MIAMI-DADE COUNTY DEPARTMENT OF SOLID WASTE MANAGEMENT

MUNISPORT SITE
COMPREHENSIVE LANDFILL CLOSURE PLAN
AMENDED FORMALIZATION REPORT
FOR THE GROUNDWATER REMEDIATION
AMENDMENT 4

March 10, 2011

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DOCUMENT HISTORY

This document is a revision by the Independent Engineer (A.D.A. Engineering, Inc.) of the original document produced by Brown & Caldwell, the original DSWM Bond Engineer, and incorporated as the COMPREHENSIVE LANDFILL CLOSURE PLAN FORMALIZATION REPORT, dated March 2005. Only the Sections pertaining to groundwater remediation have been revised to reflect the Lump Sum proposal items; the other sections were not revised, with the exception of section 3.2.4 Stormwater Management System that has been historically updated as per the SFWMD permit records and Draw # 8A payment.

This document serves as a guide for the proposed groundwater remediation work to be performed at the Munisport site. The June 2010 Amendment 2, the January 2011 Amendment 3 and the latest agreed upon revisions incorporated into this March 10, 2011, Amendment 4 (based on the January 2011 Amendment 3 and the February 22, 2011 meeting at DSWM) do not alter the agreed upon Lump Sum proposal for the groundwater remediation that prompted Amendment 2, but rather clarifies the deliverables and payment methodology established on Amendments 2 and 3.

EXECUTIVE SUMMARY

This Executive Summary is historical language from the original document (Not Changed)

Please note that all capitalized terms used in this Executive Summary are defined in the body of this report.

The February 2004 Resolution R-244-04 adopted by the Miami-Dade County Board of County Commissioners stipulates that the DSWM Bond Engineer (the Bond Engineer) accomplish a formalization and Grant-Eligible budget validation of a number of landfill closure and remediation projects (including the Munisport Project) within the Comprehensive Landfill Closure Plan prior to commencement of construction of each project (the Pre-Construction Formalization.)As a result of the pre-construction formalization and validation effort documented in this report, Brown and Caldwell, as the Bond Engineer, have determined, and the Project Stakeholders have agreed, that:

- The grant amount provided by the County to the City of North Miami under the Grant Agreement is $31,027,000 for Grant-Eligible expenses, as set forth in the Grant Agreement;
- As provided in the Grant Agreement, interest earned, if any, on grant funds in the escrow account can be used to fund Grant-Eligible expense; the Schedule of Values included in this report reflects a preliminary projection of interest earned in the amount of approximately$2.0 million in addition to the base grant amount of $31,027,000, for a total of approximately $33.0 million; it should be noted that actual interest earned can vary widely as a function of the actual draw schedule that will occur, interest rate for earnings, and other variables;
- The County is not obligated in any way to fund Grant-Eligible expenses above the grant amount of $31,027,000 plus any interest earned;
- The Bond Engineer has identified at least $31,027,000 in Grant-Eligible expenses (as provided in the Grant Agreement) required by the Munisport Project budget;
- All Draw Requests against the Munisport Project budget shall be reviewed for authorization based on physical progress according to formulas (by individual budget item on the Schedule of Values) presented in this report;
- The Project Maximum unit costs for each item in the Schedule of Values shall be updated annually to reflect inflation according to a widely accepted construction cost index;
- The general intent of the Project Maximum Total in the Schedule of Values is that the sum of the draw requests for each item in the Schedule of Values will not exceed its associated Maximum Project Total amount; for a Project Maximum Total to be changed as the project progresses, other than a change required to reflect inflation, a change in the basis (such as units required, unit cost basis, or a change in the design basis) for calculation of the item in question must be authorized by the Bond Engineer.

CHAPTER R1.0

INTRODUCTION

As provided by Resolution R-244-04 passed by the Miami-Dade County Board of County Commissioners (BCC) in February 2004, Miami-Dade County (the County) resolved to:

• Develop the Comprehensive Landfill Closure Plan (CLCP) to address closure and remediation of the following inactive landfills:

- The Munisport Landfill Site (the Munisport Site) located in the City of North Miami;
- The Virginia Key Site located in the City of Miami;
- The Homestead Landfill located in the City of Homestead;

and other landfill closure or remediation projects of Countywide significance, including:

- North Miami-Dade Landfill Groundwater Remediation;
- South Miami-Dade Landfill Cell 3 Closure;
- North Miami-Dade East Cell Closure; and
- South Miami-Dade Landfill Cell 4 Closure; and to

• Enter into an amended grant agreement (the Grant Agreement) between the County and the City of North Miami (the City) to provide additional funding in the amount of $31,027,000 (subject to this report's pre-construction validation (by PBS&J) of the estimate as part of the Brown & Caldwell CLCP) for closure and remediation (the Munisport Project) of the Munisport Site.

The February 2004 BCC resolution stipulates that the DSWM Bond Engineer, Brown & Caldwell, (the Bond Engineer) accomplish a formalization and Grant-Eligible budget validation of each project in the CLCP prior to commencement of construction of each project (the Pre-Construction Formalization.) In addition, the Grant Agreement requires that the Bond Engineer accomplish oversight of the Munisport Project construction activities in order to determine:

a) Allowable use of grant funds as set forth in Section III of [the Grant Agreement], including those uses of grant funds set forth in paragraphs A, B, and C [of the Grant Agreement];
b) Compliance with regulatory agency technical and permitting requirements, including referenced in paragraphs A, B, and C [of the Grant Agreement.]

The Grant Agreement (Section III B) also requires the Bond Engineer (the Independent Engineer as of August 2009) to approve individual Draw Requests from the City, based on specific physical progress as the Munisport Project is accomplished.

The original Brown & Caldwell report presented the results of the Pre-Construction Formalization for the Munisport Project. The two major chapters of the original report, Chapters 2.0 and 3.0, were modified to include language of the Schedule of Values (SOV) and payment methodology in Chapter 2.0 of the June 2010 and January 2011 revisions.

The revised Chapters 2.0 and 3.0 present the Schedule of Values (Revised Table R3-1) documenting the development of each item in the Schedule of Values, which presents two major groupings of information for each item:

- Project Maximum Total Calculation (the maximum Grant-Eligible amount for each item); and
- Draw Payment Basis (basis for approval of individual Draw Requests based on specific measures of physical progress.)

The revised Chapter 4.0 presents specific procedures that will be followed by the Independent Engineer to review and approve individual Draw Requests, in cooperation with Munisport Project Stakeholders:

- Miami-Dade County
- The City of North Miami
- The Developer or Receiver
- The Engineer of Record (ES Consultants - Overall Project) and subcontractor to CH2M Hill
- CH2M Hill (Contractor, Groundwater Remediation System in its entirety as per Receiver-Vendor Contract)
- Other Munisport Project Stakeholders

Draw Requests submitted by the City (through the Developer/Receiver), once approved by the Independent Engineer and by the Miami-Dade County Department of Solid Waste Management (DSWM), will result in an amount corresponding to the approved Draw Request amount, to be paid from the Escrow Account created under the Grant Agreement.

The overall intent of the Schedule of Values and the Oversight Work Plan is to ensure that payment of Draw Requests tracks, as closely as reasonably possible, actual engineering and permitting, and physical construction progress as documented by the Vendor (CH2M Hill, referred to as Contractor in CLCP) and the Engineer of Record (ES Consultants) and as physically verified by the Independent Engineer in the field.

While some items in the Schedule of Values will be tracked for physical progress (and therefore payment) through application of per acre pre-approved unit costs, a number of items will require verification of payment validity through review of documents (e.g. plans, calculations, models, etc; proof of submittals to the regulatory and permitting agencies; copies of regulatory permits obtained; stamped approved plans by the permitting agencies; and City of North Miami Building Department approvals).

CHAPTER 2.0

MUNISPORT SITE HISTORY AND CONCEPTUAL CLOSURE

R2.1 History

The Munisport Site includes an inactive municipal landfill located on a 291-acre parcel of land within the City limits of North Miami, Florida, along Biscayne Boulevard between NE 135th and NE 151st Streets. The Site is bordered to the east by Biscayne Bay, and wetlands; to the south by a mobile home community, to the west by commercial developments, and to the north by the Florida International University Biscayne Bay (North) Campus.

Activity associated with the Site began in the mid-1960's as part of the construction of a trade and cultural center to be known as "Munisport". Operations in the 1970's initially included the placement of construction debris to raise the elevation of wetland areas to provide a subgrade for construction. Due to financial constraints and opportunities for increased revenues from landfill tipping fees, the developers began accepting solid waste for fill material. The owner of the property, the City of North Miami, pursued a modification of the dredge and fill permit to allow for the use of solid waste as fill material. However, the modification was denied by the United States Environmental Protection Agency (EPA) through a veto of the United States Army Corps of Engineers dredge and fill permit. Before the use of solid waste could be halted through veto of the dredge and fill permit, an estimated six million cubic yards of solid waste had been placed in the landfill. Because the solid waste was disposed of without the use of a liner nor leachate control mechanisms, rainfall percolating through the solid waste is believed to have caused elevated levels of ammonia in the underlying groundwater and associated discharge into adjacent surface water.

A remedial investigation completed by EPA in 1988 and a water quality and toxicity assessment completed in 1989 found that the landfill posed no threat to human health, but that it did pose a significant threat to aquatic organisms in the adjacent wetlands. Based on these findings, EPA issued a Record of Decision (ROD) in 1990 that included the implementation of a hydraulic barrier to intercept the discharge of contaminated groundwater from the landfill to the adjacent mangrove preserve. EPA and the City of North Miami entered into a Consent Decree for the cleanup in 1992. Contaminated groundwater collected as part of the implementation was to be treated through air stripping with the water discharged to the underlying aquifer. Associated actions included the tidal restoration of a State of Florida mangrove preserve and a hydraulically altered wetland area.

Due to the varying degrees of complexity in scope of the different components of the remedy, EPA decided to segment the design and construction process into the four following phases: Tidal Restoration of a wetland area included in the Biscayne Bay Aquatic Preserve; Access and Service Road; Hydraulic Barrier Recovery Wells; and Treatment and Disposal System. Tidal restoration of the wetlands was completed in September 1995. Construction of the service road and recovery wells for the hydraulic barrier were substantially completed in 1996. A draft design for the groundwater treatment and disposal system was submitted to EPA in December 1996.

However, based on results from the monitoring of the changes in water quality and toxicity conditions in the mangrove preserve in 1996, and as a result of the dike breach for tidal restoration

of the preserve, EPA concluded that the increased tidal circulation was adequate to mitigate the adverse impact to the environment and that further response pursuant to CERCLA was not warranted. As a result, the ROD was amended to "No Further Action" in 1997. The Site was removed from EPA's National Priorities List in September 1999. The State and County are expected to oversee the closure of the landfill.

The City published a solicitation for letters of interest in April 2001, pertaining to the potential development of approximately 190 acres of the former landfill. The Swerdlow Group submitted a letter of interest to the City of North Miami in July 2001. On April 23, 2002, authorization was received to negotiate a development agreement for the Munisport Site between the Swerdlow Group and the City. A development agreement was executed by the City and Swerdlow Group on November, 2002.

The original Developer intended to develop the Site as a mixed-use residential, hotel, and commercial community. A new Developer or the City may have other uses for the land. The City will continue to retain ownership of the Site and in the event a Developer expresses interest and contracts with the City, the Developer will be given a long-term lease for the development of the project.

As described in Chapter 1.0-Introduction of this report, the County has provided the City $31,027,000 under the Grant Agreement to close the landfill and accomplish groundwater remediation.

On August 2003, the former Engineer of Record for the project, PBS&J, submitted its "Conceptual Closure and End Use Plan" for the Site on behalf of the City. After being amended in November 2003, January 2004, and twice during March 2004, the Conceptual Closure and End Use Plan were approved by FDEP on June 2004. FDEP also approved the Alternate Procedures and Requirements, which stated that part of the Site could be closed using a permeable cover.

The aforementioned plan approval was introduced as the Munisport Site CLCP Pre-construction Formalization Report by Brown and Caldwell dated March 2005. Following Brown and Caldwell, Malcolm Pirnie, Inc. became the Bond Engineer; however, Malcolm Pirnie, Inc. merged with ARCADIS, an engineering firm providing direct services to the City's Developer at the Munisport Site. The Solid Waste Department requested and obtained an opinion from the Ethics and the Public Trust that prohibited Malcolm Pirnie, Inc. from providing bond engineering services. On August 25, 2009 the Solid Waste Department proposed to the City of North Miami that an Independent Engineer, A.D.A. Engineering, Inc., provide the services required of the Bond Engineer. SEE EXHIBITS R-1, R-2 and R-3.

The former Developer actively pursued the approval of an in-situ groundwater treatment system, an ex-situ treatment system and a funnel and gate system None of these systems were implemented and the Groundwater Remediation Budget saw a percentage reduction due to monies spent on local agency fees, requested studies, models, incomplete designs and impasses regarding permits.

The Receiver through his engineers (CH2M Hill prime and ES Consultants subcontractor) is now proposing a conventional groundwater extraction system with the extracted effluent disposal through a Class I Industrial injection well. See this Chapter Section 2.3.01 (Project Overview) and Section 2.3.02 (Basis of Estimate).

2.2 Closure

2.2.1 Site Preparation (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

The "Conceptual Closure and End Use Plan" published by the Engineer of Record in August 2003 states that Site preparation for closure and re-development will require rough grading, clear and grub/cutting & chipping, removal/disposal of unsuitable materials, and slope and fill. The Engineer of Record estimates that the landfill footprint is approximately 164 acres. It is assumed that about half of the 164-acre Site will require 1.5 feet of cut or fill. High points averaging 1.5 feet will be graded into low points for a smooth surface that generally follows the original grade of the landfill.

Clearing the Site, which includes grubbing, cutting, and chipping, will be done in conjunction with the rough grading. The entire Site is overgrown with heavy vegetation that needs to be removed in order to accomplish the proposed closure and redevelopment plan.

The Engineer of Record expects that during the clearing and rough grading phase, bulky waste materials will be churned to the surface. If these materials cannot be relocated within the Site, then they will be collected and disposed off-site, in an approved landfill or, if these are ferrous, they will be recycled. It is expected that these unsuitable materials will consist of general trash, tires, metal, white goods and other bulky items.

The 164-acre Site will then be covered with 0.5 feet of sandy material that is intended to provide a bedding layer for the final cover system that will be placed on top of it. Final Cover specifications will be discussed in the following section.

2.2.2 Landfill Final Cover System (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

Under current State of Florida landfill closure requirements established in Chapter 62-701, F.A.C., the final cover system for the Munisport Landfill would consist of an impermeable barrier (permeability of 1 X 10-7 cm/sec or less) layer in order to minimize infiltration and erosion. Chapter 62-701.310 F.A.C. allows for the request of an approval of alternate procedures or requirements as long as the petitioner demonstrates that the alternate procedure or requirement provides an equal degree of protection for the public and the environment.

During August 2003, the Engineer of Record, on behalf of the City, requested an Alternate Procedure for the Landfill Closure of the Munisport Landfill. This request consisted of placing a permeable 24-inch thick sand layer instead of the impermeable layer normally required. The Engineer of Record estimates that the permeable layer will cover approximately 50% of the Site. The future structures and paving would provide an impermeable layer on the remaining 50% of the Site. This permeable layer is consistent with the design requirements of the proposed groundwater remediation system, which relies on the continued infiltration and groundwater movement throughout the landfill area.

The current FDEP closure permit includes authorization of the Alternate Procedures and Requirements, SWAP 94-1, which approves the use of both impermeable and permeable areas. The

24 inch permeable layer, as designed by the Engineer of Record, will be divided into two distinct layers. The bottom layer will consist of 12 inches of a sandy material (Type M, or similar). The upper layer will consist of 12 inches of clean and relatively free-draining topsoil with a well-established vegetative cover of grass or sod.

2.2.3 Gas Management System (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

Historical documents suggest that landfilling activities at the Site might date as far back as the 1940's. Even though there are no accurate records of landfilling operations prior to the early 1970's, aerial photographs identify active landfilling operations since the mid 1960's. Taking the mid 1960's as the baseline of mayor landfill activities at the Site, the age of the waste varies from approximately 20 to 40 years. Typically, landfills continue to produce gas for many years after their closure. Recent studies performed by H.J. Ross Associates and HSA have shown that landfill gas is still being produced at the Munisport Site but in very small quantities.

The Engineer of Record reviewed the landfill gas generation potential of the Munisport Site using EPA's Landfill Gas Emissions Model (LandGEM), which estimates air pollutant emissions from municipal solid waste landfills. Two scenarios were developed to run the model. The first considered the entire waste as biodegradable and the second assumed that only half (50%) of the total waste mass was biodegradable. The results from the model indicated that in the worst case scenario (100% biodegradable) the methane production increased to a maximum value of 3,768 megagrams per year (Mg/yr) reached in year 1980. From 1981 to present, the methane production has been decreasing. The methane production for year 2003 was calculated at 1,502 Mg/yr.

Under Title V Regulations, the allowable surface emission rate for landfill gas is 500 ppm at 10 cm above the landfill surface. In order to exceed that surface emissions rate, the landfill would have to be producing a minimum of 2,000 Mg/yr. This value is lower than the value calculated for 2003, as mentioned in the previous paragraph. Also, the lower explosive limit for methane is 5% of 50,000 ppm, which is equal to 100 times the allowable surface emission rate specified in the Title V Regulations.

Based on the field studies performed and the gas production estimates derived from the LandGEM model, the Engineer of Record determined that under a conventional landfill closure, the landfill area would require a total of 82 passive gas wells over the entire 164 acres. This is the equivalent of one passive well every two acres. In addition, the Engineer of Record requested an alternate closure procedure to replace the required impermeable cover system with a permeable cover system due to groundwater remediation requirements. The permeable cover would allow gas produced at the landfill to escape to the atmosphere and reduce the potential for gas buildup under the landfill cover.

Since the ultimate goal is to redevelop the Site into a series of housing, commercial, and hotel developments, the gas management system will be considerably different from the one that would be installed for a usual non-redevelopment closure. Buildings and structures to be constructed on-site will require a series of barrier and venting systems to prevent any gas infiltration and buildup that could lead to hazardous conditions if methane concentrations exceed safe levels. Utility lines will also require a barrier system, as they could provide a path for the gas to enter into the buildings. The actual gas management system will be designed in conjunction with the design of the proposed buildings and structure. The redevelopment of the site has been divided into various phases which will be submitted to FDEP, as completed, for final approval of the gas management system involved.

2.2.4 Stormwater Management System (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

The Site's stormwater management system has yet to be fully designed and permitted. Instead, the Engineer of Record developed a "Proposed Method for Stormwater Control" that follows the requirements of Florida Department of Environmental Protection (FDEP), South Florida Water Management District (SFWMD), and Miami-Dade County Department of Environmental Resources Management (DERM). These state that the system should limit the post-development peak rate of discharge for the 25-year, 72-hour storm design event to that of the pre-development condition for basins with a positive discharge. Closed basins, in the post-development condition, retain the 100-year, 72-hour storm event. For the use of the drainwells as on-site retentions, storage equal to 0.5 inch over the basin area will be provided prior to discharge into the drain well as a water quality volume.

Design criteria of the proposed method included attenuation of the peak flow from post-development conditions basins through stormwater detention basins so as to not exceed predevelopment peak rates of discharge. Water quality retention time volume will be provided for in either stormwater ponds or environmental swales (sodded swales that allow for sediment treatment before discharging to stormwater basins). The post-development stormwater system consists of a system of treatment and attenuation basins that will discharge off-site via environmental swales, drain to on-Site lakes, or discharge to new drain wells.

The design by the Engineer of Record allows for 10,500 linear feet of swales and drainage channels, weirs to control discharge, 10 outfall structures, and approximately 7,500 linear feet of piping, 15 drain wells, and 16 basins.

As part of the proposed stormwater management system the various lake shores in the Site will have to be regraded. The proposed plan consists of removing waste from the shore line and regarding the lake shores to achieve 1:4 grade. It was estimated that 150 sf/lf of the lake bank will need to be peeled back, 24 sf/lf of over-excavation will be needed to remove waste, 24 sf/lf of backfill with final cover over waste, and 54 sf/lf of shore line will have to be excavated under water.

2.2.5 Site Access Control (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

Access control to the Site will be restricted by 16,500 linear feet of fencing and gate. The fence is a 6.0 foot high fence, 9 gauge, no barbed wire, 2 inch line post, 10 inch O.C., 1-5/8 inch top rail, aluminized steel.

R2.3 Groundwater Remediation

R2.3.01 Project Overview

<u>BACKGROUND</u>

The City of North Miami – Miami-Dade County grant for the closure and remediation of the former Munisport Landfill contains two major sections: landfill closure and groundwater remediation. This revision to the schedule of values (SOV) of the grant is only for the groundwater remediation portion of the project. Currently, including unallocated accrued interest, there is approximately $14.5 to $15 million available in the grant to complete the groundwater remediation portion of the project, which includes up to five years of pre-closure O&M.

To date, several groundwater remediation approaches have been considered for the Former Munisport Landfill site. The main approaches that were considered consisted of:

1. Conventional groundwater extraction methods followed by ex-situ biological treatment and re-injection of the treated water into select portions of the surficial aquifer. This approach was approved for pilot testing by DERM, but was later abandoned by the developer (Biscayne Landing, LLC). This system would be expected to produce 3 to 5 million gallons per day (mgd) of groundwater for treatment, resulting in a relatively large treatment facility. Capital costs for such a system would likely be $15 to $20 million and based on a similar system operating in Miami-Dade County (County's Old South Dade Landfill), O&M costs would be well over $1 million annually.

2. An in-situ system was pilot tested at the site for approximately two years. While the in-situ system would likely have been less costly than options that include groundwater extraction and treatment, it was disapproved by DERM. The current funding allocated for groundwater remediation in the grant is based on the projected cost of the in-situ system.

3. A funnel and gate (F&G) extraction system followed by ex-situ biological treatment and re-injection of the treated water into the salt water portion of the aquifer, below the contaminant plume was approved for pilot testing by DERM. This extraction approach has not been used in Miami-Dade County. The F&G system was proposed to minimize the groundwater extraction flow rate, thereby minimizing the required capacity (and cost) of the treatment facility. The extraction system would consist of sheet pile or slurry walls installed to approximately 35 feet below grade and recovery wells would be located within the open slots of the wall (spaced every 300 feet or so). Estimates for the cost of the F&G extraction system with ex-situ treatment range from approximately $15 to $20 million, excluding O&M, depending on the flow capacity. Based on the aforementioned similar system in Miami-Dade, O&M costs would be approximately $1 million annually. Additionally, the F&G extraction system required a $2.6 million pilot test. When this approach was considered, the developer at the time requested an increase to the grant of $19 million.

SOV REVISION

The alternative remediation system that is being proposed by the team of CH2M Hill prime and ES Consultants subcontractor (collectively the Contractor) for the project site consists of a conventional groundwater extraction system utilizing vertical groundwater recovery wells and a Class I injection well to dispose of the groundwater into the boulder zone (approximately 3,300 feet below ground). This approach provides the level of protection required; uses technology that has been proven and approved in the past by DERM throughout Miami-Dade County; can be implemented more timely than other proposed systems; drastically reduces capital and O&M costs; has less uncertainty; and provides much greater flexibility than other systems.

To move forward with the project, a revision to the SOV of the grant is needed to allocate funding for this beneficial approach. The proposed SOV revision provided herein is based on the concepts detailed below. Although the detailed design of this new remediation approach has not commenced, based on experience with the technology proposed and similar local sites, the Contractor has agreed to complete the project for a lump sum (Guaranteed Maximum Price) in an amount less than what is available in the grant for groundwater remediation, plus the accrued interest to date. The Contractor will provide a performance and payment bond to provide assurance that the project will be completed satisfactorily. This approach will result in a minimum savings on the order of $10 million to project stakeholders.

Along with this "Project Overview", the revised Schedule of Values (Table R3.1) and a "Basis of Estimate" comprise the documents the Contractor has developed in support of the SOV revision. To develop the SOV revision, the Contractor utilized reasonable estimates of equipment requirements and material quantities based on project requirements and experience on similar sites in South Florida. Because this project will be completed for a lump sum amount and the Contractor is assuming considerable risk, the costs provided in the SOV are only intended to provide a basis for payment to ensure that grant funds are disbursed commensurate with the work progress.

TECHNICAL OVERVIEW

Extraction System – Vertical Recovery Wells

Vertical recovery wells will be installed along the eastern and southern property boundaries (approximately total 8,000 feet) to create a hydraulic barrier to off-site migration of the ammonia contaminated fresh water lens below the landfill. Based upon established DERM requirements, the lens of groundwater that requires treatment is approximately 20 to 25 feet thick at the eastern property boundary and deepens along the southern boundary as one moves westward. This lens has been defined as Zones 1 and 2 in prior reports.

It is likely that 20 to 40 recovery wells will be required to establish and maintain the hydraulic barrier. Extensive groundwater modeling will be conducted to simulate the extraction system and determine appropriate well spacing and flow rates. Once those criteria are established, wells, pumps, controls, etc. will be sized and selected accordingly. The expected maximum total flow rate for the extraction system is 5 mgd. The extracted groundwater will be conveyed to the injection system pump station (see below) through a common header pipe.

Disposal System

The extracted groundwater is non-hazardous and can be directly injected into the Boulder Zone via Class I Industrial injection well. With this approach, groundwater treatment will not be required, thus eliminating the challenges of other remedies that would require operating a biological treatment system, maintaining effluent quality and preventing system upsets. In addition a biological system would not be able to provide the flexibility in flow control that is inherent in this new proposed remedy.

Class I Industrial Injection Well

The injection well will have a design capacity of 5 MGD (3,500 gpm at 12.5 ft/s) and will be constructed using multiple casings to isolate and protect the aquifers penetrated during drilling and testing. The injection zone will be completed as a nominal 16-inch diameter open-hole from approximately 2,800 feet to 3,300 feet in depth. The exact casing depths will be determined pending evaluation of drilling and testing data throughout well construction and subject to the approval of the FDEP. The injection well steel casings will be installed and fully cemented to ground surface. A monitoring annulus for leak detection will be provided by installing an 11.75-inch Fiberglass Reinforced Plastic (FRP) pipe with packer inside of the final 16-inch diameter seamless steel casing.

As the well is constructed, various data will be collected and submitted to the FDEP in support of the casing setting depths. Additional features of the injection well include continuous measurement and recording of injection flow and pressure. An annular leak detection system will be installed that is comprised of a hydropneumatic tank connected to the fluid-filled annulus between the 16-inch and 11.75-inch well casings. The tank and monitoring annulus will be maintained at an approximate pressure of 125 psi. Pressure and water level monitoring within the hydropneumatic tank will be provided; loss of pressure or the decline in water level within the tank will be used to evaluate the potential development of leaks in the 16-inch and/or 11.75-inch casing during operation.

Dual-Zone Floridan Aquifer Monitor Well

A dual-zone monitor well will be constructed to permit the continuous measurement of the potentiometric surface and for obtaining water samples from two zones within the Floridan aquifer. Drilling and testing will be comparable to that described for the injection well, but will focus on identification of two specific monitoring zones; the selection of the two monitor zones are subject to the approval of the FDEP. Since the Biscayne Landing site is adjacent to Miami-Dade County's North District Wastewater Treatment Plant, there is historical data that indicates the base of the USDW is located at approximately 1,310 feet below land surface (bls). Current guidance from the FDEP requires the completion of an Upper Monitor Zone (UMZ) at or immediately below the USDW; the location is selected and approved based on site specific testing. A Lower Monitor Zone (LMZ) will be constructed approximately 200 feet below the UMZ. The expected length of the open-hole sections for each monitor zone will be between 50 feet and 100 feet.

Upon completion of the dual-zone monitor well, both monitor zones will be equipped with water sampling and transfer pumps; pressure transducers will be installed to measure and record the elevation of the water surface in the two monitor zones. Purge water produced during periodic sampling of the two monitor zones will be disposed of in the injection well.

Injection Well Pump Station

Groundwater from the extraction trench will be conveyed to the injection well pump station for disposal in the injection well. To the maximum extent possible, "off the shelf" components will be used in the construction of the facility to ensure components can be quickly replaced or repaired should there be a failure. The pump station will be located within close proximity of the injection well to minimize the footprint of the disposal system.

R2.3.02 Basis of Estimate

This basis of estimate has been prepared to support the revised Schedule of Values (SOV) for the City of North Miami – Miami-Dade County grant that incorporates the conventional groundwater

extraction and injection system as the method of groundwater remediation at the Former Munisport Landfill site proposed by CH2M Hill prime and ES Consultants subcontractor (together the "Contractor"). This basis of estimate and the SOV have been developed by the Contractor based on their prior remediation design, permitting and construction experience nationally and in particular in South Florida, including Miami-Dade County. At the time of developing the SOV, the remediation system is at the conceptual level; however, regulatory agencies having jurisdiction over the project have expressed their support of the concept. The work will include design, permitting, construction and an operations and maintenance period. The Contractor will provide a performance and payment bond to the City of North Miami prior to commencing construction. The bond will provide the City and other stakeholders the assurance that the project will be completed satisfactorily for the amount indicated herein.

1. Performance and Payment Bond

A performance and payment bond will be provided for the construction portion of the project. The bond will be obtained upon completion of design and permitting and will be provided to the City prior to commencing construction. The cost of the bond will be reimbursed at cost and is estimated at 1.1 to 1.3% of the total construction cost.

2. Allowance

Permit and agency review fees will be required for the various approvals and permits needed from DERM, FDEP, SFWMD, building department, etc. Permit and review fees will be reimbursed at cost; $100,000 has been allocated for these fees. This line item can also be used to reimburse other grant eligible costs.

All permit fees will be issued or reimbursed in the form of a check upon presenting an original receipt or upon submittal of a letter from the Contractor stating the amount of the fee, purpose and agency letter or copy of the requesting agency's fee table.

3. Engineering and Permitting

It is anticipated that the engineering and permitting for the groundwater remediation system will include the following:

- Review, evaluation and acceptance of prior onsite work that will be used in the development of the remediation design, including prior pump tests, geologic investigations, groundwater quality trends, etc.
- Groundwater modeling to demonstrate the effectiveness of the proposed extraction system and predict future groundwater conditions
- Address issues related to potential wetland impacts due to the extraction system
- Stormwater modeling to evaluate the impact to the extraction system capture
- Preparation of a Remedial Action Plan, or modification of prior plans
- Preparation of construction drawings of the full-scale groundwater extraction system
- Preparation of construction drawings of the injection well system including pump station and other appurtenances
- Participation in meetings with regulatory agencies throughout their review process
- Participating in public meetings as necessary

Additionally, this item includes the preparation of applications and services to obtain the following permits/approvals:

- Approval of the RAP by DERM Pollution Remediation Section

- Approval of the RAP by DERM Coastal Section
- Underground Injection Control (UIC) Permit for well construction from FDEP
- Water Use Permit from SFWMD
- Environmental Resource Permit (ERP) Modification from SFWMD
- Landfill Closure Permit Modification from FDEP
- Permitting of the construction plans through the County and City of North Miami

Ten percent of the construction cost is provided in the SOV for the engineering and permitting services. The fee is based on past experience with projects of this complexity, size, and involving the number of stakeholders, and is commensurate with similar projects. Permit fees are not included in the cost for this item (see item 2).

In order to provide a basis for payment to ensure that grant funds are disbursed commensurate with the work progress, the milestones listed below will be used as a guideline for payment. These are only anticipated activities and others may arise that will require agreement between the Contractor and Independent Engineer on a payment basis. Note that the total compensation for this item is the amount indicated herein (or SOV), and is not dependent on the number of RAIs issued or the specific activities listed below. The percentages within each activity listed below tied to deliverables are the maximum percentage of the fees for that activity that may be drawn upon achieving the milestone.

Activity	**% of line item**
Initial concept presentation and meetings with agencies, City, County; Contractor will provide meeting materials or other relevant information with the draw	3
Groundwater modeling; Contractor will provide a certified status of work completed for modeling with each draw at 30%, 60% and 90% completion; Final 10% payment upon RAP submittal	15
Address wetland issues; Contractor will provide a certified status report of work completed with each draw at 30%, 60% and 90% completion; Final 10% payment upon RAP submittal	5
Prepare RAP; 30%, 60% and 90% progress payments. Final 10% payment upon RAP submittal	18
Respond to RAP RAI #1; Final payment upon submittal	3
Respond to RAP RAI #2; Final payment upon RAP approval	2
Construction drawings for full-scale extraction system; 60% payment at RAP submittal; 30% payment at submittal for construction permits; Final 10% payment once all permits are obtained	12.5
Water Use Permitting; up to 60% progress payments, 30% upon submittal of application; Final 10% payment upon receipt of permit	2
ERP Permitting; up to 60% progress payments, 30% upon submittal of application; Final 10% payment upon receipt of permit	1
Landfill Closure Permit Mod.; up to 60% progress payments, 90% upon submittal of application; Final 10% payment upon receipt of permit modification	2
FDEP UIC application; up to 90% progress payment, Final 10% payment upon submittal of application	8

Respond to UIC RAI #1; Final payment upon submittal of RAI response	3
Respond to UIC RAI #2; Final payment upon receipt of notice of intent to issue permit	2
Construction drawings for pump station; 30%, 60% progress payments, 90% at submittal for construction permits; Final 10% payment once permits obtained	17.5
Public notice/meetings	1
Construction Permitting; Final payment upon obtaining permits	5
	100

During the course of the design and permitting, draws will be submitted monthly based on the work completed. A description of the work completed and a partial deliverable, as warranted, will be submitted by the Contractor to the Independent Engineer. Generally, the Independent Engineer will review progress against 30%, 60%, 90% and 100% milestone checkpoints. Interim percentages can be paid in the assessment and judgment of the Independent Engineer as to the project progression and completion. The Contractor and Independent Engineer will meet monthly and agree to the percent complete for the activities underway. Draws will be submitted by the Contractor using the standard AIA form and engineer's certification.

4. Construction-Phase Engineering, Surveying, and CQA

These services will include the following:

- Modification of design documents as necessary
- Surveying during construction and for as-builts
- Quality assurance testing and reporting
- Preparation of O&M Manual
- Operator training, start-up and balancing of the system
- Injection Well and Dual-Zone Monitor Well Engineering Report
- Engineer/Geologist of Record construction certification

Ten percent of the construction cost is provided in the SOV for this item. A majority of the cost for this item is for the supervision by a geologist during the drilling of the injection and dual-zone monitoring well. The contractor is planning on providing coverage by a geologist 24 hours per day during the drilling activities which are expected to last 10 to 12 months. Draws for construction-phase engineering services will be 10% of the amount for construction activities on each draw.

5. Project Management

This task includes the following essential components of the project during the engineering, permitting, and construction phases:

- Management of in-house personnel and project delivery teams
- Ensuring QA/QC procedures are being implemented
- Coordination, meetings, and communication with Receiver/developer, City, County, and regulatory agencies
- Reporting as necessary throughout project
- Scheduling
- Contracting
- Permit compliance
- Construction administration
- Health and safety monitoring

Five percent of the construction cost is provided in the SOV for project management. The fee is based on past experience, general industry standards, and is commensurate with similar projects. Draws for project management will be based on % completion to a maximum 60% for the Engineering & Permitting Phase and 40% for the Construction Phase. For payment schedule, see Section R3.4 Page 25.

6. Mobilization for Site Work and Extraction System (excluding Injection Well System)

This item includes the mobilization of equipment, personnel, temporary offices, project signage, etc. (and also includes all estimated subcontractor mobilization charges). The fee of 7.5% of the construction cost is based on past experience and is commensurate with similar projects. Mobilization line item 6 of the SOV is only for the erosion control, electrical power supply, site preparation, and extraction system line items. A second mobilization line item (item 11) covers the remaining construction scope of work. A draw for mobilization will be submitted after the necessary permits are obtained to allow for construction commencement.

7. Erosion Control/Silt Fence

In accordance with DERM Natural Resources Coastal Section requirements, it is expected that two rows of silt fence will be installed along the 6,000 foot eastern property boundary and one row along the 2,000 foot southern property boundary for a total of 14,000 linear feet of silt fence. Also, 6,000 feet of high visibility temporary construction fence will be required along the eastern property boundary because of the abutting wetlands.

The cost of $6.00 per linear foot is less than the $7.15/LF that was previously approved for the Homestead Landfill project and includes material, installation, and maintenance and repair of the fences for the duration of construction activities. Draws will be based on the percent completed of the total linear footage of silt fence required. 10% is to be paid upon submittal of the notice of intent to use the general NPDES permit and receipt of acknowledgement from the FDEP. 80% is to be paid based on completion of the installation, and the last 10% as 4 equal payments of 2.5% at 3 month intervals as the project progresses to ensure maintenance of the erosion silt fence and compliance with the FDEP and DERM regulations and closure of the NPDES permit.

8. Electrical Supply to Work Site

Permanent electrical service is anticipated to be 480 volt, 3 phase, 500 amp service from FPL. Tie-in to existing high-voltage electrical service originating at the west side of the Biscayne Landing property will be needed. A lump sum fee of $25,000 is included for this line item to be paid in full upon completion of the construction activities and energizing of the system.

9. Site Preparation

Significant site preparation activities will be required to enable access to the needed areas of the site by heavy equipment, including the sizable drilling equipment for the deep injection well. Other typical site preparations will also be needed. We have included the following as part of the site preparation activities:

- Approximately 3,500 linear feet of 30'wide access roads for heavy equipment
- Equipment staging area (approximately 50'x50')
- Temporary security fence for staging area
- Temporary electricity distribution for equipment
- Construction pathways, etc.
- Foundations (excavation of waste and replacement with structural fill as needed) for pump station ASTs

Draws for site preparation activities will be equally distributed over a four month period beginning at the inception of site construction work.

10. Extraction System

Based on our local experience, the Contractor expect to utilize from 20 to 40 vertical extraction wells to create a hydraulic barrier along the eastern and southern property boundaries. The wells will be sized to accommodate the required pumps and flows that will be needed to create the barrier, based on groundwater modeling results. The wells are expected to terminate at -15' to -25' NGVD, depending on the depth of the salt water interface at the well location. Well diameter will likely be from 8" to 12". The Contractor may utilize open boreholes (similar to those used at the Old South Dade Landfill) if the geology permits.

The recovery wells will be connected through a header system pumping the extracted groundwater to storage tank(s) associated with the injection well pump station. Instrumentation and controls will be installed to operate, monitor and record data from the individual groundwater recovery pumps. Communication with the injection well pump station will be provided as a fail-safe to prevent overflow of the groundwater storage tank(s) in the event of an injection well pump station outage.

10.1 Recovery Wells

For purposes of preparing the lump sum fee in the SOV, the Contractor assumed an extraction well spacing of 250 feet, resulting in 32 wells to cover the 8,000 feet of eastern and southern property boundary. The recovery wells will likely consist of flush mounted 8" to 12" diameter PVC slotted well screens with risers. To avoid garbage from entering the screen interval, a surface casing will be installed to seal off the waste from the borehole. Once the casing is installed and the waste removed, the borehole will be advanced until the depth at which the well will be set. The wells will be developed after installation and the development water will be disposed of appropriately. Garbage that comes to the surface during drilling activities will be relocated and covered with temporary cover as appropriate. The unit price of $9,500.00 per well includes the work described herein as well as the technical supervision needed by an engineer or geologist.

Eight thousand feet of hydraulic barrier are needed. Groundwater model results will determine well spacing and the average linear foot of "coverage" each well provides; therefore, draws for the recovery wells will be based on the percent complete of the required linear feet of barrier needed. Draws may be split to include 30% after well installation; 50% upon installation of pumps and controls; 15% when operational; and 5% when approval of the construction certification for the system is obtained.

10.2 Pumps/Appurtenances

Based on the expected flows of 5 mgd, we anticipate each of the extraction wells will be equipped with the following:

- Instantaneous and totalizing flow meter
- Manually operated flow control valve
- Vault to house flow meter and flow adjustment valve
- Stainless steel 2 hp submersible pump (150 gpm @ 20' tdh) with Teflon seals and bearings
- Pump controller with level indicator and level alarm
- Level transducer

- 50' motor lead
- 2" discharge connection
- Satellite monitoring system to display on/off and instantaneous flow for each well

This line item also includes the lateral piping from each recovery well and tapping into the header pipe. The necessary electrical conduit, wiring, and connection for the extraction system are also included in this line item.

The lump sum fee for this line item is based on a unit price of $13,070 for the assumed 32 recovery wells. The draw basis for the pumps and controls is provided under item 10.1, Recovery Wells.

10.3 Header Trench Excavation

A header pipe system will be needed to run the entire length of the extraction system to accept flows from the recovery wells. Using the 8,000 linear feet of eastern and southern property boundary and a 6' deep by an average of 4' wide trench to accommodate the pressure pipe results in the following calculation for the material excavation:

8,000 LF x 6' deep x 4' wide = 192,000/27 = 7,111 cy

The unit price of $6.95 per cy of material/waste excavated includes equipment and operators, and is based on a production rate of 250' lf of excavation per day for the trench and is comparable to unit prices from prior projects and industry standards. Draws for the trench excavation will be based on the percent complete of the total required length of header. Draws will be made as follows: 80% based on the linear foot of trench excavated; 10% upon pipe installation; 5% when pipe is tested; and 5% when approval of the construction certification for the system is obtained.

10.4 Relocate Waste from Header Trench

Approximately 7,111 cy of excavated waste from the header trench excavation will be relocated to an on-site location. A swell factor of 1.3 is added to the waste volume, bringing the total volume to 9,244 cy. This waste will be spread, lightly compacted and covered with 1' of temporary cover (see item 10.5).

The unit price of $8.80 per cy includes $4.00 per cy for loading, $1.00 per cy for hauling to an on-site location and $3.00 per cy for spreading the waste, plus 10% markup. Draws for the relocation of waste from the header trench will be based on the percent complete of the total required length of header, as these activities are expected to occur simultaneously with the header trench excavation.

10.5 Temporary Cover over Waste

One foot of temporary cover will be used to cover the 9,244 cy of relocated waste from the header trench. Assuming a stockpile height of 3', an approximately 288' x 288' area of waste will need cover. One foot of cover over that area yields approximately 3,081 cy of cover material needed. Using a conversion factor of 1.3 tons per cubic yard and a compaction rate of 1.2, yields a total of 4,807 tons of temporary cover material needed.

The unit price of $20.88 per ton includes $14.00 per ton of fill, 7% sales tax, $4.00/ton to backfill and spread, plus 10% markup. Draws for the temporary cover will be based on the percent complete

of the total required length of header, as these activities are expected to occur simultaneously with the header trench excavation.

10.6 Header Pipe

The header system for the groundwater extraction will likely consist of an average of 18" diameter pressure HDPE or similar pipe running the entire length of the extraction system and terminating at the injection well pump station.

The unit price of $63.25 per linear foot includes $50.00/lf for materials, 7% sales tax, $4.00/lf for installation, plus 10% markup. Draws for installation will be based on the percent complete of the total required length of header. Draws for the header pipe will be as follows: 30% when the pipe is delivered; 60% when installed; 5% when the pipe is tested; and 5% when approval of the construction certification for the system is obtained.

10.7 Header Trench Backfill

Select soil, such as crushed limerock, will be used to backfill the header trench. 7,111 cy (from item 10.3) using a conversion factor of 1.3 tons per cubic yard and a compaction factor of 1.2 yields a total of 11,093 tons of fill material needed.

The unit price of $20.88 per ton includes $14.00 per ton of fill, 7% sales tax, $4.00/ton to backfill and spread, plus 10% markup. Draws for the trench backfill will be based on the percent complete of the total required length of header. Draws will be made as follows: 90% per linear foot of trench backfilled; 5% when pipe is tested; and 5% when approval of the construction certification for the system is obtained.

10.8 Piezometers/Monitoring Wells

We estimate that approximately 40 piezometers/monitoring wells may be required as part of the monitoring network for the remediation system. The piezometers/wells will be installed to various depths; therefore, we used an average cost of $1,500 which includes drilling and supervision. Draws will be based on the percent complete of the total required piezometers/monitoring wells. Draws will be made as follows: 95% upon completion log submittal; and 5% when approval of the construction certification for the system is obtained.

Injection Well System for Groundwater Disposal

A Class I industrial injection well system will be constructed in accordance with Underground Injection Control requirements in F.A.C. 62-528 and the FDEP's UIC Class I Test/Injection Well construction permit. The injection well system will include an injection well with an annular leak detection system, dual-zone Floridan aquifer monitor well, and a pump station with associated control and monitoring equipment.

11. Mobilization for Injection Well System

This item includes the mobilization of equipment, personnel, and temporary offices, etc. The fee of 7.5% of the construction cost is based on past experience and is commensurate with similar projects. Mobilization line item 11 of the SOV is only for Injection Well System components (deep injection well, dual-zone monitoring well, and the pump station). A draw for mobilization will be submitted after the necessary permits are obtained to allow for construction commencement.

12. and 13. Class I Industrial Injection Well and Dual Zone Monitor Well

The basis of cost for the construction of the proposed Biscayne Landing injection well system, including a Class I Industrial Injection Well and Dual-Zone Floridan aquifer monitor well, was developed from quotations received January 7, 2010 from three drilling contractors: Youngquist Brothers, Inc. (YBI), All Webbs Enterprises, Inc. (AWE), and Layne Christensen (Layne). Note that the quotations were based on an injection well with a disposal capacity of 5 MGD from groundwater produced from recovery trenches based on the initial groundwater production estimates from modeling. If groundwater recovery wells are used in lieu of trenches, the injection well with a capacity of 5 mgd will likely be needed for disposal at as safe operating velocities. The quotations are summarized as follows:

	YBI	**AWE**	**Layne**
Injection Well (3 mgd)	$4,750,000*	$3,082,707	$4,703,711
Dual-Zone Monitor Well		$1,278,962	$1,597,925
Total Construction	$4,750,000	$4,361,669	$6,301,636

*Lump sum quote provided for construction of both wells

Analysis of the bids determined that AWE's quote was significantly lower than historical pricing for similar injection well systems. Also, their referenced projects do not list any injection well construction experience similar to the work required for Biscayne Landing. AWE's quoted price was not believed to be representative of the established scope of work. Both Layne's and YBI's quotations were within the expected range for the construction of the injection well system and both contractors have significant experience with the type of drilling required for the Biscayne Landing project. Based on the review of contractor quotations and experience, a price of $5,525,818 for the construction of the injection well and dual-zone monitor well is appropriate; this price was developed by averaging Layne's and YBI's quotations. Due to the uncertainties in subsurface conditions, the requirements for testing and data evaluation concurrent with the drilling, and regulatory reviews and approvals throughout the well drilling operations, as well as potential cost escalation for commodity materials (i.e. cement, steel, FRP) $300,000 is added to the quote average, which is normal and customary for the industry. This results in an estimated subcontractor cost for the injection and dual-zone monitor well construction of $5,825,818.

For the Biscayne Landing groundwater remediation system, the injection well and dual-zone monitor wells are similar in design and depth to those constructed for Miami-Dade Water and Sewer Department (MDWASD) which successfully operate four injection wells and four dual-zone monitor wells at their North District Wastewater Treatment Plant. Additionally, FDEP has indicated that those wells are operating properly and there are no issues related to confinement of the wastewater effluent within the injection zone. Unlike MDWASD's injection wells, the Biscayne Landing injection well will be designed and constructed to comply with Class I industrial injection well standards which includes a pressurized monitoring annulus in the well. To meet the construction standards, an 11.75" FRP casing and packer will be installed in the final 16" steel casing. In the unlikely event of a leak in either the 16" or 11.75" casings, a drop and annulus pressure would occur. With the added 11.75" FRP casing, the injection capacity is 5 mgd at 12.5 ft/s.

In order to provide a basis for payment to ensure that grant funds are disbursed commensurate with the work progress, the following milestones will be used as a guideline for payment:

Activity	% of Line Item
Deep Injection Well	
Pump package/mud cleaning system setup	5
Drilling Rig Erection	5
Drilling Fluid Containment Pad & Pit Casing	5
Proposed 44" casing - drilling, testing & installation	5
Proposed 36" casing - drilling, testing & installation	10
Proposed 26" casing - drilling, testing & installation	35
Proposed 16" casing - drilling, testing & installation	20
Proposed 11.75" casing & packer - installation & testing	10
FDEP Cert & Clearance letter	5
Dual-Zone Monitoring Well	
Drilling Rig Erection	10
Drilling Fluid Containment Pad & Pit Casing	10
Proposed 30" casing - drilling, testing & installation	35
Proposed 20" casing - drilling, testing & installation	25
Proposed 12.75" casing - drilling, testing & installation	15
Proposed 6.625" casing - drilling, testing & installation	5

14. Injection Well Pump Station

Groundwater collected by the groundwater recovery system will be conveyed to the injection well pump station for disposal via deep well injection. For purposes of developing the SOV, we are including as part of the pump station the conveyance piping to the injection well, a hydraulic surge control system, hydropneumatic tank and annular leak detection system for the injection well, dual-zone monitor well sample/transfer pumps and piping, permanent electrical equipment for the pump station, temporary electrical service for the drilling rig, climate controlled precast concrete building (approximately 20' x 12'), monitor and control instrumentation, and ≤50,000 gallons aboveground storage tank(s) (AST).

The pump station will be designed for a maximum flow of 5 mgd and will include basic equipment and controls with a low degree of complexity. The pump station will not be designed or constructed to meet Class I redundancy as defined in EPA-430-99-74-001. No secondary/backup power (generator) will be provided or redundant pump(s), controls, valves and piping.

Three to four constant speed centrifugal pumps, generally off the shelf, will be used for injecting the recovered groundwater into the injection well. Based upon the projected operating pressure range, ±75 horsepower pumps are anticipated to be used to convey the full 5 mgd flow.

AST(s) will be low profile and designed to receive the estimated 5 mgd of groundwater flow produced by the recovery system. The tank(s) will be sized to prevent excessive cycling of the pumps, and to the extent practical, minimize visibility from neighboring properties.

Pump station piping will be Class 250 ductile iron; the primary method of protection of ductile iron and metallic valves will be with epoxy linings/coatings, as required, because the groundwater produced from the recovery system will be brackish. A hydraulic surge suppression system consisting of a bladder filled hydropneumatic tank may be required; hydraulic modeling will be provided for the piping system to evaluate and size the necessary hydraulic surge suppression equipment.

Telemetry between the individual groundwater recovery wells and injection well pump station will provide on/off controls to prevent overflow of the injection pump station AST(s) during outages; other safety elements will be provided as needed.

Temporary power will be required for electric motor powered drilling equipment including drill rig, mud pumps and mud cleaning systems. FPL connection for either 22.9 KV or 13.2 KV power will be provided to a portable sub-station. Tie-in to the existing high voltage power from FPL will occur west of the pump station site and may be run overhead; electrical power for local temporary service will be run at ground surface in 4,160 V shielded mining cable that is identified and protected. Temporary daily power demand will be approximately 500 KW.

Excavation and backfilling with structural fill will be conducted under the precast building, pump station, AST(s) and other places, as needed, to provide adequate foundations for installation of concrete slabs. Use of piles for support is not anticipated.

For collection of groundwater samples from the dual-zone monitor well, two manually operated centrifugal pumps (approximately 2 HP each) will be installed for purging and conveying the groundwater to the AST(s). Each monitor zone will also be provided with pressure monitoring and recording instrumentation.

For the injection well, flow (instantaneous and totalized) and pressure will be monitored and recorded. Also, a hydropneumatic tank and pressurized nitrogen supply will be connected to the injection well's monitoring annulus. Monitoring and recording instrumentation for pressure and fluid level within the tank will be provided. This equipment comprises the leak detection system required under UIC industrial injection well construction requirements.

In order to provide a basis for payment to ensure that grant funds are disbursed commensurate with the work progress, the following milestones will be used as a guideline for payment:

Activity	**% of Line Item**
Pump Station	
Temporary Electrical Service for Portable Substation	10
Permanent Electrical Service for Pump Station	10
Concrete Foundations (Pumps, Tanks, Precast Bldg.)	5
Groundwater Storage Tank(s)	10
Injection Pumps, Piping, and Hydraulic Surge System	50
Precast Bldg (approx. 12' x 20')	3
Injection Well Annular Monitoring Tank	1
Dual-Zone Well Pumps and Piping	1
I&C	5
Start up Services	5

The Contractor will meet with the Independent Engineer each month prior to submittal of the draw to review the work progress and agree to the percentage complete on each of the pump station construction activities. Generally, the Independent Engineer will review progress against 30%, 60%, 90% and 100% milestone checkpoints. Interim percentages can be paid in the assessment and judgement of the Independent Engineer as to the project progression and completion.

15. Annual Pre-closure Operations, Monitoring and Maintenance

In accordance with the City-County grant, operations, monitoring and maintenance expenses for activities associated with the groundwater remediation system are grant eligible for the period of time up to the completion of the landfill closure. At this time, the expected completion date of the landfill closure is unknown; therefore, the five years of O&M activities allocated in the line item are simply based on the available grant funds for groundwater remediation. If the landfill is closed within the five years allocated in this line item, pre-closure O&M activities will no longer be grant eligible at the time of closure completion/certification, regardless if there is funding left in this line item.

As part of this item, we anticipate conducting the following activities specifically for the groundwater remediation system:

- Performing weekly inspections of the extraction and injection systems
- Repairing or replacing parts as needed to maintain performance of the system
- Balancing and adjusting the system as necessary
- Conducting water quality sampling and analyses as required for compliance of the extraction and injection systems
- Preparing quarterly reports of system performance and others as required by the regulatory agencies for the remediation system
- Preparing renewal applications for permits specifically for the remediation system
- Mechanical integrity testing of the injection well at year five as required by the FDEP UIC permit

The fee for Pre-closure Operations, Monitoring and Maintenance in the SOV is for a 5 year duration, beginning after system start-up and balancing. This item does not include activities associated with the landfill closure or routine site-wide water quality monitoring. Charges for electricity consumption are to be paid by the Developer or the City of North Miami. This will be determined by the administrator of the property. (*This section supersedes section 3.3.4*)

The total monies allocated for this item are $1,405,000.00. Payment of O&M activities shall be disbursed in the form of a $23,416.66 monthly fee. The Contactor must submit signed and sealed monthly reports for the O&M services rendered. Reports shall include the operation logs, maintenance logs, report of activities completed and significant invoices for equipment replacement (if required and verified by the City and DSWM) upon the expiration of the warranty period.

2.3.1 Original Ex Situ Treatment System (Deleted, Not Applicable)
2.3.2 In Situ Treatment System (Deleted, Not Applicable)
Process Theory (Deleted, Not Applicable)
Bench Scale and Pilot Scale Testing (Deleted, Not Applicable)
Prototype Treatment System (Deleted, Not Applicable)
Full Scale Treatment (Deleted, Not Applicable)

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CHAPTER R3.0

SCHEDULE OF VALUES

The original Schedule of Values (SOV) developed for the Munisport Landfill Closure is the result of an extensive review of related reports, consent agreements and resolutions, cost estimates, actual engineering costs, and construction costs. A number of meetings were held between the DSWM, the Bond Engineer, the Developer and its representatives, and the City of North Miami during this effort.

The original Developer retained the services of the former Engineer of Record, PBS&J, and HSA Engineers and Scientists (HSA) to head the landfill closure and groundwater remediation efforts. The former Engineer of Record had been leading the landfill closure efforts and HSA developed the prototype for the in situ groundwater remediation system. Later ARCADIS proposed the funnel & gate ex-situ remediation system. Currently CH2M Hill, prime, and ES Consultants, minority subcontractor have proposed a Class I Industrial well disposal system on a Lump Sum contract basis. The revised March 10, 2011, Amendment 4 SOV is based on the lump sum contract as indicated in the preceding Chapter 2.0 SOV REVISION, as per the June 2010 and the January 2011 Amendments # 2 & #3, respectively, and language in this Chapter 3.0 in addition to the agreed revisions by all parties at the February 22, 2011 meeting at the DSWM.

R 3.1 Basis of the Schedule of Values

The Revised Schedule of Values presented in the Revised Table R3-1 dated March 10, 2011 is the agreed upon document that governs the Draw and Payment Basis for the Groundwater Remediation Lump Sum Contract. The Table is divided into two main sets of table rows:

- Landfill Closure (Not part of this revision); and
- Groundwater Remediation.

The original Schedule of Values incorporated two main concepts (and groups of table columns) for each component "Item" of the Munisport Project:

- Project Maximum Total (the maximum dollar amount, as adjusted for inflation annually, that is Grant-Eligible); and
- Draw Payment Basis (basis for measuring physical progress, and therefore payment, toward the Project Maximum Total.)

The Project Maximum Total is computed based on accepted unit costs (such as cost per acre), or on an accepted percent of a reference dollar amount (such as "hard" cost sub-total).

The Draw Payment Basis is presented either as a formula (such as acres completed or percent of total acres completed), as a reference to actual vendor invoices submitted. For the proposed Groundwater Remediation, the draw payment will be based on a percentage of completion of the items in the SOV as indicated on Amendment 4 Table R3.1. (Note that there is an existing Lump Sum Contract between the current Receiver, Charles DeSanti, and the Contractor, CH2M Hill and ES Consultants as a subcontractor based on the June 2010 Amendment 2 that is assignable to a future Developer or the City.)

In order to prepare the Revised Schedule of Values, the Independent Engineer reviewed the "Conceptual Closure and End Use Plan" dated August 2003 and its subsequent revisions prepared by the former Engineer of Record PBS&J and Brown & Caldwell (March 2005). For the Closure items there were no changes.

For the groundwater section, the Independent Engineer reviewed the proposed construction cost for the Class I disposal system with industry standard costs for similar projects.

3.2 Landfill Closure Schedule of Values (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

As part of the application to FDEP to close the Munisport Landfill, the Engineer of Record developed a cost estimate reflecting each component of the conceptual closure approach. This cost estimate was integrated into "Part S: Financial Responsibility Requirement" of the permit application. Part S provides a brief description of the required closure activities and the associated cost. The cost estimates were derived from actual landfill closures done in recent years, recent material cost and delivery quotes to nearby landfill, and well-known cost estimating sources such as RSMeans Site Work & Landscape Cost Data.

The Bond Engineer reviewed the "Conceptual Closure and End Use Plan" for the Munisport Landfill and performed its own analysis to verify the data provided. A Schedule of Values was prepared which tied the format proposed by the Developer with the data provided by the Engineer of Record on the "Conceptual Closure and End Use Plan". This Schedule of Values was discussed in a series of meetings between the DSWM, the Bond Engineer, and the Developer and its consultants in order to reach agreement on a final Schedule of Values which would then be used as the basis for the review of draw requests.

The following paragraphs provide a description of the items listed in the Schedule and Values and the supporting data for the PMT. It was agreed that the PMT's would be divided by a standard measurement unit in order to facilitate work review and payment for work performed. The basic units used were: cost per acre, cost per linear foot, and percent of total system completed.

3.2.1 Mobilization (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

The first item on the Schedule of Values is Mobilization. General mobilization activities involve setting up field offices, storage, equipment staging and parking areas and transporting equipment and crews to the Site. Mobilization typically represents approximately 5% of the total construction cost (in Table 3-1, 5% of the Closure Construction Sub-Total of $13,817,151 is used). The mobilization cost PMT corresponding to the estimated closure cost of the Munisport Landfill is therefore $690,858. It is anticipated that the Mobilization item will be part of the first Draw Request.

3.2.2 Grading (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

The Grading item in the Schedule of Values is composed of the following components: Clearing, Cut and Chip, Lake Shore Regrading, Rough Grading, Remove Unsuitable Material, Initial Cover, and Temporary Fencing.

There has been little activity at the Site since the landfilling operations were discontinued. Therefore, the Site is overgrown with vegetation. Clearing and Cut and Chip activities will be required in order to remove this vegetation before any construction activities can commence at the Site. The Engineer of Record estimated that the entire Site (164 acres) will require Clearing, and Cut and Chip activities. Estimated unit costs are $4,850.00/acre and $4,425.00/acre, respectively. These unit costs were derived from data provided on RSMeans Site Work & Landscape Cost Data. The Bond Engineer reviewed the cost estimate and agreed that it represented a fair cost for these activities. The PMT's for these activities are $795,400 for Clearing and $725,700 for Cut and Chip, as reflected in the Schedule of Values.

A series of lakes and ponds are located within the Site that will be utilized as part of the stormwater management system. Current regulations require that a ledge be created along the shoreline of each lake and pond. The Engineer of Record provided an estimate of the cost of constructing a 6.0 foot ledge along the shoreline in Part S of the Conceptual Closure and End Use Plan and followed up with a more detailed quantity estimate prepared in December 2004. This later estimate resulted in calculation of a total of 10,900 linear feet of lake shore that would require regarding and estimated the total cost PMT at $501,019. The Schedule of Values reflects a per unit cost of $45.97/linear foot used to develop the PMT.

The Engineer of Record estimated that half of the Site (82 acres) will require rough grading activities. Rough grading at the Site calls for an average of 1.5 feet of cut or fill in order to achieve a smooth surface that generally follows the natural contour of the original grade of the landfill. The quantity of material to be removed has been estimated to be approximately 200,000 cubic yards and the associated cost to be just over $2.00/cy. The total cost estimate PMT for the rough grading activities is $410,000. This total cost has been divided into the respective cost per acre unit, which results in a unit cost of $2,500.00/acre, as shown in the Schedule of Values.

It is expected that, during the rough grading activities, some bulky waste materials (trash, tires, metal, white goods, etc.) will be exposed and will require removal to an off-site facility for disposal or recycling. The Engineer of Record estimated that a total of 20,000 cubic yards of this bulky material will require collection and removal. The unit cost has been estimated at $15.00 per cubic yard. The total cost PMT for hauling is therefore $300,000.

Once the rough grading activities are completed, an initial layer of cover will be placed and spread over the entire 164 acres. This Initial Cover layer will be 6.0 inches thick and is intended to provide initial cover to waste exposed during rough grading as well as a bedding layer to the final cover layers to be placed on top. The cost estimate for the initial cover item was developed using a total of 132,266 cubic yards of material (for the 6.0 inch thickness layer over the 164 acres) at a cost of $12.28 per cubic yard for a total cost PMT of $1,624,226. The corresponding per acre unit cost is $9,903.82.

A temporary fence around the Site is required during the closure and construction activities to limit public access to the Site. The Engineer of Record established that a total of 16,500 linear feet of temporary fencing will be required to cover the perimeter of the Site. The cost estimate for a temporary chain link fence has been set at $15.00 per linear foot. Therefore, the total cost PMT for the Temporary Fence item is $247,500.

3.2.3 Cap and Cover (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

The Final Cover system reflected in the Schedule of Values is different from that described in the "Part S Financial Responsibility Requirements" Section prepared by the Engineer of Record, in that the Part S 12.0 inches of slope and fill plus the 12.0 inches of top soil cover have been reconfigured to 6.0 inches of initial cover plus 20.0 inches of Final Cover and 4.0 inches of Ground Cover. The configuration reflected on the Schedule of Values resembles a typical configuration used for closure of landfills in Miami-Dade County. The unit cost for the Initial Cover material, discussed above, was kept consistent with the cost estimate shown in Part S.

It was estimated that a total of 440,886 cubic yards of material would be required to provide the 20.0-inch layer of Final Cover and 88,177 cubic yards of material for the 4.0- inch Ground Cover throughout the entire 164 acres. Using the cost estimate provided in Part S for the material, delivery, placement and spreading equal to $12.28 per cubic yard, the total cost estimate for the Final Cover and the Ground Cover calculates to $5,414,088 PMT and $1,082,817 PMT, respectively. The respective unit cost for the Final Cover is $33,012.73 per acre and the unit cost for the Ground Cover is $6,602.55 per acre.

3.2.4 Stormwater Management System (Updated)

The conceptual Stormwater Management System for the Site was discussed in Chapter 2.0 of this report, and even though the final design has not been completed, the former Engineer of Record, PBS&J, provided a series of allowances for the different components that will be required in the final system. These allowances provide for 10,500 linear feet of swales and drainage channels, weirs to control discharge, 10 outfall structures, approximately 7,500 linear feet of piping and the construction of 15 drain wells and 16 basins. The total cost PMT for the entire Stormwater Management System has been estimated at $2,229,000 and was divided into a unit value of $13,591.46 per acre. It was anticipated that the payments will be based on the percent completion of each of the basins based on the total value calculated from the total acreage of the basin.

Draw Requests for this item were computed as follows. Drainage basins are of various acreages. Each drainage basin will therefore represent a unique portion of the overall PMT amount of $2,229,000. Since there can be considerable elapsed time between the initiation and completion of each drainage basin, physical progress, and therefore Draw Request approval, will be based on the percent of each drainage basin completed. A drainage basin is considered 60% complete when only the basin is in place with the additional 40% slated for the drainage well installation. For example, if SW -15 (basin name) has an area of 12.58 acres, and during the walkthrough with the engineer of record the agreed upon completed acreage is 6, then the percent complete would be 6 x 60% = 3.6 acres/203.17 (the total acres covered by the stormwater management system) = 1.77% x the inflated adjusted project maximum total in the schedule of values. This is applicable to all the catch basins. The current overall Engineer of Record, ES Consultants, has obtained SFWMD and DERM permits and licenses since 2007**.** Payments have been made on previous Draws for this section under the above described method of payment.

3.2.5 Gas Management System (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

The cost estimate for the Gas Management System was based on the conceptual passive system described in Chapter 2.0. The conceptual system consists of installing 82 passive gas wells and 25 gas monitoring probes throughout the Site. The cost for installing the passive wells was estimated at $5,700 per well and the monitoring wells were estimated at $800 per well. The total cost PMT for the Gas Management System is $487,400.

As mentioned in the discussion of the gas system in Chapter 2, the final Gas Management System will be different from the one described in the Conceptual Closure Plan and Part S of the same report. The Gas Management System that will be installed will consist of venting and barrier features constructed as part of the structures and utility lines that will be built. Therefore, Draw Request payments will be based on the percent completion of total footprint acreage of structures and utilities that require a gas venting system. For example, if the total acreage footprint of the structures and utilities that will require a gas venting or barrier system is 50 acres, the corresponding payments will be calculated by measuring the gas barrier system constructed and its associated acreage which will be divided by the total 50 acres to determine the percentage completed. This percentage will then be applied to the $487,400 PMT to determine the corresponding payment.

3.2.6 Other Items (Not Changed) Original language from Brown & Caldwell March 2005. PBS&J Engineer of Record, Brown & Caldwell Bond Engineer

There are several eligible "soft costs" that are included in the cost estimate of the Closure. These costs are estimated as percentages of the Closure Construction Sub-Total of $13,817,151. The Schedule of Values shows two distinct items for:

a) Closure and Alternate Procedure Permitting, and
b) Engineering, Modifications, Survey, Testing, and Inspections.

The Closure and Alternate Procedure Permitting has been estimated at 5% of the Closure Construction Sub-Total, which represents a PMT of $726,860. The Engineering, Modifications, Survey, Testing, and Inspections are activities which will be on-going during the construction of the landfill closure and have been estimated as 10% of the Closure Construction Sub-Total, which represents a PMT of $1,381,715. These items are included in Part S in items 10 and 11 as Engineering and Professional Services. The cost reflected in Part S and in the FDEP Forms is based on the corresponding closure cost estimate shown in the FDEP Form.

R3.3 Groundwater Remediation

It was agreed that draws for work associated with groundwater remediation at the site will be based on percent complete costs as per Amendment 4. The cost estimates developed in the Revised Schedule of Values originally were part of Amendment 2 and are included in the Lump Sum Contract between the Receiver, Charles DeSanti, and the Contractor (CH2M Hill, prime and ES Consultants, subcontractor) that is assignable to a future Developer or the City. The costs presented in the Revised Schedule of Values were determined through the Independent Engineer's review of cost estimates provided by CH2M Hill and ES Consultants. Generally, the Revised Schedule of Values presented is based on the assumption that the proposed system will be successful, and that implementation of the system will comply with the desired goals and regulatory criteria. Since a total

new concept and system is being proposed, then the original Schedule of Values for the groundwater remediation had to be updated to match the proposed system.

The CH2M Hill and ES Consultants Project Overview and Basis of Estimate provide a description of the different items listed in the Revised Schedule of Values and the basis for the cost estimates. Each draw related to the groundwater remediation system will contain contractor's supporting design and permitting progress, proof of submittals, copies of permits, backup data for construction verification including surveys, tests results, permanent power installation and energizing, start up and system calibration on a percent complete of the Lump Sum Contract for the work performed.

3.3.1 Bench Scale and Pilot Scale Testing (Deleted, Not Applicable)

3.3.2 IRAP Prototype (Deleted, Not Applicable)

3.3.3 Full Scale Remediation System (Deleted, Not Applicable)

3.3.4 Pre-closure Operations, Monitoring and Reporting

The original language for this section 3.3.4 has been superseded in its entirety by section 15 on page 19. The following original language is depicted here for historical continuity only.

It had been agreed that the operation of monitoring would be eligible for draws for seven (7) years, the original estimated time it will take to complete the landfill closure. This element of the remediation cost includes power consumption supplies, sampling analysis, reporting and labor.

R3.4 Project Management

Significant eligible costs are incurred for project management of the Closure and Groundwater Remediation efforts, and these are reflected in the last item labeled "Project Management" at the bottom of the Schedule of Values. The Grant Agreement (Section III-Use of Grant Funds, Paragraph B) stipulates that administrative costs associated with the project are eligible uses of Grant Funds. The eligible amount is set at 5% of the available amount of $10,350,792.98, which results in a dollar allowance of $517,539.65 to be disbursed as follows:
Up to 60% during the Design and permitting phase ($310,523.79)
The remaining 40% during the Construction phase. (207,015.86)

R3.5 Total Project Maximum

The Total Project Maximum for the entire project overall shown in the current Revised Schedule of Values is $34,817,562.95 as of September 30, 2009. This amount is greater than the base grant amount of $31,027,000, and includes approximately $3,790,562.095 through September 30, 2009 in preliminarily projected interest that may be earned, and therefore, added into the Escrow Account. The Grant Agreement stipulates that interest earned by the Grant Funds in the Escrow Account may be used for eligible purposes. It should be noted that interest earned will vary widely as a function of applicable interest rates and of the pace with which the initial amount of $31,027,000 is drawn down. It should be clarified that the County is funding eligible uses only up to the base grant amount ($31,027,000) plus any interest earned. Any eligible amounts above the sum of the base amount and the earned interest cannot be funded by the County under the Grant Agreement.

CHAPTER 4.0

CONSTRUCTION OVERSIGHT WORK PLAN

R4.1 The Bond Engineer Scope of Work

The Independent Engineer will determine compliance with the following terms of the Grant Agreement as follows:

a) Allowable use of grant funds as set out in Section III of the Grant Agreement, including those uses of grant funds set forth in paragraph A, B and C of the Agreement; and

b) Compliance with regulatory agency technical and permitting requirements, including those referenced in paragraph A, B and C of the Grant Agreement.

Together, these two components constitute the Construction Oversight function that must be accomplished by the Independent Engineer. The purpose of this Chapter 4.0 is to document and describe the steps involved in accomplishing the Construction Oversight function. The major tasks required to address Independent Engineer Construction Oversight items a) and b) presented immediately above are:

- Preparation for Draw Request Processing (Section 4.2 below)
- Draw Request Processing (Section 4.3 below)

Each construction Draw Request from the Escrow Account shall be based upon the Revised Schedule of Values (Table R3-1 dated March 10, 2011) and associated backup documentation prepared by the Contractor (CH2M Hill and ES Consultants), Developer / Receiver, certified by the Engineer of Record and agreed upon by the City. Draw Requests will be reviewed provided supporting design and permitting progress, proof of submittals, copies of permits, backup data for construction verification including surveys, tests results, physical observation of physical construction progress, permanent power installation and energizing, start up and system calibration on a percent complete of the Lump Sum Contract for the work performed are included. Review of each Draw Request for Grant Eligibility and for compliance with regulatory agency technical and permitting requirements will occur simultaneously.

R4.2 Preparation for Draw Request Processing

Preparation for Draw Request Processing will be accomplished through the following sub-tasks:

- Review Draw Request Package, verify percentage of completion and confirm status of Accompanying Documentation with the regulatory and permitting agencies
- Review and Compare Draw Request and Field Data, and verify physical work progress
- Submit Request for Additional Information from the Developer, Receiver and /or his Engineers (as required)
- Additional Corroborative Activity

Descriptions of these sub-tasks are presented below:

4.2.1 Attend Weekly Progress Meeting (Deleted, Not Applicable)

4.2.2 Perform Walk-Through Inspections to Verify Physical Work Progress and Compile Bond Engineer Weekly Report (Deleted, Not Applicable)

4.2.3 Conduct Monthly Walk-Through with the Engineer of Record (Deleted, Not Applicable)

R4.2.4 Review Draw Request Package and Accompanying Documentation

Upon receipt of the preliminary Draw Request Package from the Contractor (CH2M Hill and ES Consultants), the Independent Engineer will have, subject to data completeness, fifteen business days to validate the percentage completion by checking documents provided and those at or in the process to be submitted to the regulatory agencies, quantities of materials, percentage of construction completion, Contractor's invoices, subcontract documents and releases of liens etc. submitted as part of the Draw Request Package.

R4.2.5 Review and Compare Draw Request and Field Data, and Site Visit

Upon receipt of a Draw Request during construction or other field activities and during the fifteen business days required for the Independent Engineer to review a preliminary Draw Request package, documentation and other data requests agreed upon during the walkthrough with the Contractor (CH2M Hill and ES Consultants) and the Engineer of Record and the Independent Engineer shall be confirmed as being a part of the Draw Request Package and shall be made available to the Independent Engineer as promptly as possible.

Any additional information required by the Independent Engineer to verify information contained in the Draw Request Package will be sent to the City, Developer or Receiver in writing.

For each Draw Request, the Developer/Receiver shall submit to the Independent Engineer, a complete package of quantities, and backup paperwork supporting the quantities for which payment is been requested. Draw Requests shall be in a summary format consistent with the agreed upon Schedule of Values as part of the Revised Table R 3.1 dated March 10, 2011, included Chapter 3.0 of this report. During the construction or field activities phase, upon the submittal of a Draw Request package, the Engineer of Record, along with the Independent Engineer, will conduct a comprehensive walk-through of the areas for which the City or Developer/Receiver will be submitting quantities for a payment for Draw Request.

R4.2.6 Submit Request for Additional Information from the Developer or Receiver (as required)

During the initial fifteen business days required by the Independent Engineer to process the Draw Request, any additional information required to provide clarity to data contained in the Draw Request Package will be sent to the Developer in writing.
The time taken by the Developer or Receiver to respond to the Independent Engineer's request will be additional time that will be added to the initial 15 working days processing time.

R4.3 Approval of Draw Request

Upon corroborating the quantities in the preliminary Draw Request package submitted by the Developer/Receiver with field data collected during the walkthrough with the Contractor and the Engineer of Record, and upon receipt of a response from the Developer/Receiver to request(s) for additional information needed to process the Draw Request, the final agreed upon document will be processed, approved within three days and then routed by the Independent Engineer to the DSWM.

The Independent Engineer will prepare a Draw Request approval cover letter for Grant Eligible items as agreed upon the Revised Schedule of Values Table R 3.1 and said letter will accompany the Draw documents routing to the DSWM. This cover letter will also include comment on Regulatory Compliance.

R4.4 Additional Corroborative Activity

R4.4.1 Maintain Photographic History of Project during Construction

The Engineer of Record and the Developer or Receiver shall both compile a picture catalogues of all phases of construction as it progresses and submit them to the Independent Engineer.

- Digital photographs should be taken in color so as to best display the situation being depicted
- All digital photographs should have a description following the number sequence by using the "rename" feature on most computers.

The following items will be photographed, as applicable:

1. Preconstruction Site condition
2. Equipment, both special and typical
3. Material stockpile showing condition, location and method of storage
4. Unsafe or potentially hazardous conditions
5. Severe weather conditions and storm damage
6. Cave-ins, settlement
7. Unusual ground or water conditions
8. Casing driving, drilling and testing activities
9. Building and mechanical equipment progress
10. Completion photographs
11. Accident report photographs

R4.4.2 Meetings with DSWM as Required

As needs dictate the Independent Engineer will meet with DSWM staff to discuss issues related to the project. These meetings may include, as required, members of the Munisport stakeholders: Developer/Receiver, Contractor, Engineer of Record, and representatives of the City of North Miami.

4.5 Summary Draw Request Processing Flow Chart (Deleted, Not Applicable)

R4.6 Forms

The Independent Engineer and other project stakeholders shall utilize the following key Forms during the
Construction Oversight and Draw Request processing effort:

- AIA G703
- City of North Miami Draw Request Letter
- Stormwater Management System Draw Worksheet
- Landfill Gas Management System Worksheet