SECTION 02266 – HYDRAULIC BARRIER WALL

PART 1 -- GENERAL

1.1 DESCRIPTION

A. The Work of this Section includes construction of a minimum 30-inch-wide hydraulic barrier wall (HBW) that will be constructed of a soil-sepiolite (S-S) slurry backfill installed within the existing perimeter embankments of the retrofitted waste pond (RWP).

B. The CONTRACTOR shall retain a qualified professional(s) to serve as their HBW specialist. The CONTRACTOR shall submit to the OWNER and DESIGN ENGINEER the resume of their proposed HBW specialist for review and approval.

C. The CONTRACTOR shall refer to the compatibility test completed by Great Lakes Environmental and Infrastructure for assisting in evaluating the slurry mixing design for the project.

1.2 REFERENCES

API Spec 13A	Specification for Drilling Fluid Materials
API RP 13B-1	Recommended Practice for Field Testing Water-Based Drilling Fluids
ASTM C 143	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM D 422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D 698	Standard Test Method for Laboratory Compaction Characteristics of Soil using Standard Effort
ASTM D 2216	Standard Test Method for Laboratory Determination of Water Content of Soil and Rock Mass
ASTM D 1140	Standard Test Method for Amount of Material in Soils Finer than the No. 200 Sieve
ASTM D 4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4380	Standard Test Method for Density of Bentonitic Slurries
ASTM D 5084	Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
ASTM D 7100	Standard Test Method for Hydraulic Conductivity Compatibility Testing of Soils with Aqueous Solutions.

1.3 DEFINITIONS

A. Sepiolite: Sepiolite, also known as meerschaum, is a clay mineral consisting of a hydrous magnesium silicate having the chemical formula of $Mg_4Si_6O_{15}(OH)_2 \cdot 6H_2O$.

B. Confining Layer: Low permeability soil stratum foundation material into which the bottom of the HBW is constructed, consisting of lean to fat clay (CL and CH).

C. Soil Sepiolite (S-S) Backfill: S-S backfill is a homogeneous mixture of material produced by mixing native soil obtained from the trench spoils and if necessary augmented with soils from the designated borrow source with sepiolite slurry and additional dry sepiolite, which is placed into the excavated trench to construct the HBW.

D. Unsuitable Materials: Material that contains waste, debris, roots, organic matter, frozen matter, or any other materials determined by the DESIGN ENGINEER to not meet the specifications for soil to be used for slurry wall mixing. Unsuitable material shall not be used in soil-clay backfill.

E. DESIGN ENGINEER: The DESIGN ENGINEER works on behalf of US Magnesium and is responsible for design of the HBW and overseeing the CONTRACTOR'S work to confirm that the HBW has been constructed in accordance with the design drawings and specifications.

F. QA REPRESENTTATIVE: The QA REPRESENTATIVE will work in close coordination with the DESIGN ENGINEER and US Magnesium to confirm that tests required per this specification and the Construction Quality Assurance Plan are being performed and the results meet the performance requirements presented in this specification.

G. CONTRACTOR: The CONTRACTOR is hired by US Magnesium and will be responsible for the construction of the HBW and appurtenant work.

H. CONTRACTOR'S HBW Specialist: The CONTRACTOR'S HBW Specialist shall be a direct employee of the CONTRACTOR or subcontracted, and shall have experienced in the design and construction of slurry walls and dewatering systems.

I. QC CONTRACTOR: The QC CONTRACTOR shall be an independent firm that shall be responsible for performing inspections and testing of the HBW construction.

1.4 PERFORMANCE REQUIREMENTS

A. CONTRACTOR shall be responsible for developing the S-S mix design. Testing for the S-S mix design shall be completed in accordance with ASTM D7001. The S-S mix design test results shall demonstrate that the mix design achieves a maximum hydraulic conductivity, k^{20}, of 1E-06 based on an average of the last 4 trials per ASTM D7001. The S-S mix design test results shall be submitted to the DESIGN ENGINEER for review. The CONTRACTOR shall not proceed with HBW construction until it has received written approval of the S-S mix design from the DESIGN ENGINEER.

B. The CONTRACTOR is responsible for performing tests necessary to meet the minimum requirements specified in Table 1. Routine testing procedures conducted by the CONTRACTOR shall be available for inspection by the QA Representative and the DESIGN ENGINEER at any time.

C. Installation of a soil-sepiolite HBW that is continuous from the tie-in trench at least one -bucket depth (minimum 3 feet) into the designated confining layer and free from any windows, cave-ins, loose natural material at the bottom of the trench that could allow inclusion of higher conductivity material within the HBW. The in-place hydraulic conductivity of the completed S-S HBW shall be $1x10^{-6}$ centimeters per second or less, no more than 30 days after placement.

D. The S-S HBW is low strength and shall not be relied upon for temporary shoring for excavations. The CONTRACTOR is responsible for design and installation of temporary shoring for excavations, if required. Shoring systems shall be designed to protect the trench wall at all times. Shoring shall be kept a sufficient distance from the S-S HBW as determined by the CONTRACTOR to avoid impacting the integrity of the S-S HBW. The CONTRACTOR is responsible for the performance and integrity of the S-S HBW, regardless of adjacent CONTRACTOR activities with or without shoring.

1.5 SUBMITTALS

A. Submit in accordance with Section 01300 Submittals.

B. The CONTRACTOR shall be solely responsible for the detailed design and installation of the S-S and mitigating the risk of damage to existing structures such as newly constructed embankments and existing monitoring wells. The detailed design shall be developed under the direct supervision of the HBW Specialist and submitted to the OWNER and DESIGN ENGINEER for approval prior to commencing work.

C. Submit evidence that CONTRACTOR meets experience requirements for HBW construction, including evidence of previous successful completion of HBW with references, and resume of HBW Specialist.

D. Submit a description of equipment and procedures to be used for:

1. Excavating the trench,

2. Mixing and placing sepiolite-water slurry, and desanding slurry in the trench,

3. Mixing and placing S-S backfill,

4. Desanding methods and equipment, and

5. Quality control measurements and testing.

E. Submit a plan describing the general work sequence and layout of operations, including slurry and backfill preparation and storage areas.

F. Confirm suitability of OWNER supplied water source.

G. Submit test results for proposed S-S backfill based on mix design testing.

H. Submit the description of CONTRACTOR'S quality control program.

I. Submit a plan for performing trial backfill mixes and provide the test results including slump, unit weight, gradation, and hydraulic conductivity.

J. Provide, for information only, sepiolite manufacturer's certification of material compliance with specifications with each shipment of sepiolite.

K. Provide copies of CONTRACTOR'S quality control tests and measurements within 1 day of performance.

L. The DESIGN ENGINEER may require resubmittal of the required submittals if the system, materials, or any part thereof is materially modified during the course of construction.

M. As-Built Profile: A scaled drawing providing the measured elevation of the confining layer and a profile of the completed slurry trench. The limits of each batch of soil-sepiolite backfill shall be delineated as placed.

1.6 CONTRACTOR EXPERIENCE REQUIREMENTS

A. The CONTRACTOR shall have constructed at least five HBWs of similar application and must have installed at least 500,000 square feet of soil-sepiolite and/or other clay-amended HBWs in comparable ground conditions.

B. Provide a HBW Specialist to work under the direct supervision of the CONTRACTOR on the project site to supervise all aspects of construction of the. The HBW Specialist shall have had experience on at least three projects in all aspects of slurry wall construction including mixing and control of slurries; mixing and placement of backfill; dewatering, trench excavation; and quality control testing.

PART 2 -- PRODUCTS

2.1 MATERIALS QUALITY CONTROL

A. CONTRACTOR shall provide access and provide material samples to the CONTRACTOR'S QC CONTRACTOR for independent testing of material properties. The minimum testing requirements shall conform to Table 1:

2.2 SEPIOLITE

A. Sepiolite for use in sepiolite-water slurry and in soil-sepiolite backfill shall be delivered in a powdered form.

B. Sepiolite shall conform to API Spec 13A Section 8

C. Transport and store sepiolite in conformance with manufacturer's recommendations.

2.3 WATER

A. Water will be supplied from the OWNER's existing water supply wells. The CONTRACTOR shall confirm water quality meets requirement for slurry.

2.4 SEPIOLITE-WATER SLURRY

A. Admixtures to alter sepiolite-water slurry characteristics are prohibited, including softening agents, dispersants, retarders, and bridging agents unless approved in advance and in writing by the DESIGN ENGINEER.

2.5 SOILS FOR SOIL-SEPIOLITE BACKFILL

A. Soil used for backfill shall be obtained from spoils from the trench excavation.

B. During excavation the CONTRACTOR shall where practical (i.e., lenses greater than 1-foot in thickness) excavate and waste lenses of oolitic sands, and preferentially waste horizons potentially containing oolitic gravels/sands to account for the swell of the S-S backfill. All excavated and wasted materials shall be placed within the RWP footprint.

C. Additional soil required for the S-S backfill shall be obtained from the OWNER's designated borrow area.

2.6 SOIL-SEPIOLITE BACKFILL

A. S-S backfill shall consist of a mixture of sepiolite-water slurry, dry sepiolite, and soils obtained from either the trench excavation or OWNER's designated borrow area.

B. Backfill must be free from pockets of fines, sand, and gravel.

C. The density of the backfill shall be at least 15 pcf greater than the density of the in-trench slurry.

D. The CONTRACTOR shall adjust the sepiolite content and mixing operations in response to varying properties of soils to consistently achieve the specified hydraulic conductivity.

E. The QC CONTRACTOR shall perform tests on samples from the mixing area provided by the CONTRACTOR.

Table 1 Soil-Sepiolite Slurry Wall – Minimum Material Requirements			
Property	**Requirement**	**Test Method**	**Test Frequency**
Sepiolite			
Viscometer @ 600 rpm	30 cP, min	API Spec 13A	Sample from each proposed source.
Residue Larger than 75 µm	8.0% by weight, max	API Spec 13A	
Moisture content	16 percent, max	ASTM D 2216	1 for each truck or rail car delivery to site
Water			
PH	6 to 9	API RP 13B-1	1 per source
Hardness	250 ppm max	Hach Test	
TDS	500 ppm max	Hach Test	
Sepiolite-Water Slurry at Mixing Area			
Marsh Funnel viscosity	Min. 36 Marsh seconds	API RP 13B-1	2 per 8-hour shift
Density	64 pcf min	ASTM D 4380	2 per 8-hour shift
Filtrate loss	20 cc max, 30 minutes @ 100 psi	API RP 13B-1	1 per 8-hour shift
PH	6.5 to 10	API RP 13B-1	2 per 8-hour shift
Sepiolite content	6.0 to 7 percent by weight of water	Weight-Volume	2 per 8-hour shift
Sepiolite-Water Slurry in Trench			
Marsh Funnel viscosity	40 Marsh seconds min	API RP 13B-1	2 per 8-hour shift, 15 feet from slurry in trench at 20 feet distance from toe of backfill, trench mid-depth and bottom
Sand Content (by volume)	15% max or as approved by Contractor's HBW Specialist	API RP-13B-1 Sand Content Kit	
Density	64 pcf min, 85 pcf max	ASTM D 4380	
Soils for Soil-Sepiolite Backfill Augmentation			
Fines content	30 percent fines min.	ASTM D 1140	1 per 500 cy, and each change in material
Plasticity Index	5 min	ASTM D 4318	
Soil-Sepiolite Backfill In Trench			
Slump	3 to 6 inches	ASTM C 143	2 tests per 8-hour shift or once every 200 linear feet of installed HBW at 25 vertical foot vertical intervals, whichever is greater.
Particle Size	For Record	ASTM D 422	2 tests per 8-hour shift or once every 200 linear feet of installed HBW at 25 vertical foot vertical intervals, whichever is greater.
Density	min 15 pcf heavier than max density of slurry in trench	fill 4-inch cylinder. mold described in ASTM C 138, rod 10 times, fill with additional backfill.	2 tests per 8-hour shift or once every 200 linear feet of installed HBW at 25 vertical foot vertical

Table 1 Soil-Sepiolite Slurry Wall – Minimum Material Requirements			
Property	**Requirement**	**Test Method**	**Test Frequency**
			intervals, whichever is greater.
Hydraulic conductivity	$1x10^{-6}$ cm/sec max	ASTM D5084 Test to be completed at confining pressures and gradient consistent with the depth of the sample collected. Test to be conducted with representative pond water.	One test per 8-hour shift or once every 200 linear feet of installed HBW at 25 vertical foot vertical intervals, whichever is greater.

PART 3 -- EXECUTION

3.1 CONSTRUCTION EQUIPMENT

A. Trench excavation equipment shall be selected to minimize raveling of the sides of the trench and damaging exterior slopes of embankments. Excavating tool width shall equal or exceed the minimum design width of the slurry trench. Equipment shall be capable of excavating at least 10 feet deeper than the maximum depth shown on the Drawings.

B. The slurry batching plant shall include equipment capable of producing a colloidal suspension of sepiolite in water. The slurry batching plant shall include pumps, valves, hoes, supply lines, and all other equipment required to adequately supply slurry to the trench. Storage ponds or tanks shall be provided to store initially mixed slurry to allow hydration, and to retain a reserve in the event of slurry loss through underlying pervious zones occurs. Slurry held in storage shall be agitated or recirculated to maintain a homogeneous mix. Slurry for use in the trench shall be prepared using a suitable mixer. Slurry shall not be made in the trench. Mixing of water and sepiolite shall continue until sepiolite particles are fully hydrated and the resulting slurry is homogeneous.

C. Slurry mixing plant shall be capable of providing a continuous supply of sepiolite-water slurry to the trench, equal to the rate of excavation. The slurry plant mixing plant shall be equipped with a high-speed/high shear colloidal mixer or a high velocity/high-pressure venturi jet mixer used in conjunction with a high-speed/high-shear centrifugal pump. The plant shall be equipped with a mechanically or hydraulically agitated sump and shall include pumps, valves, hoses, supply lines, tools, and other equipment and materials required to prepare the slurry and deliver it in a continuous supply from the hydration pond (or tanks) to the slurry trench. Mixers shall be capable of continually mixing the slurry to provide and maintain a uniform blended slurry. Provide sufficient ponds (or tanks) for storage of hydrated sepiolite slurry.

D. Slurry cleaning equipment shall be available le to reduce sand, sediment, or other solids as necessary to maintain the sand content or density requirements of the slurry in the trench. Slurry cleaning equipment may contain but not limited to vibratory shaker screens, centrifugal sand separators, or stilling ponds.

3.2 PRE-CONSTRUCTION EXPLORATION

A. Subsurface exploratory borings have been obtained by the OWNER to measure the character of materials to be excavated. Locations of the borings are shown on the

Drawings. The OWNER assumes no responsibility for interpretation or deductions made by the CONTRACTOR from the data provided. Local variations in the subsurface materials are to be expected, and if encountered will not be considered as materially different. Soil classifications shown on the logs are the result of field visual and laboratory classifications. The borings are classified in accordance with the Unified Soil Classification System. Locations of the borings along the alignment of the HBW within the limits and proposed depths of this contract are included in the contract drawings and boring logs are provided in the Basis of Design Report. Groundwater levels indicated in the explorations were measured at the time of drilling and may vary depending on time of year and from year to year.

B. Knowledge of Subsurface Data: It is the CONTRACTOR'S responsibility to become acquainted and satisfied as to the character, quality, and quantity of surface and subsurface materials by inspecting the site, performing additional borings as necessary for soil classification and mix design formulation and by evaluating information derived from the exploration work performed for this project and included in the plans and specifications. Failure by the CONTRACTOR to become acquainted with all the available information and any other site-specific conditions such as utility information will not relieve the CONTRACTOR from responsibility for properly estimating the difficulty or cost of successfully performing the work.

3.3 TEMPORARY WORKING SURFACE PREPARATION

A. Prepare the temporary working surface from which trench excavation, backfill mixing, and backfilling operations are to be performed. Previous work performed by others has established a top of HBW crest elevation of 4218 feet.

B. Maintain control of gravity drainage along the working surface. Maintain the working surface free of excessive amounts of excavated soils and slurry.

3.4 SEPIOLITE-WATER SLURRY PREPARATION AND PLACEMENT

A. Sepiolite-water slurry shall be a homogenized, stable, colloidal suspension of Sepiolite in water. Allow freshly mixed slurry to hydrate in storage ponds or tanks. Agitate or recirculate slurry occasionally in the ponds or tanks until sepiolite is fully hydrated, as indicated by stabilized Marsh funnel viscosity readings and homogeneous appearance of the slurry. Slurry shall not be mixed in trench.

B. Introduce sepiolite-water slurry into the trench when excavation begins. Maintain the slurry level in the trench within 1 foot of the temporary working surface. Minimize dilution of the slurry by surface water. Maintain the slurry level in the trench at all times, including nights, weekends, and holidays.

C. Slurry in the trench shall conform to specified requirements at all times. Remove any slurry containing suspended solids in excess of the specified amount or separate suspended solids by desanding and re-introducing the desanded slurry into the trench.

3.5 TRENCH EXCAVATION

A. Maintain the trench excavation within 2 percent of vertical. Check for verticality with a carpenter's level laid across the excavator, or by other method acceptable to the Design ENGINEER.

B. The slurry trench shall follow the design alignment unless approved in advance in writing by the DESIGN ENGINEER.

C. Excavate trench continuously to full depth. If constructing the slurry wall in phases, re-excavate and reconstruct a minimum horizontal length of 10 feet of slurry wall over the entire depth of the end of the previously constructed wall.

D. Minimize the length of trench supported only by slurry. Maintain a minimum distance of 10 feet from the upstream (pond side) crest of the embankment to allow inspection and depth measurement, and to permit cleaning of the bottom if required.

E. At the intersection of two straight-line segments, extend the trench excavation a minimum of 5 feet beyond the outside of the intersection at full depths including at trench bottom.

F. Overlaps and changes in direction of the slurry trench shall require a minimum, full depth over excavation at least 5 feet beyond the centerline of the trench. In cases where the trench must be re-excavated (for example, due to an extended shutdown, cave-in, rework, etc.), the overlap into acceptable backfill shall extend a minimum of 10 feet into the previously placed S-S backfill at all depths.

G. Sound trench bottom and top of backfilled zone in the trench at 20-foot intervals, each day upon completion of each work shift, and before commencing work immediately prior to backfilling. Any additional materials measured at the trench must be cleaned by CONTRACTOR. To approve the bottom recently excavated trench, the sounding must be conducted at 20-foot-intervals. Record depth from top of working surface to bottom of trench to the nearest 0.5 foot.

3.6 TOP & BOTTOM OF SLURRY WALL

A. The slurry wall shall extend from the crest elevation of 4218 as shown on the Drawings. The final depth of the slurry wall shall extend a minimum one -bucket depth (minimum 3 feet) into the confining layer. The estimated bottom of the HBW" throughout the alignment of the HBW as shown on the Drawings is an estimate only. The CONTRACTOR'S HBW Specialist and QC Contractor shall be responsible for ensuring, by measurement and documentation, that the HBW extends a minimum of one -bucket depth (minimum 3 feet) into the confining layer.

B. CONTRACTOR shall sample cuttings from the trench bottom at 20-foot intervals or as directed by the CONTRACTOR'S HBW Specialist. The bottom of trench and depth to be keyed into clayey layer at trench bottom shall be documented by CONTRACTOR per the Construction Quality Assurance Plan.

C. Prior to backfilling any portion of the trench, the CONTRACTOR shall pass the excavating tool along the completed section to demonstrate to the satisfaction of the CONTRACTOR'S HBW Specialist and QC Contractor that the trench is continuous and keyed the minimum specified depth into the underlying confining stratum.

3.7 CLEANING TRENCH BOTTOM

A. For portions of open trench from the previous working day, the trench shall be cleaned of debris and excess sediment prior to backfilling.

B. If the unit weight of the slurry in the trench exceeds the specified limits or becomes unworkable, the heavy slurry shall be removed from the trench and replaced with fresh slurry.

C. Prior to backfilling, the trench shall be sounded to measure the bottom and compared to the depths for that location from the previous day to monitor for cave-ins.

D. At the start and end of each workday, measure and record the slope of the backfill inside the trench at 20-foot intervals from ground surface to trench bottom, to measure slough. Maintain a continuous record of these measurements.

3.8 TRENCH STABILITY

A. Avoid construction loading that may cause trench instability, such as equipment operation, stockpiles of backfill or waste, and berms.

B. In the event of trench wall failure prior to completing backfilling, remove all material displaced into the trench and take corrective action to prevent further instability.

C. The excavated trench shall be kept full of slurry at all times. The depth of slurry in the trench shall not be more than one foot below the platform elevation.

3.9 MIXING SOIL-SEPIOLITE BACKFILL

A. Adapt the mixing technique as necessary to satisfy the hydraulic conductivity requirement, employing one or more of the following techniques in the order of numbering:

B. Increase the proportion of clay and clay soils in the backfill by separating and spoiling excavated sandy layers.

C. Broadcast dry sepiolite, as required based on the on the DESIGN ENGINEER approved S-S mix design per 1.4A above. If dry sepiolite is required, it shall be spread over 6- to 8-inch thick layers of backfill and mix thoroughly.

D. Add more sepiolite to the sepiolite-water slurry mixture.

E. Thoroughly mix and blend excavation material and on-site borrow soils into a homogeneous mass by windrowing, disk harrowing, bulldozing, blading, use of a pug mill, or by other methods. Blend soils prior to mixing with sepiolite-water slurry.

F. Sepiolite-water slurry may be sluiced into the backfill during mixing operations to obtain the required consistency and slump. Sluicing with water will not be permitted.

G. Allow excess slurry to drain into the trench. Do not allow drainage beyond the construction limits or into adjacent water bodies.

H. Where mixing backfill material adjacent to the trench, construct a dike 0.5- to 1-foot high, parallel to the trench, to keep the backfill from flowing uncontrolled into the trench. Intermittent openings in the dike to drain excess slurry to the trench are permitted.

3.10 PLACING SOIL-SEPIOLITE BACKFILL

A. Place backfill so as to avoid segregation of the materials. Dropping backfill into the slurry is prohibited.

B. Lower the initial backfill to the bottom of the trench using a clamshell bucket or similar equipment until the backfill emerges from below the slurry surface and achieves its natural angle of repose.

C. If initial backfill is to be placed without the use of a clamshell bucket or similar equipment, excavate a lead-in trench. Begin the lead-in trench away from the HBW and ramp it down to full depth of the HBW at a slope of 1.5 horizontal to 1 vertical.

D. Place backfill continuously into the trench in the direction of excavation, from beginning to end of the trench.

E. Place backfill so that the surface of backfill below the slurry surface follows a reasonably uniform slope without hollows that may trap pockets of slurry. Introduce new backfill on top of previously placed backfill, causing the new backfill to slump or slide down the forward face of previously placed backfill.

F. Cease backfill placement if the density of trench slurry exceeds the maximum density specified at any sampling location.

G. Place additional backfill material in the trench as necessary to accommodate settlement.

3.11 FIELD QUALITY CONTROL

A. The CONTRACTOR'S QC Contractor shall document all work performed during the construction of the S-S HBW in order to substantiate its compliance with the procedures and requirements set forth in these Specifications. Depth measurements of the excavated trench shall be made every 20 feet along the entire alignment of the slurry trench by the CONTRACTOR. Measurements shall be made under the direct observation of the CONTRACTOR'S QC Contractor.

B. The CONTRACTOR'S QC Contractor shall perform tests on samples of sepiolite slurry, soil-sepiolite slurry, and any other materials to monitor compliance with properties described in Section 2. CONTRACTOR shall provide samples in quantities and frequencies to the QC Contractor as required by this specification.

C. Based on the test results the CONTRACTOR shall remove and replace any sections of the S-S HBW not meeting the properties described in Section 2 as determined by the CONTRACTOR'S QC Contractor based on test results.

D. The CONTRACTOR shall implement its own Quality Control program to monitor the properties of the sepiolite-water and soil-sepiolite-water slurries and the quality of the work performed. The CONTRACTOR shall also document and report in writing to the QA Representative that the quantities of slurry mixing material used on a daily basis. The CONTRACTOR shall document and maintain a field log of all the results of tests performed by the CONTRACTOR and submit per SECTION 01300 - Submittals.

E. The CONTACTOR'S QC Contractor in coordination with the CONTRACTOR'S HBW Specialist shall observe all depth measurements of the slurry trench performed by the CONTRACTOR. Final approval of the slurry trench shall be given by the DESIGN ENGINEER and shall be based on the CONTRACTOR'S documentation of the work, on the results of the testing performed, and the CONTRACTOR'S QC Contractor's visual observation of the work performed.

3.12 SLURRY WALL TOP TREATMENT

A. Place a layer over the soil- sepiolite backfill within two days of completing backfill placement over each 100 ft length of trench, to prevent drying. The temporary layer shall consist of 2 foot minimum of compacted backfill obtained from the OWNER's borrow area or surplus S-S backfill not used in construction of the HBW.

B. If any depression develops within the completed trench area, repair with additional soil-sepiolite backfill and/or final trench cover material, as appropriate to match design elevations.

3.13 DISPOSAL OF EXCESS SLURRY AND SPOILS

A. Place excess slurry within the RWP footprint within 7 days after completing the HBW construction. CONTRACTOR shall not allow slurry to escape to nearby drainage courses or surface water, or wetlands.

B. Dispose of excess excavated material from trench excavation as directed in Section 02200, Earthwork.

- END OF SECTION -