet of compacted contaminated material must be placed across the CAMU bottom ahead of the working face of Slit Trench contaminated material subsequently placed in the CAMU."

**3.10 D. 1. Regarding the requirement for One-Dimensional Consolidation Testing;**

*Will these results be used for informational purposes only or is there a criteria associated with these results that the contractor will be held accountable for? How should the results be presented? What is the maximum load that the test will need to accommodate?*

One-dimensional consolidation testing results will be reported in the Construction Quality Assurance (CQA) report provided to NDEP. The consolidation testing will be used to determine leachate generation and the contractor will not be held accountable for the testing results. The CQA plan states that "Normal stress for test shall be equivalent to final depth of sample (based on final cover system topography) multiplied by unit weight of overlying waste and cover system materials."

### **SECTION 02225 - DRAINAGE AGGREGATE**

**3.02 A. Place when...and approved by construction manager.**

Section 02225.3.02.A has been revised to include the suggested change.

### **SECTION 02770 - GEOMEMBRANE**

**1.04 B. 3. a. minimum experience with geomembrane requirement seems low**

Experience has been increased to 5,000,000 SF.

*b. minimum experience with geomembrane requirement low*

Experience is comparable to industry standard (based on GSE Field Installation Quality Assurance Manual).

**1.06 E. 2. Regarding subgrade acceptance;**

*This section conflicts with 3.02 A. Since the geomembrane will be installed on a GCL, the subgrade acceptance criteria and procedures may be more appropriate in the GCL section.*

The submittal requirement in Section 02770.1.06.E.2 has been moved to Section 02772.1.05. The subgrade acceptance statement in Section 02770.3.02.A has been deleted and Section 02772.3.02.A states: "The Geosynthetics Installer shall provide certification in writing that the surface on which the GCL shall be installed is acceptable. This certification of acceptance shall be given to the Construction Manager prior to commencement of GCL installation in the area under consideration."

**2.02 A. 7. Need to add more detail on sampling adjacent rolls, etc.**

Section 02770.2.02.A.7 shall be revised to state: "If a geomembrane sample fails to meet the quality control requirements of this Section the Geomembrane Manufacturer shall sample and test, at the expense of the Manufacturer, rolls manufactured in the same lot, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established to bound the failed roll(s)."

**3.02 A. This appears to conflict with 1.06 E. 2., See comments on that section above.**

The subgrade acceptance statement in Section 02770.3.02.A has been deleted and Section 02772.3.02.A states: "The Geosynthetics Installer shall provide certification in writing that the surface on which the GCL shall be installed is acceptable. This certification of acceptance shall be given to the Construction Manager prior to commencement of GCL installation in the area under consideration."

**3.03 G. 3. b. should also have a means of measuring and monitoring roller pressure.**

Fusion welders do not typically provide a means to measure roller pressure, rather the welder pressure is set when the rollers are engaged on the geomembrane when initiating the welding process. As this varies from fusion welder to fusion welder, it is difficult to require a means of measuring the roller pressure. As such we typically do not require the monitoring of the roller pressure.

**H. 2. ASTM D 4437; Is this the correct test method?**

The new test method is ASTM D 6392, which replaces ASTM D 4437 for high density polyethylene geomembrane seams.

*Record welder temperature, speed, & pressure and make sure settings are the same during production welding.*

As previously discussed, roller pressure is a difficult setting to measure. Therefore, we do not typically document roller pressure.

**J. 4. a. ASTM D 4437; Is this the correct method?**

The new test method is ASTM D 6392, which replaces ASTM D 4437 for high density polyethylene geomembrane seams.

**3.06 A. Allow for sampling at manufacturing location?**

At the end of Section 02770.3.06.A, the following has been added: "Conformance sampling may be conducted at the manufacturing facility shipment to the site."

**SECTION 02771 - GEOTEXTILE**

**2.02 D. Need similar statement in the related geomembrane section?**

Section 02770.2.02.A.7 shall be revised to state: "If a geotextile sample fails to meet the quality control requirements of this Section the Manufacturer shall sample and test, at the expense of the Manufacturer, rolls manufactured in the same lot, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established to bound the failed roll(s)."

**SECTION 02772 - GEOSYNTHETIC CLAY LINER**

**2.01 A. Addressed in previous report.**

**G. Addressed in previous report.**

**2.02 Regarding Interface Friction Testing**

*Additional comments may be provided as part of the ASW review of the Final Cover requirements.*

*Please explain how this section matches Final Waste Slope Stability Calculations?*

Section 02772.2.02.A.1: This represents the veneer stability of final soil lined slopes calculation. The calculation was performed based on an assumed weakest peak interface strength angle of 20 degrees between the textured HDPE geomembrane and hydrated GCL.

Section 02772.2.02.A.2: This represents the global stability of the base liner system. The slope stability calculation was performed based on a weakest interface strength of 12 degrees between the textured HDPE geomembrane and hydrated GCL.

Section 02772.2.02.A.3: This represents the global stability of the base liner system when a GCL with a vapor barrier is used.

**3.02 A.** *“...prior to commencement of ~~geomembrane~~ GCL? installation...”*

Section 02772.3.02.A has been revised to state: “The Geosynthetics Installer shall provide certification in writing that the surface on which the GCL shall be installed is acceptable. This certification of acceptance shall be given to the Construction Manager prior to commencement of GCL installation in the area under consideration.”

**3.10** *Consider provision to allow sampling at point of manufacture.*

Section 02772.3.10.A, the following has been added: “Conformance sampling may be conducted at the manufacturing facility shipment to the site.”

*Provide detailed procedures in the event of a failure.*

Section 02772.3.10.C shall be revised to state: “If a GCL sample fails to meet the quality control requirements of this Section the GCL Manufacturer shall sample and test, at the expense of the Manufacturer, rolls manufactured in the same lot, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established to bound the failed roll(s).”

**3.11** *Should address protection against rain on both exposed and covered GCL.*

Section 02772.3.11.C has been included and states: “Contractor shall be responsible for protecting GCL from hydration from precipitation, dust spraying activities, or any other activities which could lead to GCL hydration.”

**SECTION 02773 - GEOCOMPOSITE**

**3.02 C.** *“...inspect and verify geomembrane surface below geocomposite is free of loose soil and rocks greater than 1 inch.”*

*In our opinion 1 inch is too large of a particle size to be in contact with the geomembrane. Please discuss.*

Section 02773.3.02.C has been revised to state states: "...inspect and verify geomembrane surface below geocomposite is free of loose soil and rock."

*H. Consider specifying a maximum particle size for the sandbag fill material.*

Section 02770.3.02.D.5.g. has been revised to include "Sand bags shall be filled with sand material with a maximum particle size of ½ inch."

**3.06** *Consider provision for sampling at point of manufacture*

Section 02773.3.06.A the following has been added: "Conformance sampling may be conducted at the manufacturing facility shipment to the site."

*D. Provide detail on what to do if sample fails.*

Section 02773.3.06.D shall be revised to state: "If a geocomposite sample fails to meet the quality control requirements of this Section the Manufacturer shall sample and test, at the expense of the Manufacturer, rolls manufactured in the same lot, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established to bound the failed roll(s)."

***Construction Quality Assurance Plan***

*A review of the CQA plan was performed.*

*Documents Reviewed*

*Construction Quality Assurance Plan for the Construction of the Corrective Action Management Unit (CAMU), Basic Remediation Company, Henderson, Nevada, October 2007*

*Discussion*

*The following comments were made regarding certain sections of the CQA plan.*

**4.2.1** *CQA Officer should be a licensed engineer in Nevada and be required to stamp the CQA report.*

The following statement has been added to Section 4.2.1: "The CQA Officer shall be a licensed engineer in the State of Nevada and shall stamp the final CQA report."

**6.6** *In places where the CQA Report is referenced may want to consider changing "...in compliance with..." to "... in substantial compliance with..."*

Document will be changed as suggested.

- 7.2** *“The CQA Laboratory will perform the conformance testing and CQC testing.” Confusing to mix CQA and CQC.*

The section will be revised and the “... and CQC testing.” will be removed.

*Are hydrometer tests necessary as part of the CQA program? These could become a major undertaking and slow construction. They are not clearly specified in the Technical Specifications and we are not clear as to where the hydrometer results can be used as an acceptance or rejection criteria. The designer should clarify.*

Hydrometer testing will be removed.

- 7.3.4** *Should also monitor for wrinkles and trampolining of the geomembrane.*

Section 7.3.4 has been revised to include that the CQA Site Manager will document that “...placement of the overlying materials does not damage, create large wrinkles, or induce excessive tensile stress in the underlying geosynthetic materials.”

- 7.3.5** *Should also monitor for adequate separation of different waste materials from the liner system.*

Section 7.3.5 has been revised to include “...monitor the distance between slit trench wastes and debris and the both the base and side slope liner system...”

- 7.4.2** *Add procedures for delineating the extent of the failed area.*

Section 7.4.2 has been revised to include “Additional tests shall be taken at half the distance to the next passing test. If the retest has failed, half the distance from the retest to the passing test shall be tested, and continue until the test passes. If a test passes, half the distance from the passing retest to the failed test shall be considered failed.”

- 8.3.1** *Monitoring that the construction activities do not cause damage to underlying geosynthetic materials and leachate collection pipes. Should also monitor for wrinkles and trampolining of the geomembrane.*

Section 8.3.1 has been revised to include that the CQA Site Manager will document that “...placement of the overlying materials does not damage, create large wrinkles, or induce excessive tensile stress in the underlying geosynthetic materials and leachate collection pipes.”

- 10.2.3** *Consider making provision for sampling at point of manufacture.*

Section 10.2.3 has been revised to state: “CQA personnel will sample the geocomposite either during production at the manufacturing facility or after delivery to the construction site.”

*There are no detailed procedures to follow in the specifications in the event of a failing conformance sample as reference in the CQA Plan.*

The following procedures are outlined in the Technical Specifications:

02770.3.06.F. - Any geomembrane that is not certified in accordance with Part 1.07.C of this Section, or that conformance testing indicates do not comply with Part 2.02 of this Section, shall be rejected. The Geosynthetic Installer shall replace the rejected material with new material.

02772.3.10.E. - Any GCL that is not certified by the Manufacturer in accordance with Part 1.05 of this section or that does not meet the requirements specified in Part 2.01 shall be rejected and replaced by the Geosynthetic Installer.

02773.3.06.E. - Any geocomposite that is not certified by the Manufacturer in accordance with Part 1.05 of this section or that does not meet the requirements specified in Part 2.01 shall be rejected and replaced by the Geosynthetic Installer.

*We have had problems in the past with minor scratches in the conformance test specimens having a major impact on the tensile break strength and elongation values. This is especially prevalent when the conformance samples are obtained in the field. Consideration should be given to the possibility of tensile at break criteria failures due to scratches and not material defects.*

Conformance samples will be collected in the manufacturing facility. In addition, the geomembrane is textured, making it less susceptible to scratch induced failures.

*10.4.2.1 The geomembrane is being deployed on GCL. It may be better to put the detailed sub-grade acceptance procedures in the GCL section.*

Section 10.4.2 has been excluded. Section 10.4.2.1 has been moved and included as Section 12.7 with the exception of the statement “...placement of the overlying materials does not damage, create large wrinkles, or induce excessive tensile stress in the underlying geosynthetic materials” which has been moved to Section 7.3.4.

*10.4.3.2 Should consider protecting both the sub-grade and GCL from rain damage.*

Rain protection is the responsibility of the Contractor. The CQA Monitors will document subgrade and GCL conditions during installation.

*10.4.4.3 Seaming apparatus pressures need to be incorporated into the Technical Specifications.*

*Document that production welding settings are consistent with settings used during trial seams.*

Section 10.4.4.3 is revised to include "... production welding settings are consistent with settings used during trial seams."

**10.4.4.7** *For trial fusion welds, test both tracks in peel?*

As required in ASTM D 6392, each external seam will be peel tested.

**10.4.4.9** *Resolution of pressure gauge should be specified.*

None required.

**10.4.4.10** *Make Field Testing section consistent with specifications which tests one strip on each side before testing the destructive sample.*

Contractor is responsible for cutting destructive sample for CQA testing and will therefore dictate sample collection upon completion of "bone" testing on each side of the destructive location.

*CQA Laboratory Testing section should specify that samples will be shipped the same day with next day delivery, depending on delivery schedule of selected vendor*

Section 10.4.4.10 is revised to state "Destructive test samples will be packaged and shipped same day with next day delivery, if necessary, under the responsibility of the CQA Site Manager in a manner that will not damage the test sample."

**10.4.5.3** *define "large holes" and "small tears"*

The Section has been revised to define small holes as <1/8 inch and small tears as <1/2 inch.

**10.4.6** *Geosynthetic liner system not accepted until CQA report and as-built drawings received by Construction Manager—will this delay deployment of cover composite?*

NDEP requires that a CQA Report be submitted prior to allowing waste placement. In order to fulfill this requirement, BRC proposes to submit a letter upon completion of the liner system to satisfy this requirement and not impair the construction schedule or product quality.

**12.2** *for "minimum average roll value" properties, use definition that is consistent with Technical Specifications.*

The CQA Plan will be revised to include minimum average roll value defined in accordance with Federal Highway Administration.

*12.5.1 incorporate provision to sample GCL during production at the manufacturing facility into the Technical Specifications.*

Section 02772.3.10.A has been revised.

*12.7 Consider taking Section 10.4.2.1 regarding subgrade acceptance from the Geomembrane Section and incorporating it here.*

Section 10.4.2.1 has been moved and included as Section 12.7 with the exception of the statement "...placement of the overlying materials does not damage, create large wrinkles, or induce excessive tensile stress in the underlying geosynthetic materials" which has been moved to Section 7.3.4.

*13.5.4 "...remove conformance samples for testing by the CQA Laboratory from the closest numerical rolls on both sides of the failed roll"—incorporate these procedures for a failed conformance sample into the Technical Specifications.*

Technical Specifications have been revised with similar language as discussed above.

*13.6 need to add paragraph regarding presence of soil and oversize particles on geomembrane.*

Section 13.6 has been revised to include the statement: "Prior to geocomposite installation, a visual examination of the geomembrane will be performed and documented.

*13.7 make minimum overlap consistent with specifications*

Section 13.7 has been revised to state: "The geonet components shall be overlapped a minimum of 4-inches along the length and a minimum of 12-inches along the width."

*13.9 make equipment requirements and maximum loads consistent with specifications*

Section 13.9 has been revised.

### ***Design Drawings***

*Comments have been made to the design drawing in previous reports.*

### ***Documents Reviewed***

*Drawings titled, FINAL DESIGN, Basic Remediation Company, CORRECTIVE ACTION MANAGEMENT UNIT, CONTROL SYSTEMS DESIGN, HENDERSON, NEVADA, OCTOBER 2007, prepared by Geosyntec Consultants.*

### ***Discussion***

*Our review is essentially complete with the following comment,*

*The material to be used to backfill the leachate collection sump should be specified in the details.*

The drawing will be revised to include the drainage aggregate specified on the leachate collection sump details.

If you have any additional questions please feel free to contact us at (858) 674-6559

Sincerely,



Rebecca Flynn, E.I.T.  
Senior Staff Engineer



Digitally signed by Greg  
Corcoran  
DN: CN = Greg Corcoran, C =  
US, O = Geosyntec, OU = San  
Diego  
Date: 2008.01.29 20:33:27 -  
08'00'

Gregory T. Corcoran, P.E.  
Principal

Attachments: Revised Technical Specifications  
Revised Construction Quality Assurance Plan

Copies to: Ranajit Sahu, C.E.M., Ph.D., Basic Remediation Company  
Robert B. Valceschini, P.E., ASW