REPORT

CONSTRUCTION RECORD DOCUMENTATION REPORT 2011 CELLS 3, 4, 5, 6 & 7 GAS COLLECTION AND CONTROL SYSTEM EXPANSION

J.E.D. Solid Waste Management Facility
Osceola County, Florida

Submitted to: Florida Department of Environmental Protection
Waste Management Program, Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767 USA

Prepared for: Omni Waste of Osceola County, LLC
1501 Omni Way
St. Cloud, FL 34773 USA

Submitted by: Golder Associates Inc.
9428 Baymeadows Road
Suite 400
Jacksonville, FL 32256 USA

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February 2012 **083-82734.19**

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February 22, 2012 083-82734.19

Mr. F. Thomas Lubozynski, P.E.
Florida Department of Environmental Protection
Waste Management Program, Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

RE: CONSTRUCTION RECORD DOCUMENTATION REPORT
2011 – CELLS 3, 4, 5, 6 & 7 GAS COLLECTION AND CONTROL SYSTEM EXPANSION
J.E.D. SOLID WASTE MANAGEMENT FACILITY
OSCEOLA COUNTY, FLORIDA
PERMIT NUMBERS: SC49-0199726-017 AND SO49-0199726-015

Dear Mr. Lubozynski:

On behalf of the Omni Waste of Osceola County, LLC (Omni), Golder Associates Inc. (Golder) is pleased to submit the enclosed report documenting the construction quality assurance (CQA) monitoring for construction of the 2011 Cells 3, 4, 5, 6 and 7 gas collection and control system (GCCS) expansion at the J.E.D. Solid Waste Management Facility located in Osceola County, Florida.

The enclosed report contains a narrative describing the construction procedures employed by the contractors and the CQA monitoring of the construction activities performed by Golder. The report also includes a summary of changes with respect to the construction drawings, a CQA certification, an as-built survey for the GCCS expansion, an as-built well schedule, well boring logs, photographic documentation of construction activities, gravel laboratory test results, the CQA engineer field monitoring reports, and the Florida Department of Environmental Protection (FDEP) Certification of Construction Completion of a Solid Waste Management Facility. An electronic copy of the report has been included on CD as well.

If there are any questions on any of the information presented herein, please feel free to call Mr. Mike Kaiser at (904) 673-0446 or the undersigned.

Sincerely,

GOLDER ASSOCIATES INC.

Veronica K. Figueroa, PE
Staff Engineer

Don E. Grigg
Senior Project Engineer

Kevin S. Brown, PE
Senior Consultant and Principal

cc: Mr. Mike Kaiser - Waste Services, Inc.
Ms. Caroline Shine - FDEP Air Resources Management, Central District

Golder Associates Inc.
9428 Baymeadows Road, Suite 400
Jacksonville, FL 32256 USA
Tel: (904)363-3430 Fax: (904)363-3445 www.golder.com

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1.0 INTRODUCTION

The J.E.D. Solid Waste Management Facility (JED Facility) is located southeast of St. Cloud, Florida, in Osceola County. The JED Facility is required under its Solid Waste Permits (SC49-0199726-004 and SO49-0199726-005, issued March 22, 2007 by the Florida Department of Environmental Protection (FDEP)), to install a gas collection and control system (GCCS) at the facility. The GCCS must meet the design drawings and specifications provided in the lateral expansion permit application approved under permit modifications SC49-0199726-017, issued on September 22, 2011 by FDEP. Additionally, the facility's Title V Air Permit, 0970079-007-AV, issued on May 23, 2010 by the FDEP, also requires installation of a GCCS meeting the requirements of 40 CFR 60, Subpart WWW Standards of Performance for Municipal Solid Waste Landfills (New Source Performance Standards [NSPS]). The JED Facility became subject to the GCCS requirements of Subpart WWW on December 23, 2008. The GCCS is required to be operational in all waste that is in place for two years or more for areas at final grade, and five years or more for areas at interim grade.

1.1 Background

Golder Associates Inc. (Golder) was retained by Omni Waste of Osceola County, LLC (Omni) to provide full time construction quality assurance (CQA) services during the 2011 Cells 3, 4, 5, 6, and 7 GCCS expansion at the JED Facility. Previous GCCS installation at the facility (Phase I and II) included approximately 65 vertical gas extraction wells, one skid mounted flare system, and header and lateral piping in the Cells 1-6 disposal areas.

The main components of the 2011 Cells 3, 4, 5, 6, and 7 GCCS expansion monitored by Golder were:

- Installation of 13 gas extraction wells (10 new wells and 3 replacement wells);
- Installation of approximately 1,852 feet of header and lateral gas conveyance pipe in Cells 3, 4, 5, and 6; and
- Installation of approximately 1,577 feet of horizontal gas collector pipe in Cell 7.

This report includes a description of the project and the activities observed by Golder during the construction of the GCCS described above. Section 2 provides a summary of the changes in the design that were necessitated by field conditions. Descriptions of the construction activities and the CQA services provided by Golder are presented in Sections 3 and 4, respectively. Section 5 presents the CQA certification by a Florida registered professional engineer.

1.2 Project Description

Construction activities for the 2011 GCCS expansion in Cells 3, 4, 5, and 6 were performed in accordance with the Phase I and II Construction Drawings and Technical Specifications prepared by Geosyntec and submitted to the FDEP. A copy of the drawings and specifications are provided in Appendices A and B, respectively. Construction activities for the 2011 GCCS expansion in Cell 7 were performed in

accordance with the Horizontal Gas Collector and GCCS/Leachate Sump Connections Intermediate Permit Modification drawings prepared by Golder and submitted to the FDEP during the permitting process. A copy of the permit modification drawings are provided in Appendix C.

All of the gas wells were installed in the area of the landfill with intermediate cover or within the active filling area. Lateral gas conveyance piping was installed below ground. The lateral gas conveyance piping connects the gas extraction wells to the main header system that directs gas to the existing flare system. Construction activities for the 2011 GCCS expansion in Cells 3, 4, 5, and 6 commenced on November 14, 2011 and were completed on December 9, 2011. Construction activities for the 2011 GCCS expansion in Cells 7 commenced on December 14, 2011 and were completed on January 6, 2012.

1.3 Scope of Services

The services Golder provided included observation and documentation of the installation of the gas extraction wells, header and lateral gas conveyance piping, tie-ins of the laterals to the existing GCCS, and installation of horizontal gas collector piping.

Golder conducted its services during this project in accordance with the following documents:

- Proposal titled "2011 – Cells 3, 4, 5, and 6 GCCS Expansion CQA Proposal (P83-82734N)," prepared by Golder, dated October 5, 2011;
- Construction drawings titled "J.E.D. Solid Waste Management Facility, St. Cloud, Florida Gas Collection and Control System (GCCS) Phase I Disposal Area," prepared by Geosyntec, dated April 2010, and provided in Appendix A of this report;
- Construction drawings titled "J.E.D. Solid Waste Management Facility, St. Cloud, Florida Gas Collection and Control System (GCCS) Phase II Disposal Area," prepared by Geosyntec, dated December 2010, and provided in Appendix A of this report;
- Design Drawings title "J.E.D. Solid Waste Management Facility, Horizontal Gas Collector and GCCS/Leachate Sump Modifications, Intermediate Permit Modification", prepared by Golder, dated September 2010 (revised October 2010), and provided in Appendix C of this report; and
- Specifications titled "Technical Specifications" prepared by Geosyntec, and provided in Appendix B of this report.

Omni retained Peavey & Associates Surveying and Mapping, PA (Peavey & Associates) to fulfill all surveying needs associated with the 2011 GCCS expansion in Cells 3, 4, 5, and 6, including development and certification of the as-built survey. As part of its services, Golder reviewed the as-built survey to check that the major components of the construction were shown.

2.0 SUMMARY OF CHANGES

The construction was conducted in general accordance with the documents described in Section 1.2 with some modifications necessitated by field conditions as described below. These modifications did not alter the design intent of the system.

2.1 Extraction Well Locations

Extraction wells GW-14R1, GW-15R2, and GW-30R1 were redrilled in close proximity to their existing locations as shown in the as-built survey provided in Appendix D. After installation of redrilled extraction wells, the compromised extraction wells were abandoned by excavating to a depth of approximately 4 feet below ground surface (ft bgs) around the pipe, cutting approximately 4 feet of pipe below ground surface, capping the top of the pipe with an 6-inch PVC cap, lag bolting the cap to the well casing, and backfilling the excavation with clean surrounding materials. The as-built well schedule presented in Appendix D provides the northing and easting for the redrilled extraction wells. Well boring logs for all installed extraction wells are presented in Appendix F.

2.2 Extraction Well Construction

Appendix H documents the laboratory test results of the aggregate backfill placed at the annulus of the borehole around the slotted pipe of the gas extraction wells. A gravel sample was tested for gradation and showed the gravel sample to have particle sizes slightly greater than American Association of State Highway and Transportation Officials (AASHTO) No. 57 stone as specified in the construction drawings; Omni accepted the larger size aggregate backfill. The carbonate content of the gravel sample was 0.1% which meets construction specifications.

2.3 Extraction Well Depths

The design depths of the wells were based upon preconstruction survey elevations obtained by JED Facility and the bottom liner system elevations provided by Geosyntec. The extraction wells were designed to terminate 15 feet from the top of protective cover. The as-built well schedule is provided in Appendix E. The following table summarizes the differences in design versus as-built well depths for wells that were not installed to the design depth. As noted in the well boring logs presented in Appendix F, wet subsurface conditions were encountered which prevented drilling depth advancement using the bucket auger for a few extraction wells. The wet material appeared to consist of auto shredder material, soil, sludges and other non-MSW wastes. Also, there were two extraction wells, GW-68 and GW-70, where the borehole began to cave in on itself thus preventing drilling depth advancement.

Table 1: Extraction Well Design Depth to Actual Depth Comparison

Well ID	Design Well Depth (ft bgs)	Actual Well Depth (ft bgs)	Difference Between Design and Actual Well Depth (ft)
GW-22	143.0	97.0	46.0
GW-28	150.0	85.0	65.0
GW-58	132.0	76.0	56.0
GW-61	128.0	83.0	45.0
GW-64	68.0	58.0	10.0
GW-65	124.0	103.0	21.0
GW-68	132.0	88.0	44.0
GW-70	80.0	52.0	28.0
GW-14R1	128.0	55.0	73.0
GW-15R2	146.0	78.0	68.0
GW-30R1	127.0	60.5	66.5

2.4 Header/Lateral Gas Conveyance Pipe Installation

There were no modifications to the details specified in the GCCS Phase I and II Disposal Area drawings (Appendix A) with respect to the lateral gas conveyance pipe installation.

2.5 Horizontal Gas Collector Installation

There were no modifications to the details specified in the P drawings (Appendix C) with respect to the horizontal gas collection pipe installation.

3.0 CONSTRUCTION ACTIVITIES

3.1 Project Participants

The parties involved in the 2011 GCCS expansion in Cells 3, 4, 5, 6, and 7 are included:

- Omni, as the owner
- Geosyntec, as the design engineer (Phase I and Phase II, Cells 1-6 GCCS)
- Golder, as the design engineer (Cells 7 horizontal gas collector)
- Golder, as the CQA Engineer
- Shaw Environmental, Inc. (Shaw), as construction contractor
- Peavey & Associates, as the surveyor

3.2 Gas Extraction Well Installation

Shaw performed the drilling and installation of 13 gas extraction wells during the 2011 GCCS expansion in Cells 3, 4, 5, and 6. The installation of the gas wells commenced on November 21, 2011 and was completed on December 8, 2011. The drill rig utilized was a Soilmec SR 30 with a 3-foot-diameter bucket auger. Shaw used an air-monitoring device during all drilling activities to monitor breathing zones. Peavey & Associates surveyed the locations of the completed gas wells; the certified as-built survey is provided in Appendix D.

Gas extraction well installation depths were field-adjusted to the existing ground elevation of the landfill based on the ground surface survey conducted prior to drilling. Waste material excavated during drilling was hauled to the active working face of the landfill for disposal. The wells were constructed using 8-inch SCH 80 PVC slotted and solid pipe. The as-built well schedule, found in Appendix E, provides the well depths along with the screen and solid pipe lengths. The well pipes were bell and spigot type, and each joint was glued and four lag bolts installed to provide additional support at each joint.

The procedure used for the installation of the extraction wells is summarized below:

- Set the bottom of the slotted pipe approximately ½-foot above the bottom of the borehole.
- Backfill borehole to approximately ½-foot above top of slotted pipe with approved stone;
- Place geocomposite ring (georing) above stone backfill;
- Install 2-foot-thick granular hydrated bentonite plug #1;
- Above bentonite plug #1, backfill borehole with clean cover soil to within approximately 3 feet of existing ground surface;
- Install 2-foot-thick granular hydrated bentonite plug #2;
- Backfill remaining borehole with clean cover soil;
- Place a 6-foot by 6-foot hydrated geosynthetic clay liner (GCL) sheet over cover soil at ground surface; and
- Place clean cover soil over hydrated GCL sheet and slope at the surface to promote surface water runoff.

Some of the extraction wells had well casings installed approximately 7 feet to 15 feet above ground surface in anticipation of future final closure cover elevations; these wells received a larger amount of clean cover soil, which made mounds suitable for easy access to the wellhead for monitoring and wellhead tuning. Appendix F includes well boring logs that show the well construction details, including the materials placed in the borehole annulus. As construction of the lateral pipe system progressed, wellheads were installed and connected to laterals. Appendix G provides photographs of the drilling of the extraction wells, the installation of the extraction wells, the installation of laterals to provide a vacuum source to the extraction wells, and the installation of the wellheads at the extraction wells.

3.3 Header/Lateral Gas Conveyance Pipe Installation

Shaw performed the installation of the lateral gas conveyance piping associated with 2011 GCCS expansion in Cells 3, 4, 5, and 6. Pipe installation commenced on November 14, 2011 and was completed on December 9, 2011. Two excavators (Deere 200C LC and Deere 120C.) were utilized for trench excavation for the header and lateral gas conveyance pipe installation. Lateral gas conveyance piping was 6-inch high-density polyethylene (HDPE) standard dimension ratio (SDR) 17 and installed at a minimum 5 percent slope below ground. The lateral gas conveyance piping connects the extraction wells to the main header system that directs gas to the existing flare system. Header gas conveyance piping was 12-inch HDPE SDR 17 and installed at a minimum 5 percent slope below ground.

At the completion of the trench grading, 6 inches of clean pipe bedding material (soil) was placed. The HDPE SDR 17 pipe (varying diameter) was then placed in the trench and covered with clean fill. Excavated waste material was disposed of at the active working face.

3.4 Horizontal Gas Collector Installation

Shaw performed the installation of two horizontal gas collectors, HGC-2 and HGC-4, during the 2011 GCCS expansion in Cell 7. The installation of the horizontal gas collectors commenced on December 14, 2011 and was completed on January 6, 2012. Two excavators (Deere 200C LC and Deere 120C.) were utilized for trench excavation for the horizontal gas collector pipe installation. Horizontal gas collector piping was 10-inch HDPE SDR 11. The solid pipe portion of the horizontal gas collectors were installed at a minimum 3 percent slope below ground, and the perforated pipe portion of the horizontal gas collectors were installed at a minimum 5 percent slope below ground. The horizontal gas collector piping was connected to the side-slope risers. The horizontal gas collectors will be connected to the main header system once Cell 7 design waste grades have been reached which will accommodate the expansion of the main header system. JED Facility operations surveyed the top of pipe of the horizontal gas collectors; the as-built survey data points with associated pipe profiles are provided in Appendix D. Appendix G provides photographs of the horizontal gas collector pipe installation.

The procedure used for the installation of the horizontal gas collectors are summarized below:

- Backfill trench with 1-foot thick coarse stone;
- Place 10-inch HDPE SDR 11 pipe above top of coarse stone;
  - First 100 feet of pipe to be solid 10-inch HDPE SDR 11;
  - Remaining pipe to be perforated 10-inch HDPE SDR 11;
- Backfill trench approximately 1 ½ feet above top of 10-inch HDPE SDR 11 pipe with tire chips;
- Place 8-ounce geotextile above tire chip backfill; and
- Backfill remaining trench with surrounding waste.

4.0 CONSTRUCTION MONITORING

Construction monitoring was documented by the CQA engineer in daily field monitoring reports, as provided in Appendix I. The field monitoring reports document the overall construction activities and the specific issues encountered during construction on a day-to-day basis.

4.1 Technical Specifications

The construction of the 2011 GCCS expansion in Cells 3, 4, 5, 6 and 7 was performed in general accordance with the technical specifications prepared by Geosyntec and provided in Appendix B. Materials utilized in the 2011 GCCS expansion in Cells 3, 4, 5, 6 and 7 were reviewed for compliance with the requirements of the technical specifications.

4.2 Gas Extraction Well Installation

Golder monitored the drilling and the well construction of all gas extraction wells. Logs showing the installation details for each well are included in Appendix F, and a summary of the well construction details is found in the as-built well schedule included in Appendix E.

4.3 Header/Lateral Gas Conveyance Pipe Installation

Golder monitored the welding and the installation of the lateral pipes during the 2011 GCCS expansion in Cells 3, 4, 5, 6 and 7. The CQA engineer observed pipe welding to ensure that the interior of the pipe was generally clean, that pipe shavings from the cutting process were removed, and that the manufacturer's recommended iron temperature and gauge pressure were followed. All header/lateral gas conveyance pipe was pressure tested at 10 psi for an hour to ensure there were no leaks in the newly installed GCCS. Per standard practice and the construction specifications, all below grade bolts and flanges were protected by covering with a polyethylene wrap and duct taped to HDPE pipe

5.0 SUMMARY AND CERTIFICATION

Omni retained Golder to provide CQA services during the construction of the 2011 GCCS expansion in Cells 3, 4, 5, 6 and 7 at the JED Facility. These services included the quality assurance monitoring, documentation, and/or testing of the items listed below:

- Installation of 13 gas extraction wells (10 new wells and 3 replacement wells);
- Installation of approximately 1,852 feet of header and lateral gas conveyance pipe in Cells 3, 4, 5, and 6; and
- Installation of approximately 1,577 feet of horizontal gas collector pipe in Cell 7.

Based on the field observations, submittal information from the contractor, field testing results, and the data presented herein, it is Golder's professional opinion that the 2011 GCCS expansion in Cells 3, 4, 5, 6 and 7 at JED Facility was installed in substantial conformance with the FDEP-approved design/construction drawings and technical specifications as referenced herein. Modifications and deviations from the technical specifications are discussed in Section 2. These modifications did not alter the design intent of the GCCS. Attachment J provides the signed and sealed FDEP Certification of Construction Completion of a Solid Waste Management Facility form, 62-701.900(2).

GOLDER ASSOCIATES INC.

Veronica K. Figueroa, PE
Staff Engineer

Don E. Grigg
Senior Project Engineer

Kevin S. Brown, PE
Senior Consultant and Principal

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APPENDIX A

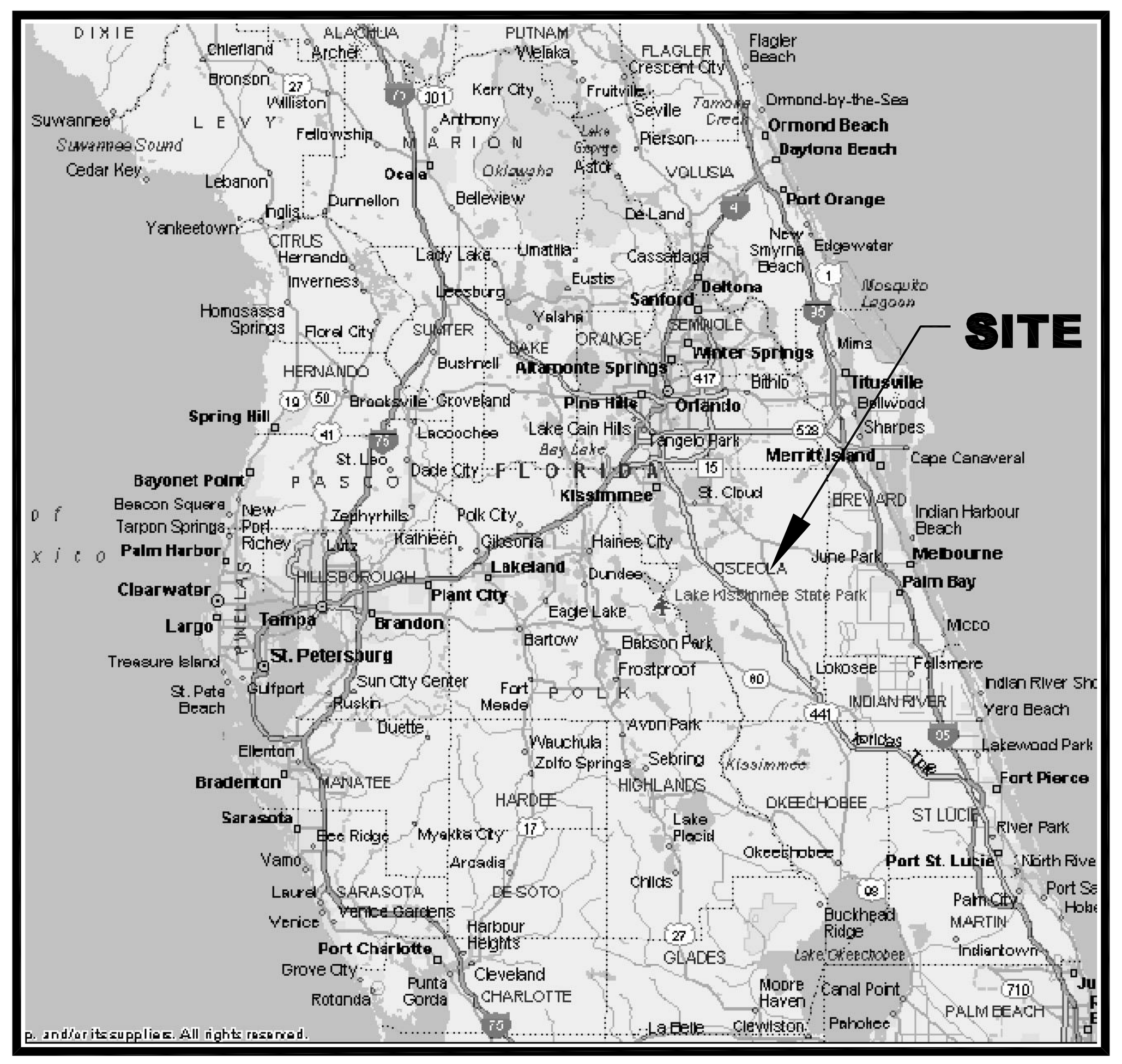
CONSTRUCTION DRAWINGS

J.E.D. SOLID WASTE MANAGEMENT FACILITY

ST.CLOUD, FLORIDA

GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE I DISPOSAL AREA

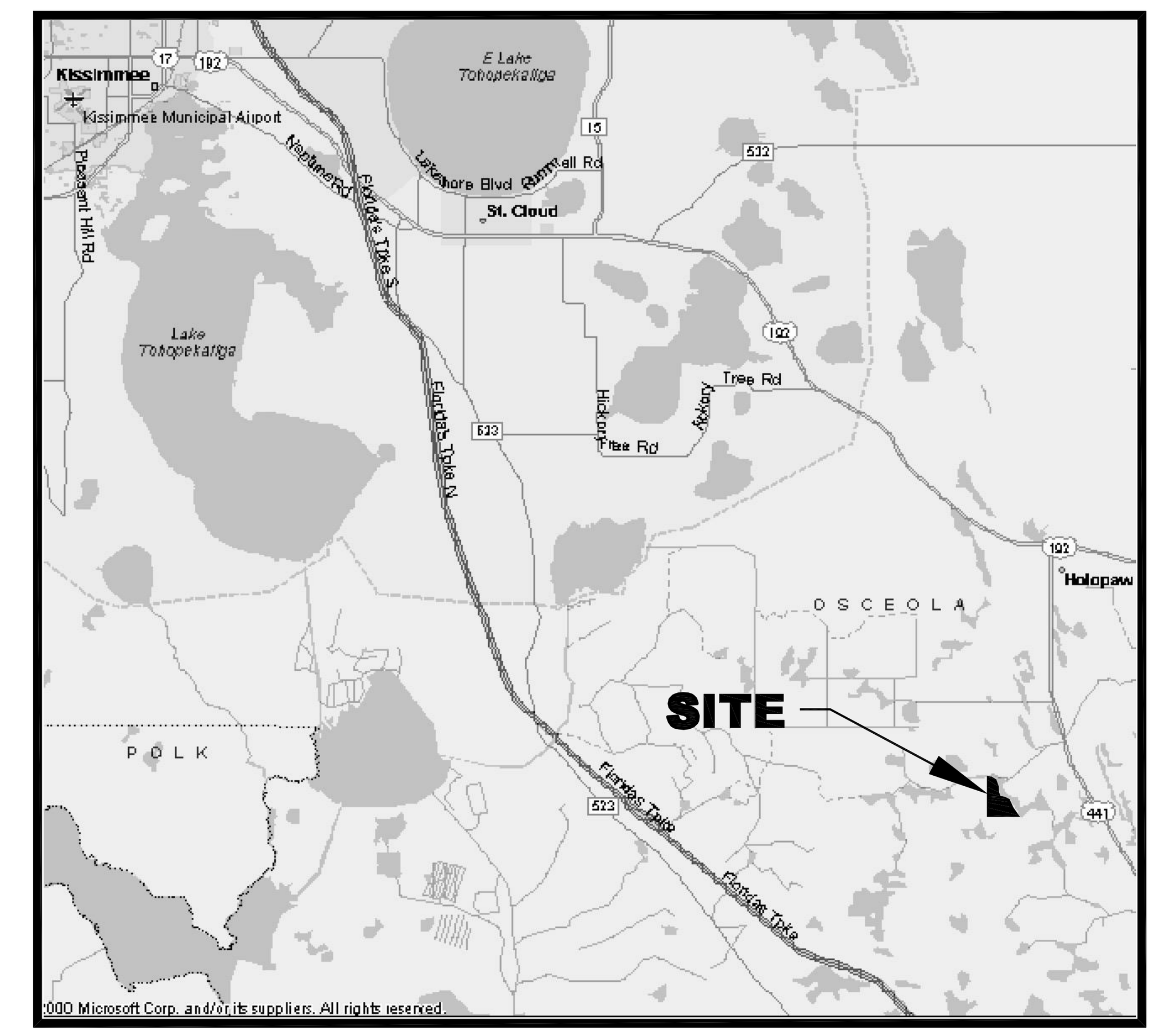
APRIL 2010



LOCATION MAP

0 32
SCALE: 1" = 32 MILES

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
1	TITLE SHEET
2	TOPOGRAPHY MAP
3	PLAN LAYOUT OF GCCS IN PHASE 1
4	PLAN LAYOUT OF GCCS IN PHASE 1 (SEQUENCE 3A)
5	CONTROL POINTS
6	GAS EXTRACTION WELLS DETAILS
7	GCCS DETAILS I
8	GCCS DETAILS II



VICINITY MAP

0 4
SCALE: 1" = 4 MILES

SEQUENTIAL DETAIL NUMBER — 1 / 5 — SHEET ON WHICH THE ABOVE DETAIL IS PRESENTED

DETAIL REFERENCE KEY

DETAIL NUMBER — 1 / 3 — SHEET ON WHICH THE ABOVE DETAIL IS FIRST REFERENCED

DETAIL
GAS EXTRACTION WELL
SCALE: NTS
XREF: FL0916.02X0079.DWG

DETAIL BAR REFERENCE KEY

EXAMPLE: DETAIL 1 WHICH IS PRESENTED ON SHEET 5 WAS FIRST REFERENCED ON SHEET 3.

SEQUENTIAL SECTION LETTER — A / 8 — SHEET ON WHICH THE ABOVE SECTION IS PRESENTED

SECTION REFERENCE KEY

SECTION LETTER — A / 8 — SHEET ON WHICH THE ABOVE SECTION IS FIRST REFERENCED

SECTION (TYPICAL)
FLARE STATION #1
SCALE: 1" = 10
XREF: FL0916.02X0099.DWG

SECTION BAR REFERENCE KEY

EXAMPLE: SECTION A WHICH IS PRESENTED ON SHEET 8 WAS FIRST REFERENCED ON SHEET 8.

CONSTRUCTION DRAWINGS

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407–891–3720 FAX: 407–891–3730

TITLE: TITLE SHEET

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU–TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P010
REVIEWED BY:	KBT	DRAWING NO.:	1 OF 8
APPROVED BY:	KBT		

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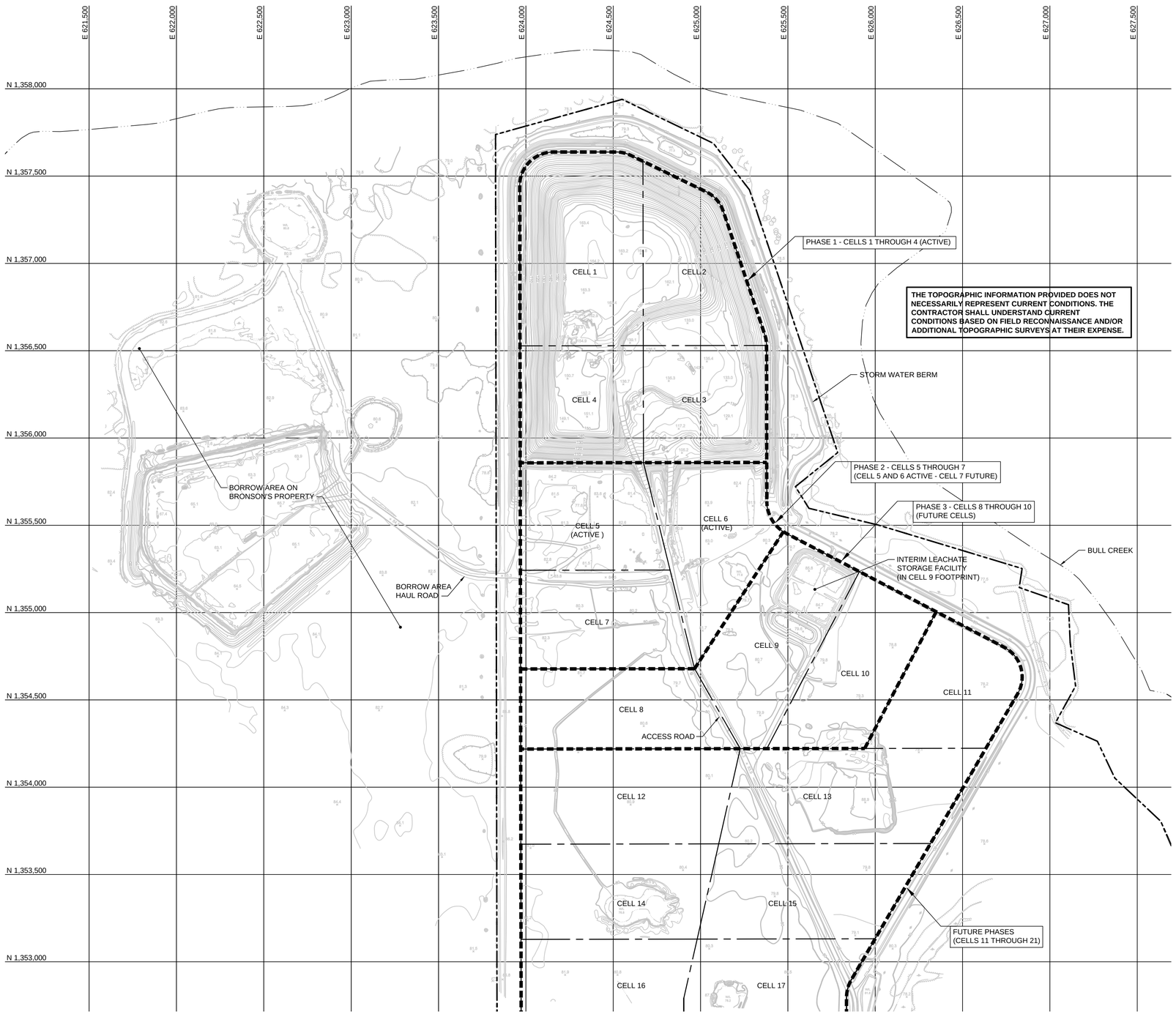

NORTH

0 300' 600'

SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- 80 EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- EXISTING FENCE LINE
- 81.3 EXISTING TOPOGRAPHY SPOT ELEVATION (FEET)
- TREE LINE
- PHASE BOUNDARY
- CELL BOUNDARY

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. THE TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING, INC. BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 17 MAY 2007.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI WasteServices, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: TOPOGRAPHY MAP

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P020
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT		2 OF 8

CONSTRUCTION DRAWINGS

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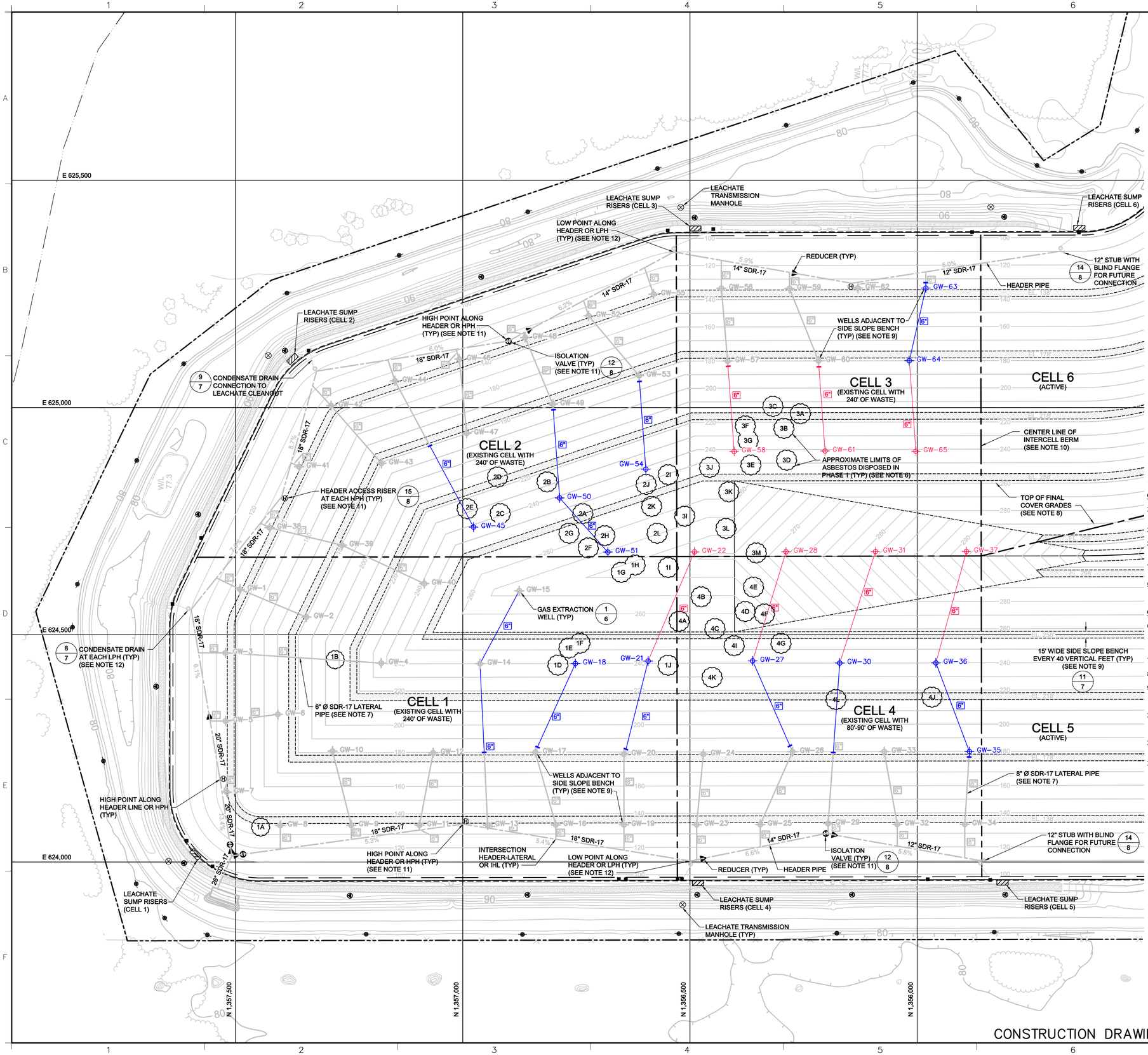

NORTH

0 100' 200'

SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- 80 — EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- X — EXISTING FENCE LINE
- TREE LINE
- GW-10 — GAS EXTRACTION WELL IN CELLS 1 THRU 4 (TYP)
- GROUNDWATER MONITORING WELL CLUSTER
- LEACHATE TRANSMISSION MANHOLE
- LEACHATE SUMP RISERS
- LEACHATE CLEANOUT
- EXISTING ELECTRIC POLES
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 6)
- REDUCER
- ISOLATION VALVE
- CONDENSATE DRAIN (SEE NOTE 12)
- CONDENSATE TRANSFER LINE
- LATERAL PIPE (SEE NOTE 7)
- HEADER PIPE
- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- CENTER LINE OF INTERCELL BERM (SEE NOTE 10)
- H — HEADER ACCESS RISER (SEE NOTE 11)
- 6" — LATERAL PIPE SIZE
- SCREEN = EXISTING
- BLUE = TO BE CONSTRUCTED IN SEQUENCE 3A (CURRENT SEQUENCE)
- RED = TO BE CONSTRUCTED IN FUTURE SEQUENCE

GENERAL NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83)
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
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GCCS NOTES:

6. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY WSI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
7. LATERAL PIPES SHALL BE 6" OR 8" DIA. SDR-17 HDPE PIPES AS SHOWN ON THIS SHEET.
8. GRADES INDICATED ON THIS SHEET WITHIN THE LANDFILL ARE TOP OF FINAL COVER SYSTEM GRADES.
9. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED IN DETAIL 11.
10. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
11. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 8, WITH THE EXCEPTION OF HIGH POINTS THAT HAVE AN ISOLATION VALVE.
12. A CONDENSATE DRAIN SHALL BE PROVIDED AT EACH LOW POINT ALONG HEADER (I.E., AT EACH LPH) EXCEPT AT LPH-3 AS NOTED ON SHEET 7. SEE SHEET 5 FOR LOCATION OF LPH-3.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 1

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P030
REVIEWED BY:	KBT	DRAWING NO.:	3 OF 8
APPROVED BY:	KBT		

CONSTRUCTION DRAWINGS

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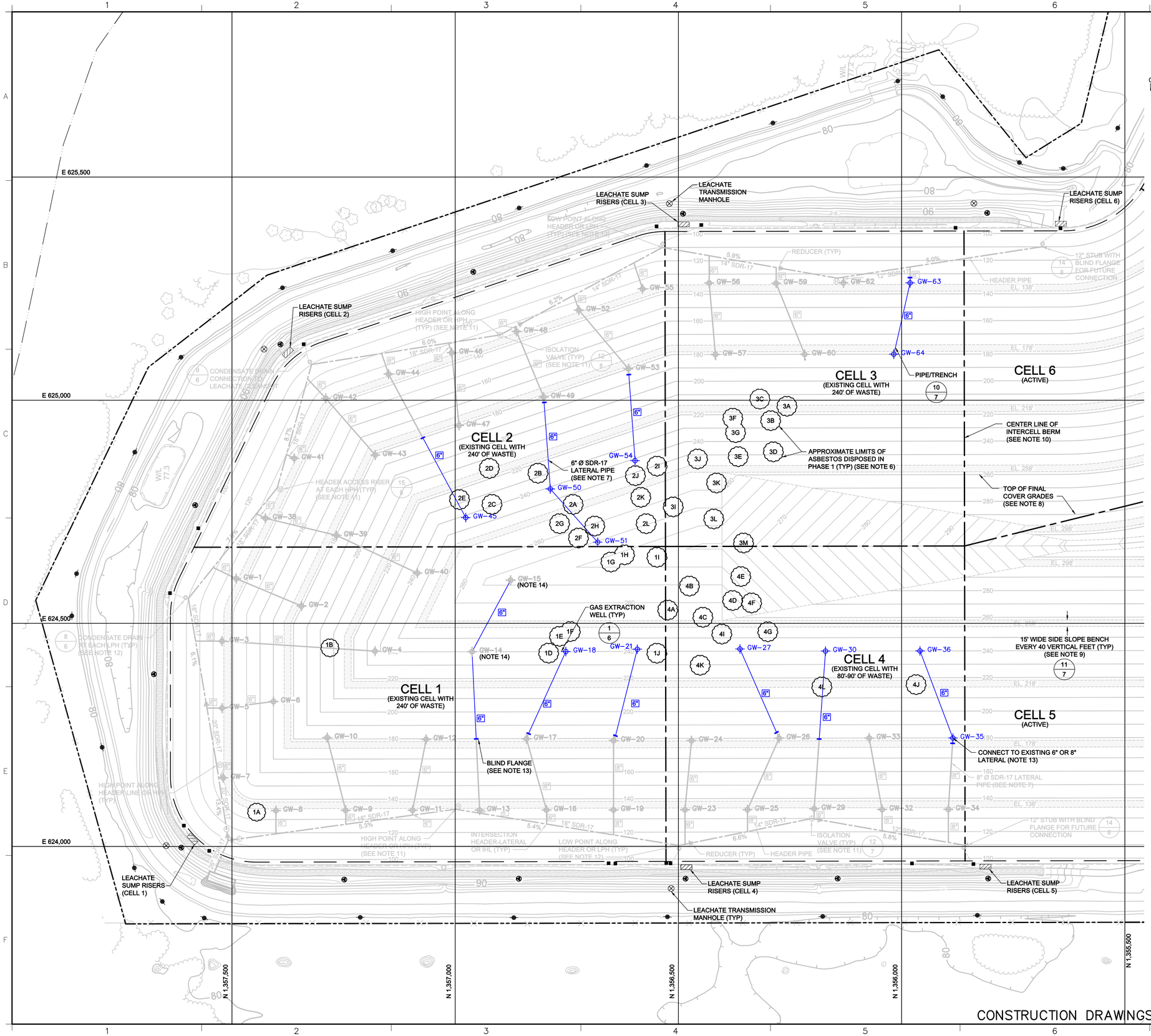

NORTH

0 100' 200'
SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- 80 — EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- X — EXISTING FENCE LINE
- TREE LINE
- GW-10 — GAS EXTRACTION WELL IN CELLS 1 THRU 4 (TYP)
- GROUNDWATER MONITORING WELL CLUSTER
- LEACHATE TRANSMISSION MANHOLE
- LEACHATE SUMP RISERS
- LEACHATE CLEANOUT
- EXISTING ELECTRIC POLES
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 6)
- REDUCER
- ISOLATION VALVE
- CONDENSATE DRAIN (SEE NOTE 12)
- CONDENSATE TRANSFER LINE
- LATERAL PIPE (SEE NOTE 7)
- HEADER PIPE
- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- CENTER LINE OF INTERCELL BERM (SEE NOTE 10)
- H — HEADER ACCESS RISER (SEE NOTE 11)
- 6 — LATERAL PIPE SIZE
- SCREEN = EXISTING
- BLUE = TO BE CONSTRUCTED IN SEQUENCE 3A (CURRENT SEQUENCE)
- RED = TO BE CONSTRUCTED IN FUTURE SEQUENCE

GENERAL NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83)
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. THE TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING, INC. BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 17 MAY 2007.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

GCCS NOTES:

6. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY WSI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
7. LATERAL PIPES SHALL BE 4", 6" OR 8" DIA. SDR-17 HDPE PIPES AS SHOWN ON THIS SHEET.
8. GRADES INDICATED ON THIS SHEET WITHIN THE LANDFILL ARE TOP OF FINAL COVER SYSTEM GRADES.
9. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED IN DETAIL 11.
10. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
11. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 8, WITH THE EXCEPTION OF HIGH POINTS THAT HAVE AN ISOLATION VALVE.
12. A CONDENSATE DRAIN SHALL BE PROVIDED AT EACH LOW POINT ALONG HEADER (I.E., AT EACH LPH) EXCEPT AT LPH-3 AS NOTED ON SHEET 7. SEE SHEET 4 FOR LOCATION OF LPH-3.
13. LOCATIONS OF EXISTING GCCS COMPONENTS ARE BASED ON CONSTRUCTION DRAWINGS FOR PREVIOUS CONSTRUCTION SEQUENCES. AS-BUILT LOCATIONS FOR EXISTING COMPONENTS, SUCH AS TIE-IN LOCATIONS FOR EXISTING LATERALS SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER AS NEEDED.
14. GW-14 AND GW-15 WERE INSTALLED PREVIOUSLY. THESE WELLS NEED TO BE CONNECTED VIA LATERALS PIPES AS SHOWN.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 — FAX: 904.398.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 1 (SEQUENCE 3A)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P0300
REVIEWED BY:	KBT	DRAWING NO.:	4 OF 8
APPROVED BY:	KBT		

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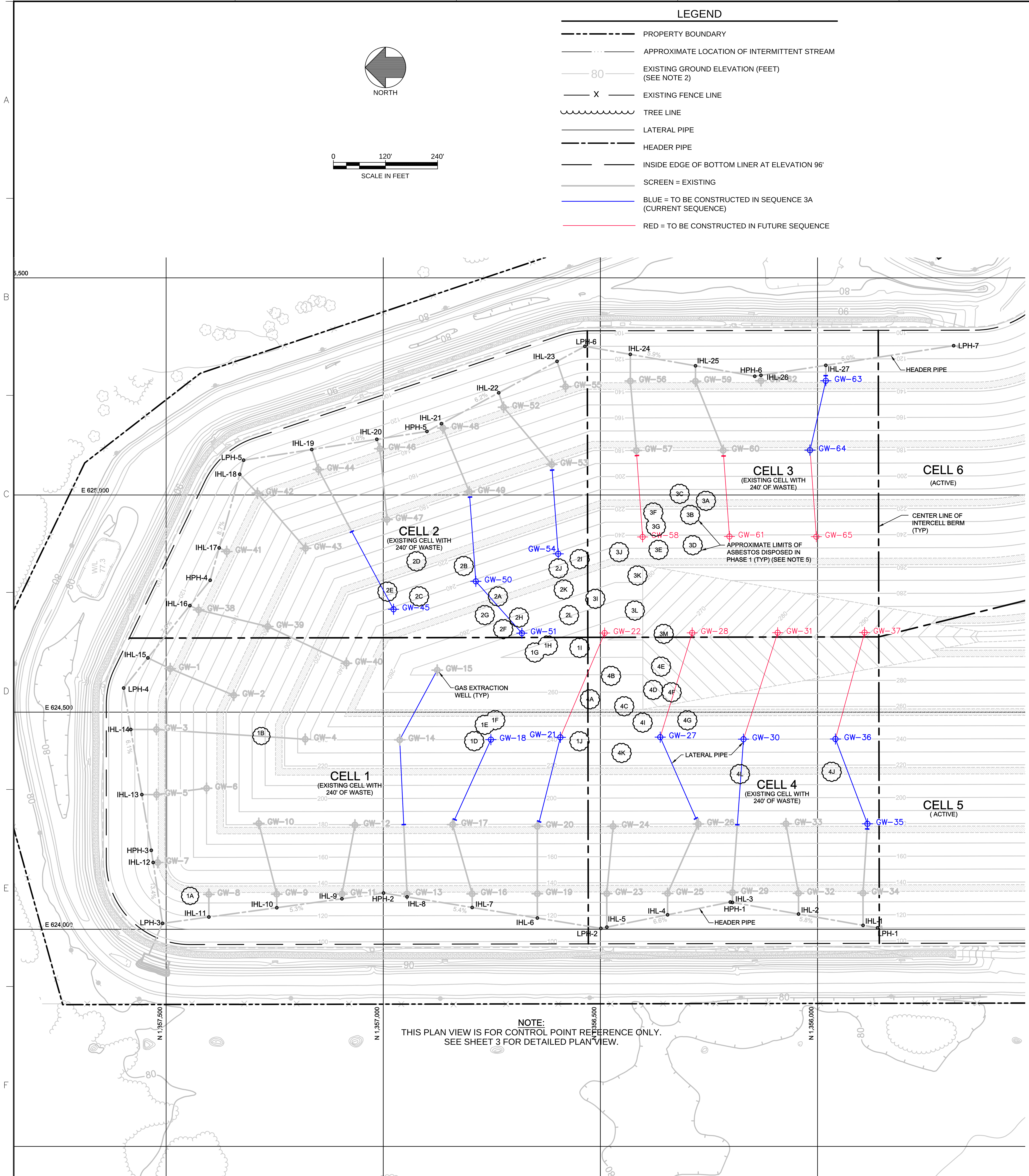


TABLE 1
GAS EXTRACTION WELLS (NOTES 3 AND 4)

GAS WELL	NORTHING	EASTING	TOP OF FINAL COVER ELEVATION	TOP OF LINER PROTECTIVE LAYER ELEVATION	BOTTOM OF GAS WELL ELEVATION	TOTAL WELL DEPTH	SCREEN LENGTH (SLOTTED PIPE)
GW-01	1,357,490.54	624,600.24	136.63	86.86	101.86	34.77	19.77
GW-02	1,357,344.14	624,538.95	179.46	89.39	104.39	75.07	55.07
GW-03	1,357,522.31	624,460.19	136.59	85.54	100.54	36.05	21.05
GW-04	1,357,179.60	624,437.67	235.82	92.07	107.07	128.75	108.75
GW-05	1,357,522.06	624,310.19	136.67	84.80	99.80	36.87	21.87
GW-06	1,357,406.86	624,324.81	170.07	87.10	102.10	67.97	47.97
GW-07	1,357,519.47	624,153.88	137.42	84.03	99.03	38.39	23.39
GW-08	1,357,401.60	624,080.39	136.56	84.25	99.25	37.31	22.31
GW-09	1,357,245.24	624,080.98	136.67	85.03	100.03	36.64	21.64
GW-10	1,357,286.56	624,243.93	181.01	87.99	102.99	78.02	58.02
GW-11	1,357,095.20	624,081.22	136.67	85.78	100.78	35.89	20.89
GW-12	1,357,065.11	624,240.18	179.64	89.01	104.01	75.63	55.63
GW-13	1,356,945.21	624,081.49	136.67	86.53	101.53	35.14	20.14
GW-14	1,356,962.05	624,436.45	240.00	93.33	108.33	131.67	111.67
GW-15	1,356,875.68	624,596.77	262.56	96.86	111.86	150.70	130.70
GW-16	1,356,795.21	624,081.74	136.67	87.28	102.28	34.39	19.39
GW-17	1,356,840.24	624,241.23	179.86	90.15	105.15	74.71	54.71
GW-18	1,356,752.05	624,436.79	239.99	94.38	109.38	130.62	110.62
GW-19	1,356,645.21	624,082.00	136.67	88.03	103.03	33.64	18.64
GW-20	1,356,645.16	624,237.19	178.40	91.04	106.04	72.36	52.36
GW-21	1,356,592.06	624,442.14	241.69	95.28	110.28	131.41	111.41
GW-22	1,356,490.09	624,682.33	265.12	102.38	117.38	147.74	127.74
GW-23	1,356,485.25	624,082.25	136.66	84.00	99.00	37.66	22.66
GW-24	1,356,470.65	624,237.19	178.30	86.10	101.10	77.20	57.20
GW-25	1,356,345.25	624,082.50	136.67	85.43	100.43	36.24	21.24
GW-26	1,356,274.31	624,242.63	180.00	88.77	103.77	76.23	56.23
GW-27	1,356,362.06	624,442.48	241.67	90.62	105.62	136.05	116.05
GW-28	1,356,288.60	624,682.67	271.49	102.63	117.63	153.86	133.86
GW-29	1,356,195.85	624,084.63	137.29	87.44	102.44	34.85	19.85
GW-30	1,356,170.37	624,437.80	240.00	93.38	108.08	131.92	111.92
GW-31	1,356,091.80	624,683.01	281.33	102.83	117.83	163.50	143.50
GW-32	1,356,043.78	624,083.03	136.67	89.42	104.42	32.25	17.25
GW-33	1,356,072.57	624,242.98	180.00	91.44	106.44	73.56	53.56
GW-34	1,355,895.25	624,083.28	136.67	91.58	106.58	30.09	15.09
GW-35	1,355,885.07	624,243.04	179.92	93.92	108.92	71.00	51.00
GW-36	1,355,958.71	624,438.16	240.00	95.88	110.88	129.12	109.21
GW-37	1,355,891.59	624,683.35	291.34	103.03	118.03	173.31	153.31
GW-38	1,357,425.10	624,735.61	136.65	84.98	99.98	36.67	21.67
GW-39	1,357,265.80	624,697.17	180.05	88.51	103.51	76.54	56.54
GW-40	1,357,084.69	624,612.57	241.67	95.20	110.20	131.47	111.47
GW-41	1,357,360.42	624,869.82	136.62	84.23	99.23	37.39	22.39
GW-42	1,357,289.74	625,004.20	136.60	83.47	98.47	38.13	23.13
GW-43	1,357,178.96	624,877.33	180.01	86.88	101.88	78.13	58.13
GW-44	1,357,149.27	625,058.86	136.60	84.20	99.20	37.40	22.40
GW-45	1,356,976.24	624,737.01	241.66	91.49	106.49	135.17	115.17
GW-46	1,357,007.62	625,106.59	136.54	84.95	99.95	36.59	21.59
GW-47	1,356,991.30	624,943.50	179.81	87.86	102.86	76.95	56.95
GW-48	1,356,862.60	625,154.20	136.87	86.00	101.00	35.87	20.87
GW-49	1,356,801.73	625,007.25	179.77	88.86	103.86	75.91	55.91
GW-50	1,356,682.70	624,657.01	241.48	92.48	107.48	134.00	114.00
GW-51	1,356,680.72	624,681.97	262.11	101.59	116.59	145.52	125.52
GW-52	1,356,722.92	625,202.03	136.57	86.45	101.45	35.12	20.12
GW-53	1,356,611.96	625,070.39	179.94	89.87	104.87	75.07	55.07
GW-54	1,356,597.09	624,864.48	241.59	93.48	108.48	133.11	113.11
GW-55	1,356,580.23	625,249.59	136.67	87.23	102.23	34.44	19.44
GW-56	1,356,430.88	625,262.50	136.67	84.33	99.33	37.34	22.34
GW-57	1,356,417.14	625,102.47	180.02	86.90	101.90	78.12	58.12
GW-58	1,356,402.74	624,903.48	241.36	90.08	105.08	136.28	116.28
GW-59	1,356,280.88	625,262.00	136.92	86.32	101.32	35.60	20.60
GW-60	1,356,217.14	625,102.88	180.00	89.55	104.55	75.45	55.45
GW-61	1,356,202.74	624,904.53	241.13	92.71	107.71	133.42	113.42
GW-62	1,356,130.26	625,263.03	136.67	88.30	103.30	33.37	18.37
GW-63	1,355,980.89	625,262.92	136.79	90.28	105.28	31.51	16.51
GW-64	1,356,017.14	625,103.23	180.00	92.20	107.20	72.80	52.80
GW-65	1,356,002.74	624,903.94	241.44	95.37	110.37	131.07	111.07

TABLE 2
HEADER PIPE (SEE NOTE 4)

POINTS ALONG HEADER PIPE	Northing	Easting	Elevation
LPH-1	1,355,861.85	624,003.33	107.00
LPH-2	1,356,498.81	624,002.24	107.00
LPH-3	1,357,508.30	624,013.69	107.00
LPH-4	1,357,597.61	624,555.64	107.00
LPH-5	1,357,321.55	625,080.16	107.00
LPH-6	1,356,535.71	625,342.24	107.00
LPH-7	1,355,686.49	625,343.79	107.00
HPH-1	1,356,200.81	624,062.75	127.00
HPH-2	1,356,999.37	624,083.47	134.36
HPH-3	1,357,534.15	624,181.95	129.64
HPH-4	1,357,398.58	624,803.68	131.75
HPH-5	1,356,899.39	625,146.33	132.46
HPH-6	1,356,144.50	625,273.50	130.17
IHL-1	1,355,895.12	624,009.16	---
IHL-2	1,356,043.70	624,035.20	---
IHL-3	1,356,195.81	624,061.87	---
IHL-4	1,356,345.17	624,033.44	---
IHL-5	1,356,485.12	624,005.02	---
IHL-6	1,356,645.11	624,025.98	---
IHL-7	1,356,795.16	624,050.33	---
IHL-8	1,356,945.20	624,074.68	---
IHL-9	1,357,095.18	624,070.33	---
IHL-10	1,357,245.19	624,049.77	---
IHL-11	1,357,401.51	624,028.33	---
IHL-12	1,357,529.84	624,153.88	---
IHL-13	1,357,555.92	624,310.19	---
IHL-14	1,357,581.40	624,460.19	---
IHL-15	1,357,541.92	624,625.04	---
IHL-16	1,357,445.36	624,745.38	---
IHL-17	1,357,377.81	624,878.22	---
IHL-18	1,357,330.59	625,047.75	---
IHL-19	1,357,164.67	625,104.75	---
IHL-20	1,357,014.89	625,128.23	---
IHL-21	1,356,865.99	625,164.32	---
IHL-22	1,356,734.11	625,235.36	---
IHL-23	1,356,599.75	625,307.74	---
IHL-24	1,356,430.98	625,323.84	---
IHL-25	1,356,280.94	625,297.47	---
IHL-26	1,356,130.28	625,275.68	---
IHL-27	1,355,980.95	625,298.60	---

HPH = HIGH POINT ALONG HEADER PIPE
LPH = LOW POINT ALONG HEADER PIPE
IHL = INTERSECTION HEADER-LATERAL

TABLE 3
APPROXIMATE ASBESTOS LOCATIONS (SEE NOTE 5)

ASBESTOS LOCATION	NORTHING	EASTING
1A	1,357,444.76	624,076.99
1B	1,357,280.64	624,445.17
2A	1,356,735.77	624,766.60
2B	1,356,814.48	624,836.54
2C	1,356,917.55	624,766.75
2D	1,356,923.54	624,847.37
2E	1,356,990.25	624,777.55
3A	1,356,256.90	624,986.59
3B	1,356,293.28	624,954.37
3C	1,356,317.48	625,002.76
3D	1,356,287.28	624,884.49
3E	1,356,366.06	624,873.80
3F	1,356,378.11	624,959.81
3G	1,356,372.07	624,927.56

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83)
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. SEE DETAIL 1 ON SHEET 5 TO EVALUATE LENGTHS OF STICK-UP, SOLID PIPE, AND SLOTTED PIPE.
4. LOCATIONS OF EXISTING GCCS COMPONENTS ARE BASED ON CONSTRUCTION DRAWINGS FOR PREVIOUS CONSTRUCTION SEQUENCES. AS-BUILT LOCATIONS FOR EXISTING COMPONENTS SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER AS NEEDED.
5. ASBESTOS COORDINATES INDICATED WERE PROVIDED BY WSI ON 4 MARCH 2008. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY WSI.

CONSTRUCTION DRAWINGS

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: CONTROL POINTS

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

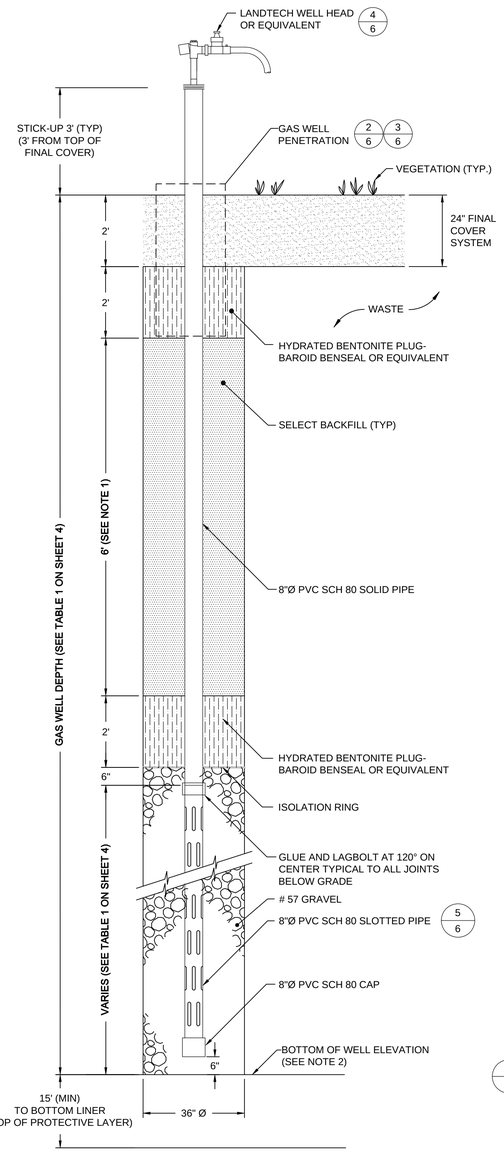
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

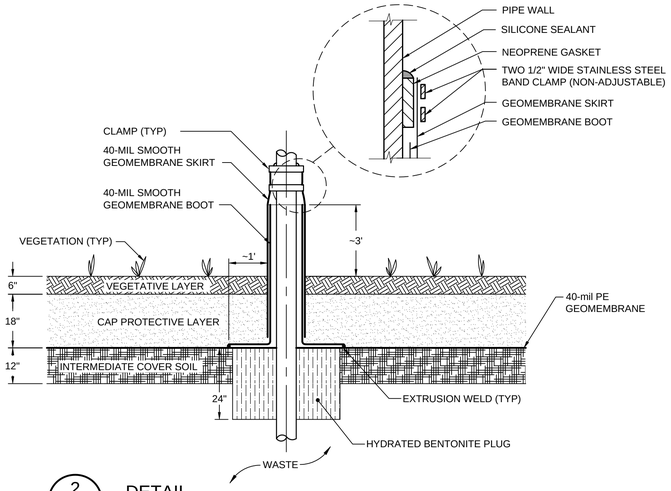
DATE

KWASI BADU–TWENEBOAH
LICENSE NO. 42460

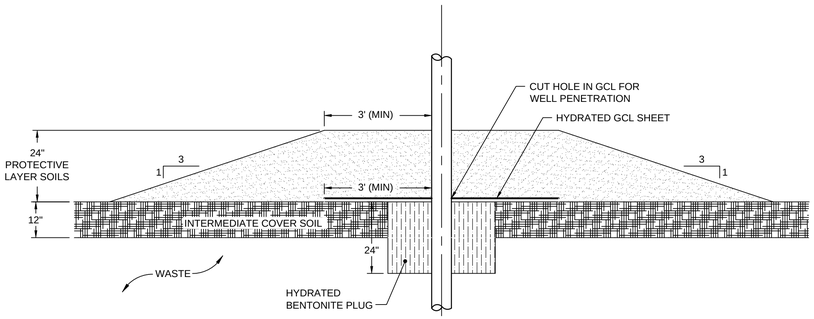
DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P040
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	5 OF 8	



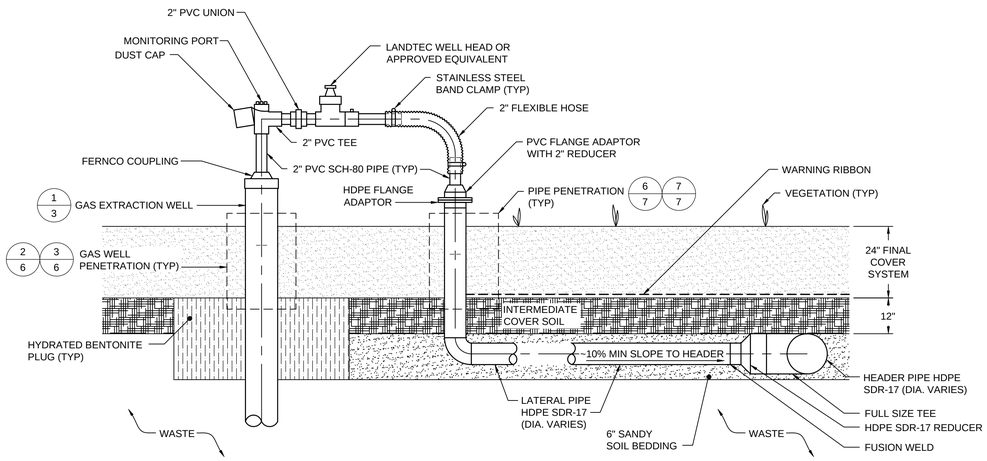
1/3 DETAIL
GAS EXTRACTION WELL
SCALE: N.T.S.
XREF: FL1452.03X021



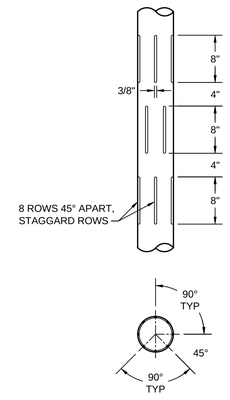
2/6 DETAIL
GAS WELL FINAL COVER PENETRATION
SCALE: N.T.S.
XREF: FL1452.03X022



3/6 DETAIL
GAS WELL SOIL COVER PENETRATION (PRE-FINAL COVER)
SCALE: N.T.S.
XREF: FL1452.03X039



4/6 DETAIL
WELLHEAD TO LATERAL
SCALE: N.T.S.
XREF: FL1452.03X024.DWG



5/6 DETAIL
PIPE SLOTS
SCALE: N.T.S.
XREF: 1452.03X020

NOTES:

1. THE LENGTH OF SOLID PIPE EXTENDING BELOW THE GEOMEMBRANE SHALL BE NO LESS THAN 10 FEET.
2. BOTTOM ELEVATION OF ALL GAS EXTRACTION WELLS SHALL BE MINIMUN 15' FROM THE BOTTOM LINER (TOP OF PROTECTIVE COVER LAYER).

NOTE:

1. ALL GAS SYSTEM COMPONENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN HEREIN AND TECHNICAL SPECIFICATIONS. CONTRACTOR SHALL REFER TO BOTH THESE DOCUMENTS.
2. SCREENED DETAILS ARE PROVIDED FOR INFORMATION PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION DURING THIS SEQUENCE.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GAS EXTRACTION WELLS DETAILS

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P050
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT		6 OF 8

CONSTRUCTION DRAWINGS

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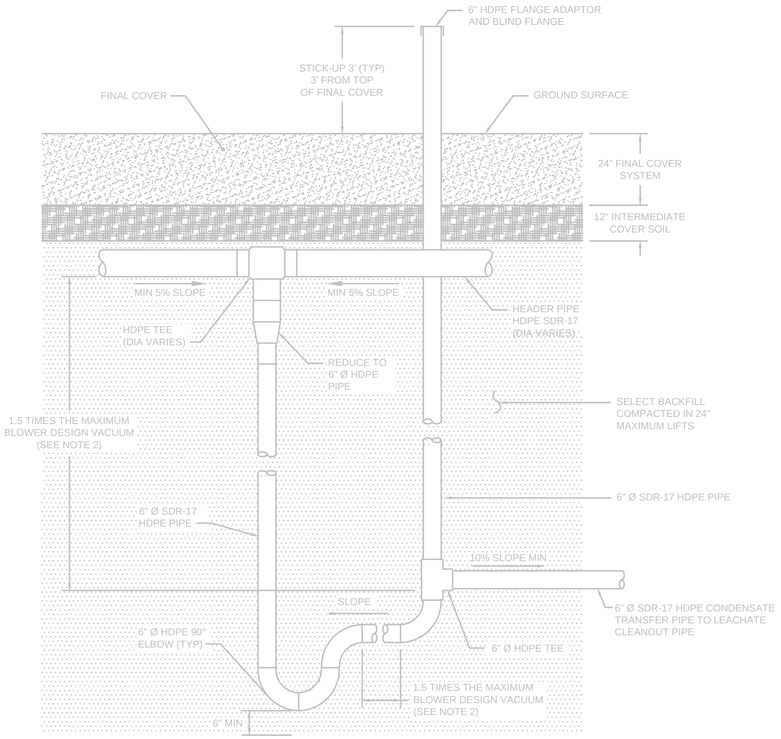
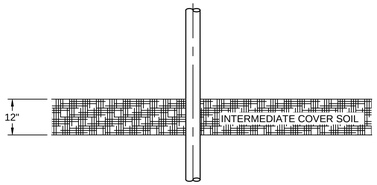


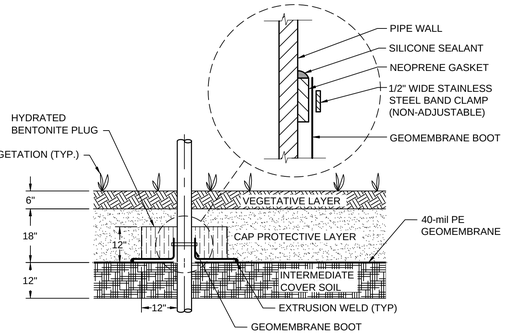
NOTES:

1. A CONDENSATE DRAIN SHALL BE PROVIDED AT EVERY LOW POINT ALONG THE HEADER PIPE EXCEPT AT LPH-3.
2. IF MAXIMUM BLOWER VACUUM ACHIEVABLE IS KNOWN FROM THE BLOWER CURVE PROVIDED BY THE MANUFACTURER, A LENGTH OF 1.0 TIMES THE MAXIMUM BLOWER DESIGN VACUUM MAY BE USED.
3. THE MAXIMUM DESIGN BLOWER VACUUM IS 50 INCHES OF WATER COLUMN AS NOTED IN THE SPECIFICATIONS.

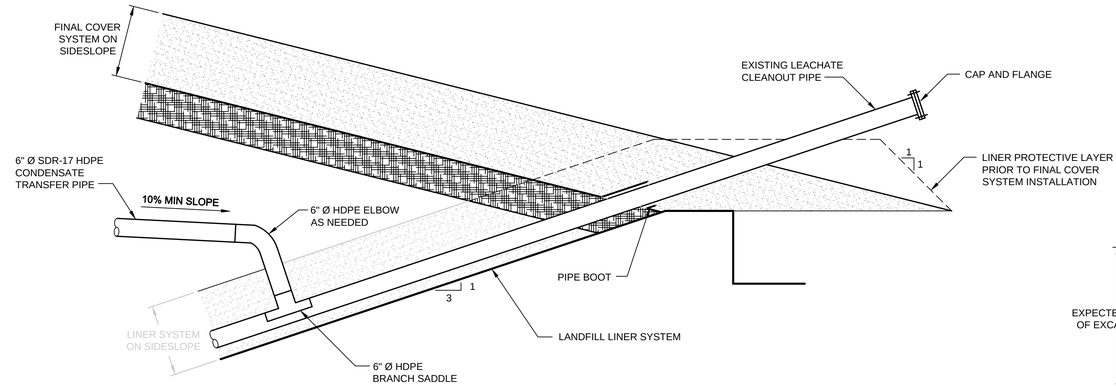
8/3 DETAIL
CONDENSATE DRAIN (NOTE 2)
SCALE: N.T.S.
XREF: FL1452.03X036



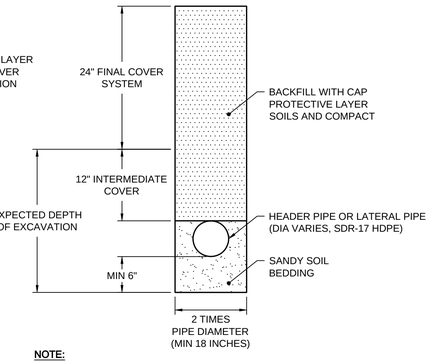
6/6 DETAIL
PIPE SOIL COVER PENETRATION (PRE-FINAL COVER)
SCALE: N.T.S.
XREF: FL1452.03X040



7/6 DETAIL
PIPE FINAL COVER PENETRATION
SCALE: N.T.S.
XREF: FL1452.03X023



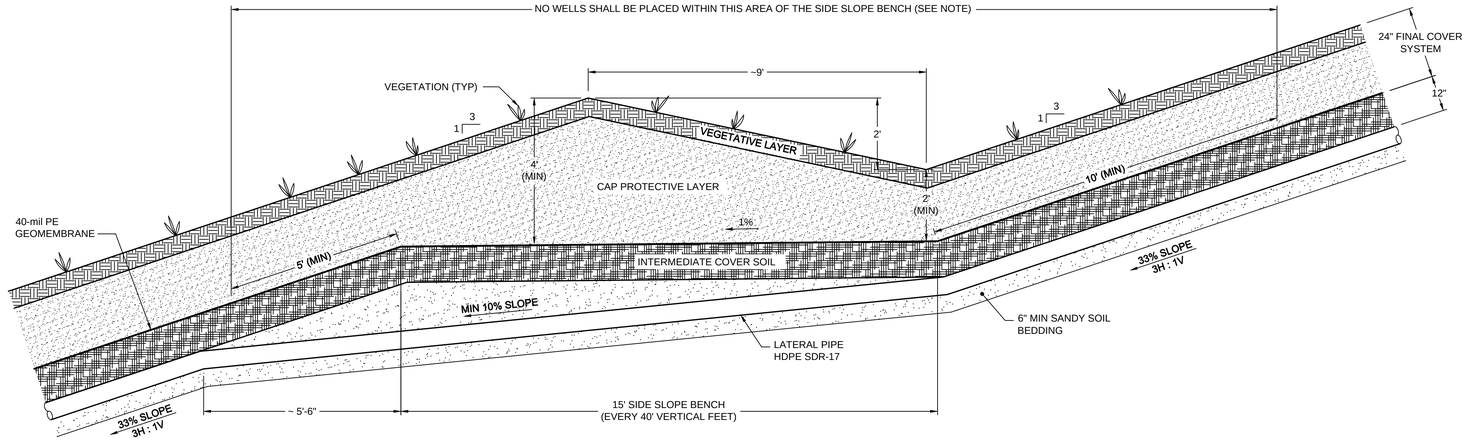
9/3 DETAIL
CONDENSATE DRAIN CONNECTION TO LEACHATE CLEANOUT
SCALE: N.T.S.
XREF: FL1452.03X037



NOTE:

HEADER AND LATERAL PIPES SHALL TYPICALLY BE INSTALLED 3-FT BELOW THE TOP OF FINAL COVER AS INDICATED. HOWEVER, ALL PIPES SHALL BE INSTALLED AT CONSTANT SLOPE BETWEEN THE END POINTS.

10/4 DETAIL
PIPE TRENCH
SCALE: N.T.S.
XREF: FL1452.03X038



NOTE:

GAS EXTRACTION WELLS ADJACENT TO THE SIDE SLOPE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE 15-FT WIDE BENCH AS INDICATED.

11/3 DETAIL
LATERAL PIPE TRENCH AT BENCH CROSSING
SCALE: N.T.S.
XREF: FL1452.03X034

NOTE:

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Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407–891–3720 FAX: 407–891–3730

TITLE: GCCS DETAILS I

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

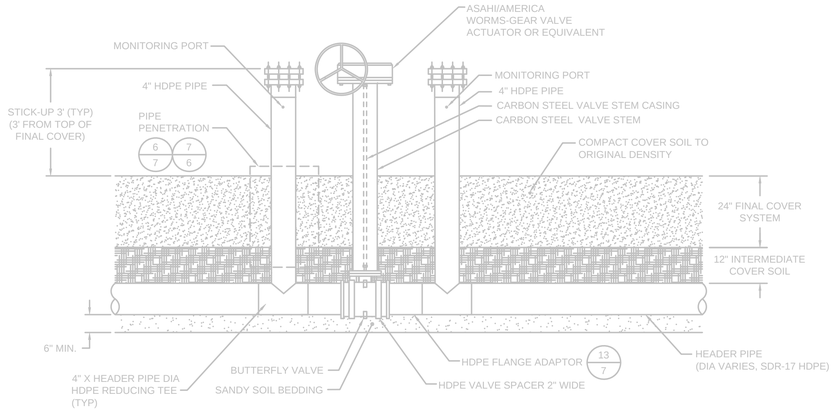
DATE

KWASI BADU–TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P060
REVIEWED BY:	KBT	DRAWING NO.:	7 OF 8
APPROVED BY:	KBT		

CONSTRUCTION DRAWINGS

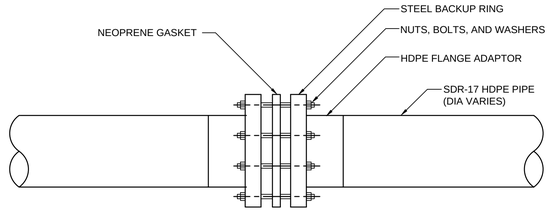
P:\JAX-CAD\J\J.E.D. SOLID WASTE MANAGEMENT FACILITY\CONSTRUCTION\GAS COLLECTION AND CONTROL SYSTEM PHASE I DISPOSAL AREA\DRAWINGS\FL1452.03P060



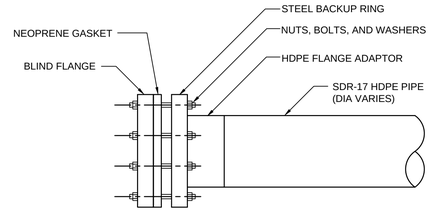
NOTE:

ISOLATION VALVES SHALL BE INSTALLED AT LOCATIONS INDICATED ON SHEETS 3 AND 8.

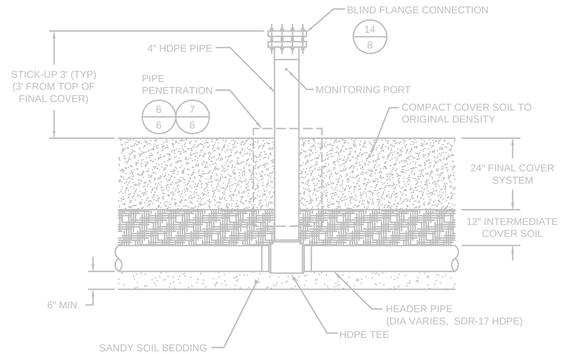
12 / - DETAIL
ISOLATION VALVE (NOTE 2)
SCALE: N.T.S.
XREF: FL1452.03X025



13 / 8 DETAIL
FLANGE CONNECTION (TYP.)
SCALE: N.T.S.
XREF: FL1452.03X026



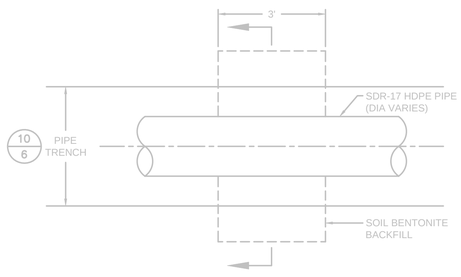
14 / 3 DETAIL
BLIND FLANGE (TYP)
SCALE: N.T.S.
XREF: FL1452.03X027



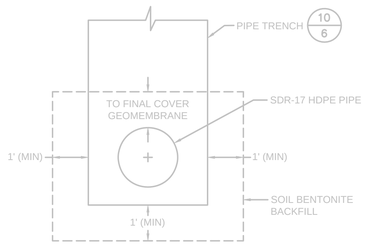
NOTE:

HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG THE HEADER PIPE (AT EACH HPH), WITH THE EXCEPTION OF THE HPH LOCATIONS THAT HAVE AN ISOLATION VALVE.

15 / 3 DETAIL
HEADER ACCESS RISER (NOTE 2)
SCALE: NTS
XREF: FL1452.03X028



PLAN



SECTION

16 / - DETAIL
ANTI-SEEP COLLAR (NOTE 2)
SCALE: N.T.S.
XREF: FL1452.03X030

NOTES:

1. THE ANTI-SEEP COLLAR SHALL EXTEND AT LEAST 1 FOOT BEYOND THE TRENCH IN EACH DIRECTION.
2. SOIL BENTONITE BACKFILL SHALL CONSIST OF MINIMUM 10% BENTONITE BY WEIGHT.

NOTE:

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Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 – FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GCCS DETAILS II

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE I DISPOSAL AREA – SEQUENCE 3A

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH
LICENSE NO. 42460

DESIGN BY:	WT	DATE:	April 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832.01
CHECKED BY:	WT	FILE:	FL1452.03P070
REVIEWED BY:	KBT	DRAWING NO.:	8 OF 8
APPROVED BY:	KBT		

CONSTRUCTION DRAWINGS

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Omni Waste of Osceola County, LLC

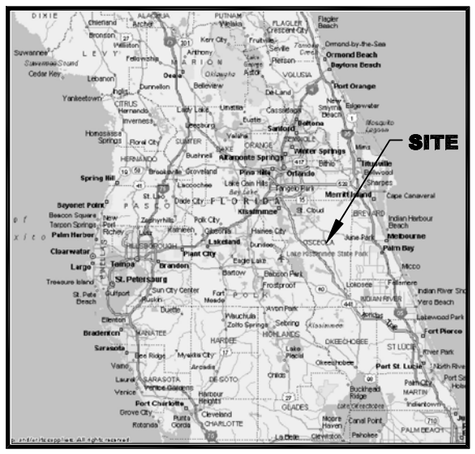
J.E.D. SOLID WASTE MANAGEMENT FACILITY

ST. CLOUD, FLORIDA

GAS COLLECTION AND CONTROL SYSTEM (GCCS)

PHASE 2 DISPOSAL AREA

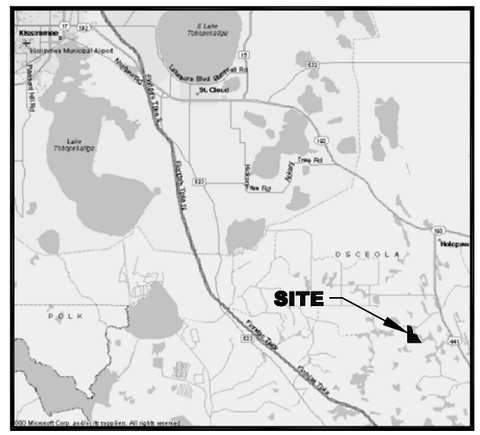
DECEMBER 2010



LOCATION MAP

SCALE: 1" = 32 MILES

LIST OF DRAWINGS			
SHEET	TITLE	REVISION	COMMENTS
1	TITLE SHEET		
2	TOPOGRAPHIC MAP		
3	PLAN LAYOUT OF GCCS IN PHASE 2 (CELLS 5 THROUGH 7)		
4	PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 4)		
5	PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 5)		
6	PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 6)		
7	PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 7)		
8	GAS SYSTEM CONTROL POINTS		
9	VERTICAL GAS EXTRACTION WELLS DETAILS		
10	GCCS DETAILS I		
11	GCCS DETAILS II		
12	FLARE STATION - PLAN AND CROSS SECTION (1)		
13	FLARE STATION - PLAN AND CROSS SECTION (2)		
14	FLARE STATION DETAIL		



VICINITY MAP

SCALE: 1" = 4 MILES

SEQUENTIAL DETAIL NUMBER

SHEET ON WHICH THE ABOVE DETAIL IS PRESENTED

DETAIL REFERENCE KEY

DETAIL NUMBER

SHEET ON WHICH THE ABOVE DETAIL IS FIRST REFERENCED

DETAIL (TYPICAL)
LINER SYSTEM AT BASE

SCALE: NTS

XREF: FL1695.01X004.DWG

DETAIL BAR REFERENCE KEY

EXAMPLE: DETAIL 1 WHICH IS PRESENTED ON SHEET 7 WAS FIRST REFERENCED ON SHEET 5.

SEQUENTIAL SECTION LETTER

SHEET ON WHICH THE ABOVE SECTION IS PRESENTED

SECTION REFERENCE KEY

SECTION LETTER

SHEET ON WHICH THE ABOVE SECTION IS FIRST REFERENCED

SECTION (TYPICAL)
PERIMETER BERM

SCALE: 1" = 10

XREF: FL1695.01X083.DWG

SECTION BAR REFERENCE KEY

EXAMPLE: SECTION C WHICH IS PRESENTED ON SHEET 5 WAS FIRST REFERENCED ON SHEET 3.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.558.1618 - FAX: 904.398.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: TITLE SHEET

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P010
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	1 OF 14	

CONSTRUCTION DRAWING

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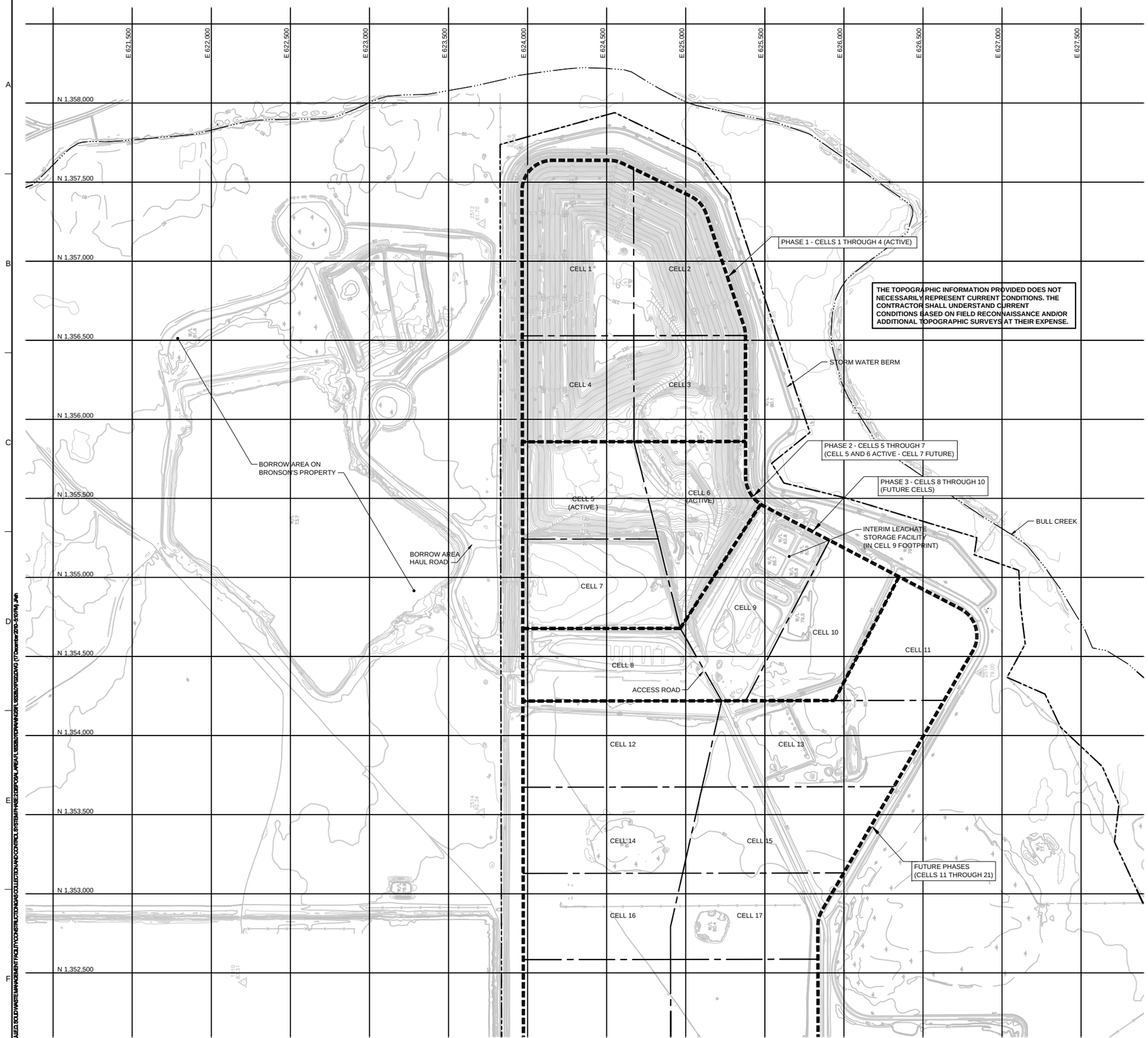

NORTH

0 300' 600'

SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- EXISTING FENCE LINE
- EXISTING TOPOGRAPHY SPOT ELEVATION (FEET)
- TREE LINE
- PHASE BOUNDARY
- CELL BOUNDARY

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY IS BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. THE TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING, INC., AND IS BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 24 JULY 2010.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.398.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI Waste Services, Inc.
Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: TOPOGRAPHIC MAP

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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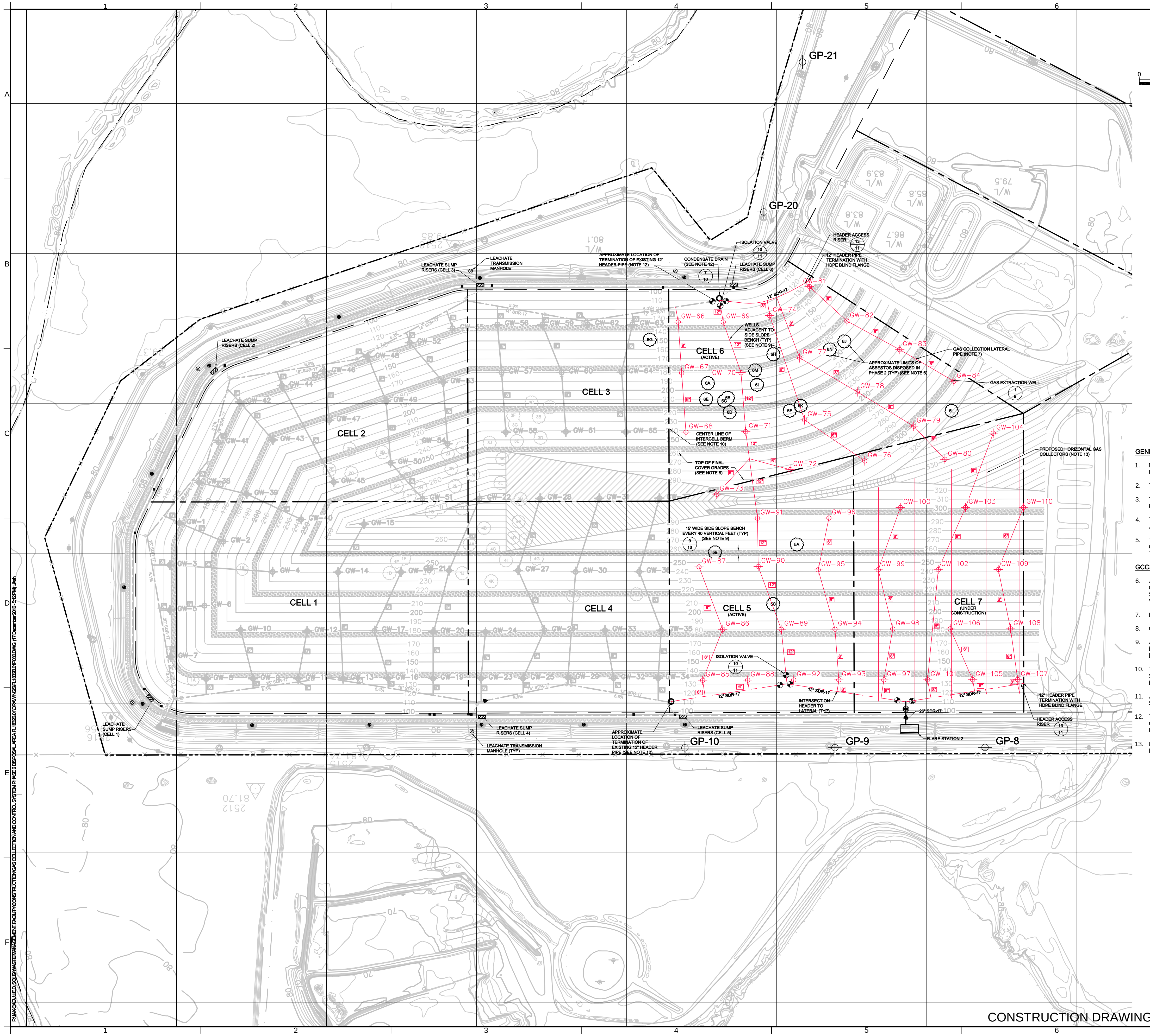
KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P020
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	2 OF 14	

CONSTRUCTION DRAWING

P:\ARCHIVED_OLD\WASTE\WAKEMED\FACILITY\CONSTRUCTION\GAS\COLLECTION\NAD\CONTROL SYSTEM PHASE 2\DISPOSAL AREA 1 WASTE\DRAWINGS\FL1832B.01P020.DWG (07 December 2010 - 5:51PM) JWH



LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- FINAL COVER ELEVATION (FEET)
- EXISTING FENCE LINE
- TREE LINE
- GW-71 GAS EXTRACTION WELL
- GROUNDWATER MONITORING WELL CLUSTER
- LEACHATE TRANSMISSION MANHOLE
- LEACHATE SUMP RISERS
- LEACHATE CLEANOUT
- EXISTING ELECTRIC POLES
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 6)
- REDUCER
- ISOLATION VALVE
- CONDENSATE DRAIN (SEE NOTE 12)
- CONDENSATE TRANSFER LINE
- LATERAL PIPE (SEE NOTE 7)
- HEADER PIPE
- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- CENTER LINE OF INTERCELL BERM (SEE NOTE 10)
- HEADER ACCESS RISER (SEE NOTE 11)
- 6" LATERAL PIPE SIZE
- GP-10 GAS MONITORING PROBE
- SCREEN = EXISTING OR DESIGN PHASE 1 GAS COLLECTION SYSTEM
- RED = PHASE 2 GAS COLLECTION SYSTEM

GENERAL NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
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5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

GCCS NOTES:

6. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY OMNI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN THE FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
7. LATERAL PIPES SHALL BE 6" OR 8" DIA. SDR-17 HDPE PIPES AS SHOWN ON THIS SHEET.
8. GRADES INDICATED ON THIS SHEET WITHIN THE LANDFILL ARE TOP OF FINAL COVER SYSTEM GRADES.
9. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED IN DETAIL 9 ON SHEET 10.
10. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
11. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 11.
12. THE EXACT LOCATION OF THE EXISTING HEADER PIPES AND EXISTING CONDENSATE DRAIN WILL BE PROVIDED TO THE CONTRACTOR BY OMNI. A REPLACEMENT CONDENSATE DRAIN SHALL BE PROVIDED AT THE LOW POINT ALONG THE HEADER IN CELL 6.
13. LOCATIONS OF PROPOSED HORIZONTAL GAS COLLECTORS (HGCs) ARE APPROXIMATE. CONTRACTOR SHALL REFER TO INTERMEDIATE PERMIT MODIFICATION PREPARED BY GOLDER ASSOCIATES FOR LOCATIONS AND CONNECTION DETAILS.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 2 (CELLS 5 THROUGH 7)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

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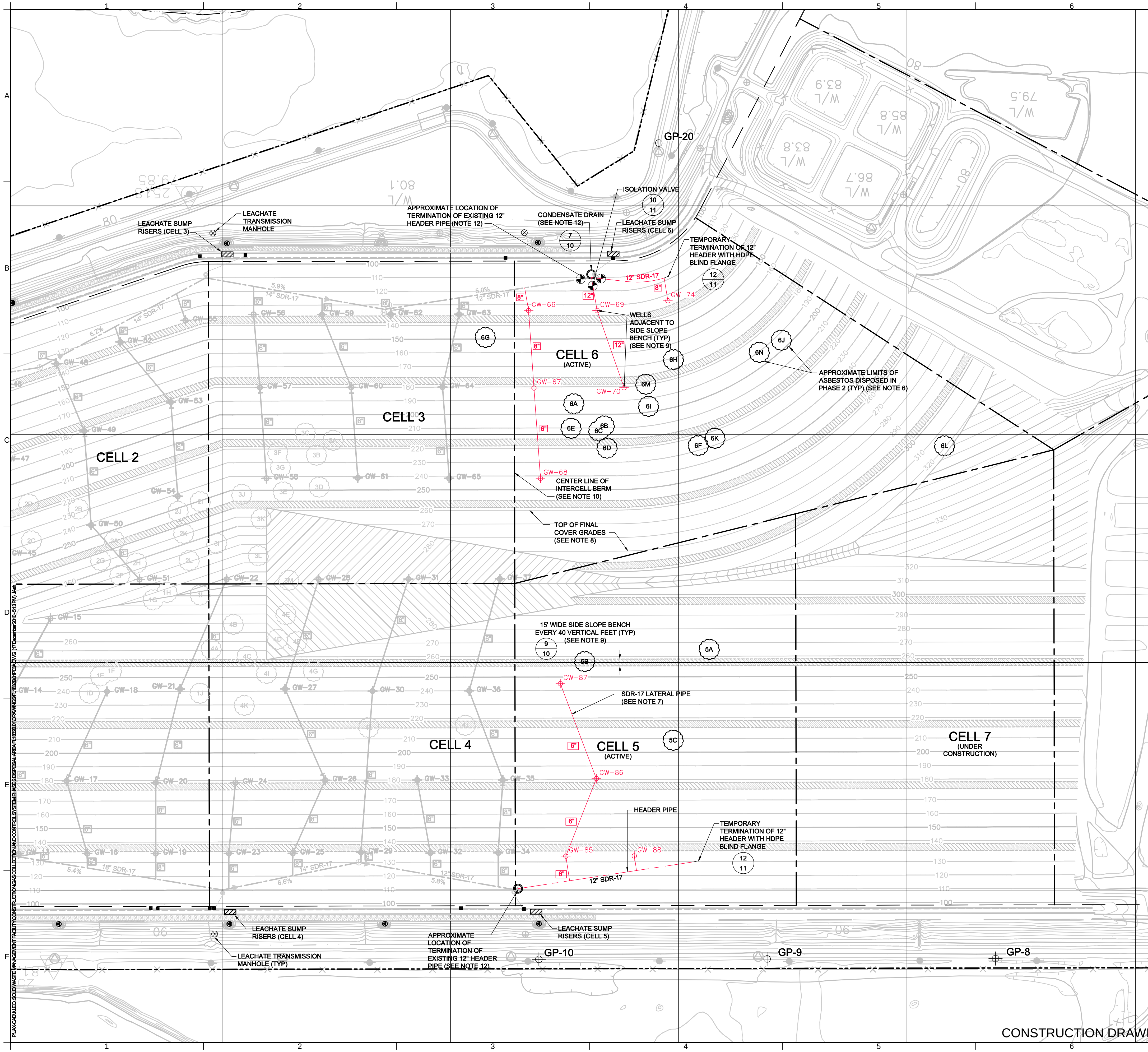
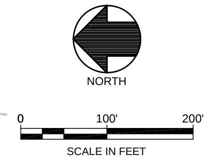
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P030
REVIEWED BY:	KBT	DRAWING NO.:	3 OF 14
APPROVED BY:	KBT		

CONSTRUCTION DRAWING





LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- FINAL COVER ELEVATION (FEET)
- EXISTING FENCE LINE
- TREE LINE
- GW-71 GAS EXTRACTION WELL
- GROUNDWATER MONITORING WELL CLUSTER
- LEACHATE TRANSMISSION MANHOLE
- LEACHATE SUMP RISERS
- LEACHATE CLEANOUT
- EXISTING ELECTRIC POLES
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 6)
- REDUCER
- ISOLATION VALVE
- CONDENSATE DRAIN (SEE NOTE 12)
- CONDENSATE TRANSFER LINE
- LATERAL PIPE (SEE NOTE 7)
- HEADER PIPE
- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- CENTER LINE OF INTERCELL BERM (SEE NOTE 10)
- HEADER ACCESS RISER (SEE NOTE 11)
- LATERAL PIPE SIZE
- GP-10 GAS MONITORING PROBE
- SCREEN = EXISTING OR DESIGN PHASE 1 GAS COLLECTION SYSTEM
- RED = CURRENT SEQUENCE

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REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 4)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

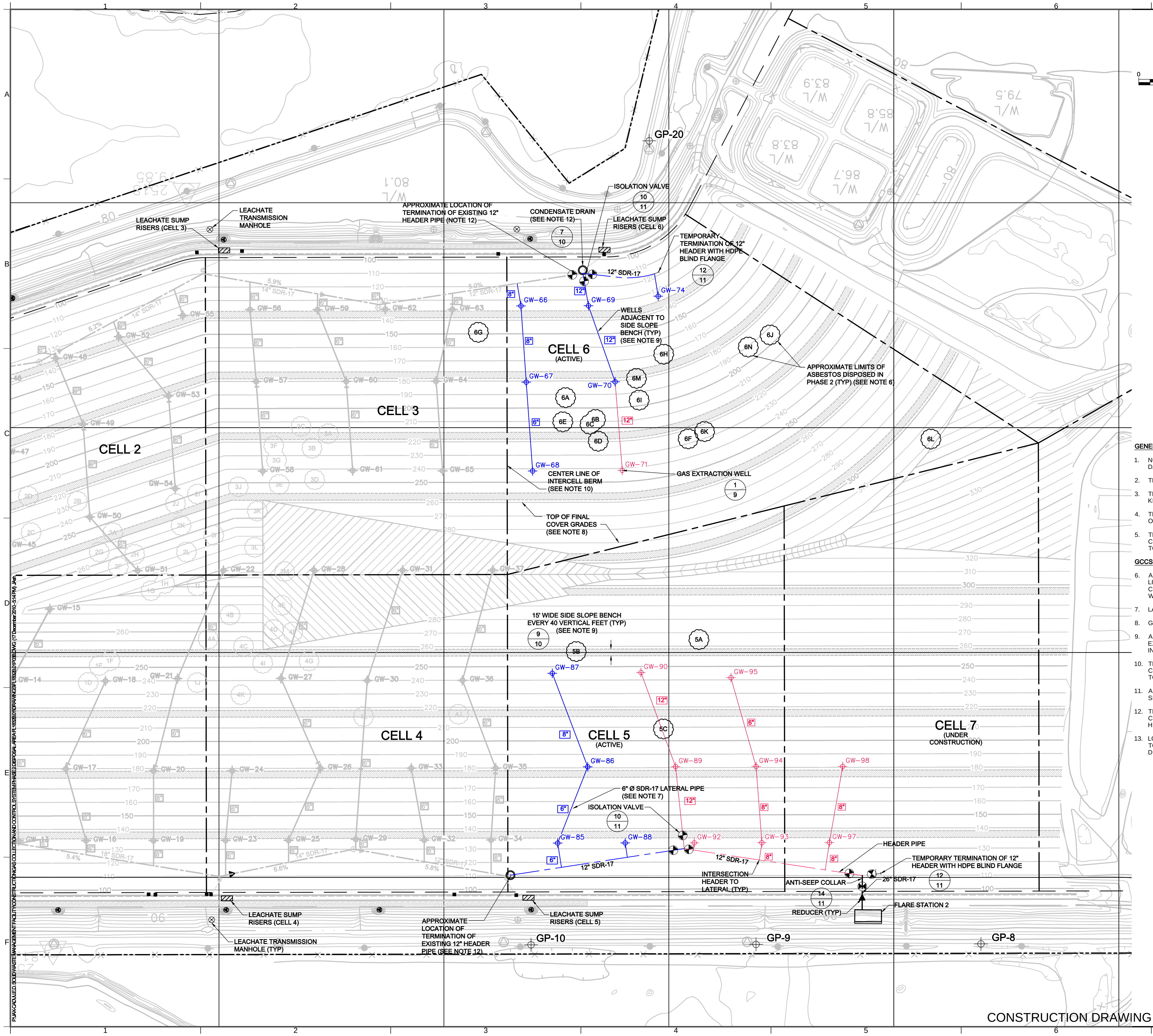
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P03A
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	4 OF 14	



LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- 80 — EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- 80 — FINAL COVER ELEVATION (FEET)
- X — EXISTING FENCE LINE
- TREE LINE
- GW-71 — GAS EXTRACTION WELL
- GROUNDWATER MONITORING WELL CLUSTER
- LEACHATE TRANSMISSION MANHOLE
- LEACHATE SUMP RISERS
- LEACHATE CLEANOUT
- EXISTING ELECTRIC POLES
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 6)
- REDUCER
- ISOLATION VALVE
- CONDENSATE DRAIN (SEE NOTE 12)
- CONDENSATE TRANSFER LINE
- LATERAL PIPE (SEE NOTE 7)
- HEADER PIPE
- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- CENTER LINE OF INTERCELL BERM (SEE NOTE 10)
- HEADER ACCESS RISER (SEE NOTE 11)
- 6" — LATERAL PIPE SIZE
- GP-10 — GAS MONITORING PROBE
- SCREEN = EXISTING GAS COLLECTION SYSTEM
- BLUE = PREVIOUS SEQUENCE(S)
- RED = CURRENT SEQUENCE

GENERAL NOTES:

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Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
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AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 5)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

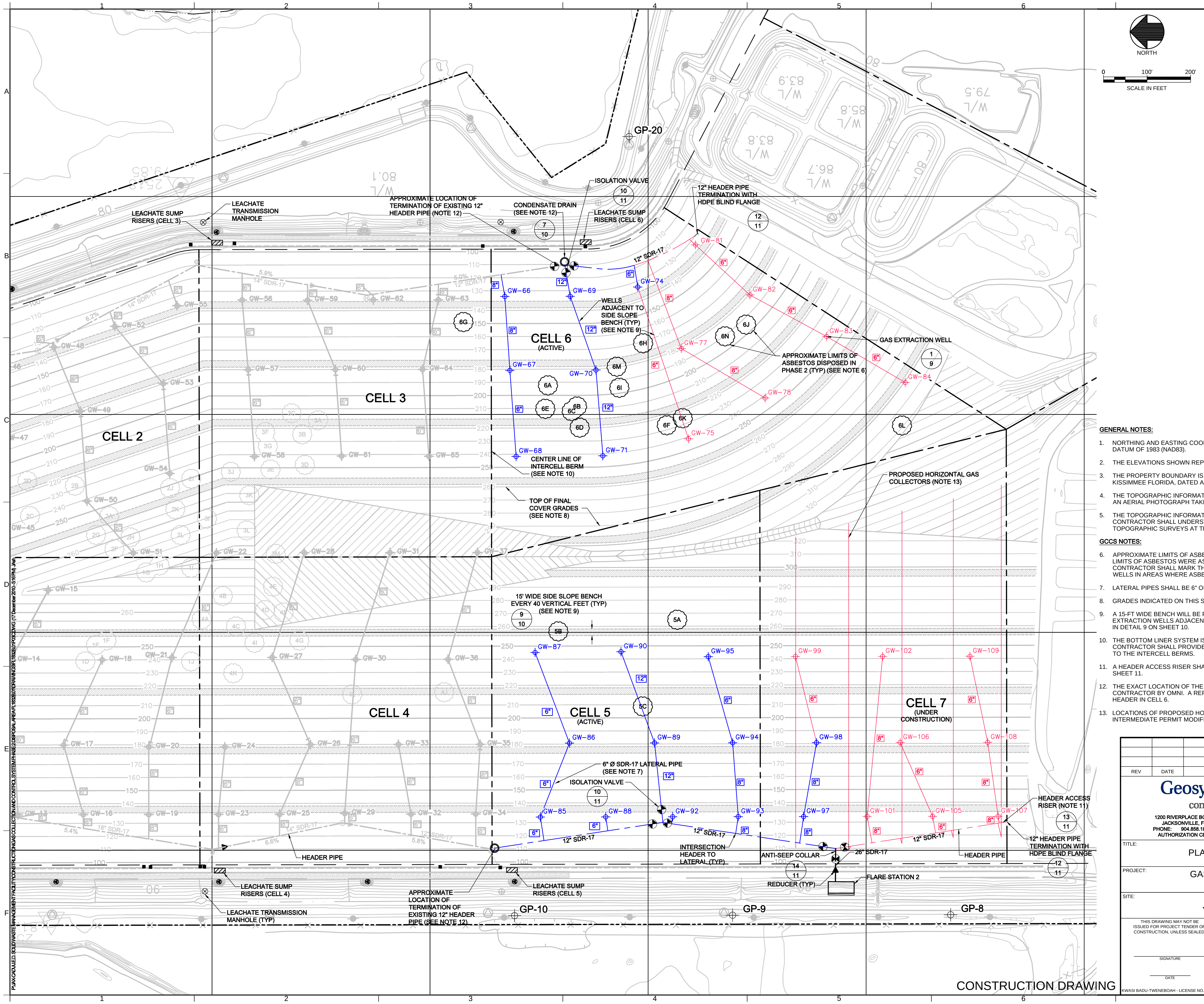
SIGNATURE

DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P03B
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	5 OF 14	

CONSTRUCTION DRAWING



LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- 80 EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- 80 FINAL COVER ELEVATION (FEET)
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AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 6)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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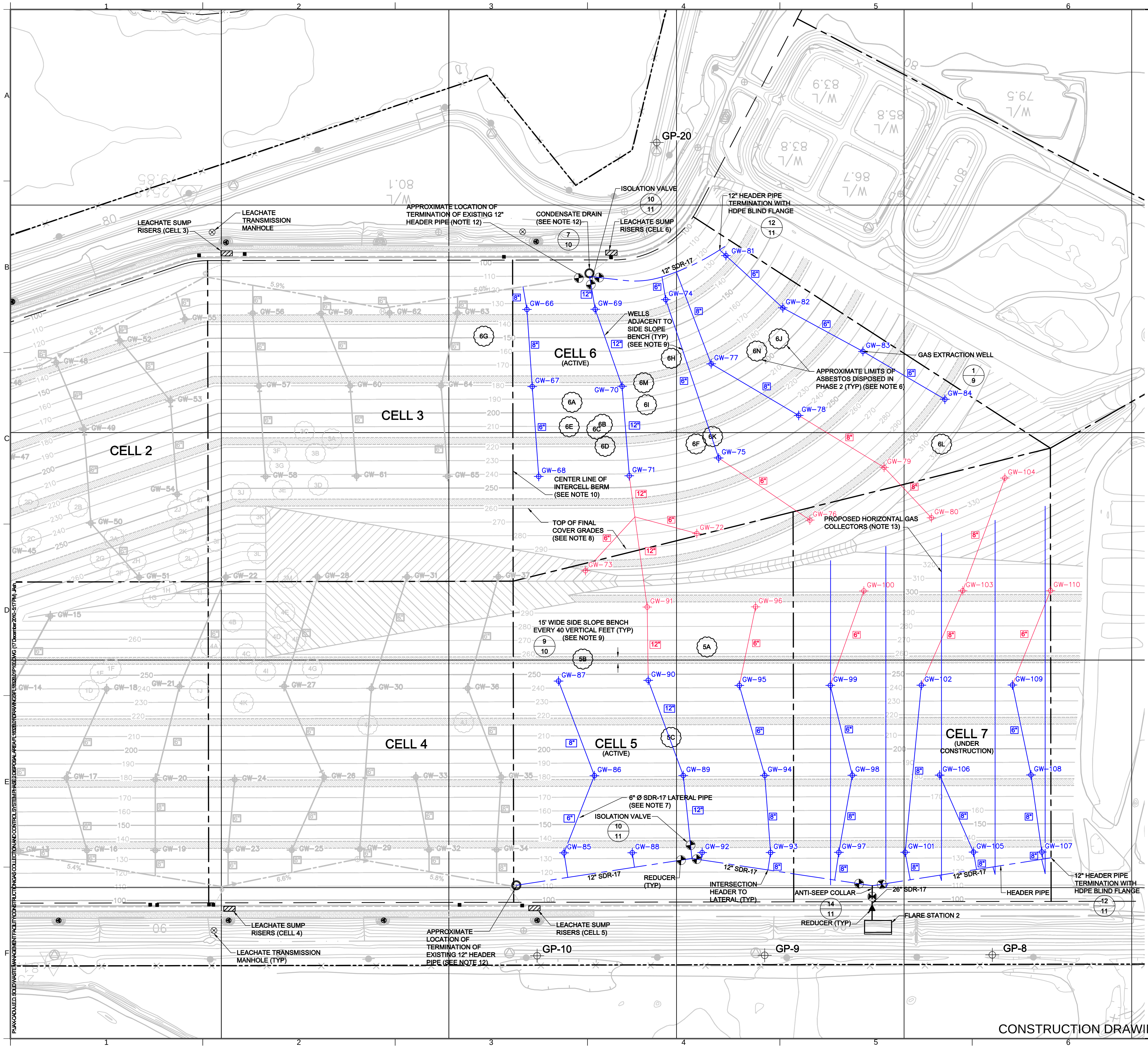
SIGNATURE

DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P03C
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	6 OF 14	

CONSTRUCTION DRAWING



CONSTRUCTION DRAWING

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Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: PLAN LAYOUT OF GCCS IN PHASE 2 (SEQUENCE 7)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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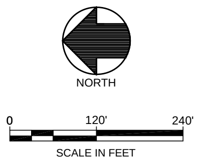
SIGNATURE

DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P100
REVIEWED BY:	KBT	DRAWING NO.:	7 OF 14
APPROVED BY:	KBT		



LEGEND

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- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- SCREEN = EXISTING OR DESIGN PHASE 1
- BLUE = SEQUENCE 4
- RED = SEQUENCE 5
- GREEN = SEQUENCE 6
- MAGENTA = SEQUENCE 7

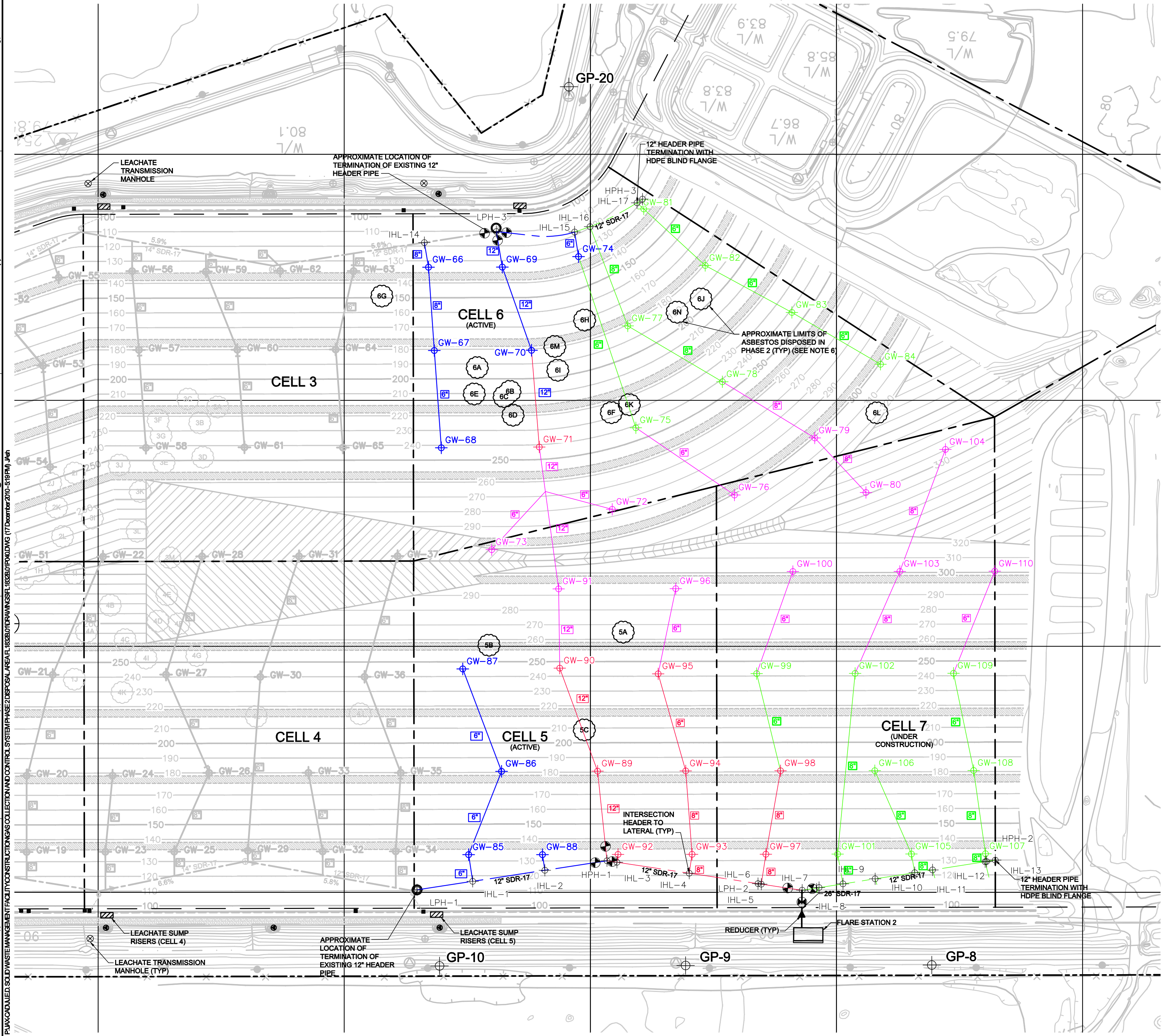


TABLE 1
GAS EXTRACTION WELLS (NOTE 3)

GAS WELL	NORTHING	EASTING	TOP OF FINAL COVER ELEVATION	TOP OF LINER PROTECTIVE LAYER ELEVATION	BOTTOM OF GAS WELL ELEVATION	TOTAL WELL DEPTH	SCREEN LENGTH (SLOTTED PIPE)
GW-66	1355828.69	625270.64	134.3	84.7	99.7	34.6	19.6
GW-67	1355817.00	625101.22	180.8	89.5	104.5	76.3	61.3
GW-68	1355802.74	624903.58	241.7	87.9	102.9	138.8	123.8
GW-69	1355678.69	625270.90	134.3	81.3	96.3	38.0	23.0
GW-70	1355619.52	625101.80	180.9	82.5	97.5	83.4	68.4
GW-71	1355603.72	624905.14	241.7	84.8	99.8	141.9	126.9
GW-72	1355455.45	624778.32	285.4	103.7	118.7	166.7	151.7
GW-73	1355700.16	624696.42	300.3	97.9	112.9	187.3	172.3
GW-74	1355523.75	625292.27	134.4	82.1	97.1	37.3	22.3
GW-75	1355407.44	624944.22	241.7	87.1	102.1	139.6	124.6
GW-76	1355207.00	624807.66	300.9	96.8	111.8	189.2	174.2
GW-77	1355423.87	625151.20	180.8	83.4	98.4	82.4	67.4
GW-78	1355231.61	625037.69	241.8	85.7	100.7	141.1	126.1
GW-79	1355043.91	624923.42	300.9	88.0	103.0	198.0	183.0
GW-80	1354940.06	624812.75	329.8	88.3	103.3	226.5	211.5
GW-81	1355391.43	625388.88	134.4	85.4	100.4	34.0	19.0
GW-82	1355266.48	625274.09	180.9	86.4	101.4	79.6	64.6
GW-83	1355090.43	625178.54	241.6	88.5	103.5	138.2	123.2
GW-84	1354910.35	625073.19	300.8	90.5	105.5	195.3	180.3
GW-85	1355747.09	624076.42	134.3	82.4	97.4	36.9	21.9
GW-86	1355680.32	624245.98	180.8	85.8	100.8	80.0	65.0
GW-87	1355759.20	624453.91	245.1	87.9	102.9	142.3	127.3
GW-88	1355597.22	624076.68	134.3	84.4	99.4	35.0	20.0
GW-89	1355485.17	624246.31	180.8	88.4	103.4	77.4	62.4
GW-90	1355562.08	624455.51	245.6	90.5	105.5	140.1	125.1
GW-91	1355564.42	624616.73	294.3	92.9	107.9	186.4	171.4
GW-92	1355443.50	624076.94	134.3	86.4	101.4	32.9	17.9
GW-93	1355293.30	624077.19	134.3	88.4	103.4	30.9	15.9
GW-94	1355306.20	624246.61	180.8	90.8	105.8	75.0	60.0
GW-95	1355362.06	624444.19	241.7	93.0	108.0	133.7	118.7
GW-96	1355326.35	624617.14	294.3	96.1	111.1	183.3	168.3
GW-97	1355143.30	624077.45	134.3	83.8	98.8	35.5	20.5
GW-98	1355113.67	624246.94	180.8	85.0	100.0	80.8	65.8
GW-99	1355162.06	624444.53	241.7	87.8	102.8	138.9	123.9
GW-100	1355088.43	624651.98	300.8	88.6	103.6	197.2	182.2
GW-101	1354997.58	624077.70	134.3	81.3	96.3	38.0	23.0
GW-102	1354962.06	624444.87	241.7	84.3	99.3	142.4	127.4
GW-103	1354871.09	624652.36	300.8	87.9	102.9	197.9	182.9
GW-104	1354778.55	624900.09	328.9	92.0	107.0	222.0	207.0
GW-105	1354847.52	624077.95	134.3	82.6	97.6	36.8	21.8
GW-106	1354921.92	624247.27	180.8	83.0	98.0	82.8	67.8
GW-107	1354697.26	624078.21	134.3	85.2	100.2	34.2	19.2
GW-108	1354721.27	624247.61	180.8	86.4	101.4	79.3	64.3
GW-109	1354762.06	624445.21	241.7	87.7	102.7	139.0	124.0
GW-110	1354678.27	624652.68	300.8	94.9	109.9	190.9	175.9

TABLE 2
HEADER PIPE (SEE NOTE 4)

POINTS ALONG HEADER PIPE	NORTHING	EASTING	ELEVATION
LPH-1	1,355,852.00	624,005.09	(NOTE 6)
LPH-2	1,355,069.37	624,004.23	107.0
LPH-3	1,355,690.99	625,343.10	(NOTE 6)
HPH-1	1,355,466.06	624,064.02	127.0
HPH-2	1,354,677.20	624,065.35	127.0
HPH-3	1,355,393.90	625,409.03	127.0
IHL-1	1,355,738.84	624,022.37	---
IHL-2	1,355,592.34	624,044.74	---
IHL-3	1,355,446.00	624,060.99	---
IHL-4	1,355,299.11	624,038.78	---
IHL-5	1,355,159.33	624,017.65	---
IHL-6	1,355,152.50	624,016.62	---
IHL-7	1,355,035.29	624,009.54	---
IHL-8	1,354,986.62	624,017.13	---
IHL-9	1,354,921.30	624,027.31	---
IHL-10	1,354,840.81	624,039.85	---
IHL-11	1,354,804.66	624,045.48	---
IHL-12	1,354,697.78	624,062.14	---
IHL-13	1,354,694.82	624,062.60	---
IHL-14	1,355,837.21	625,320.66	---
IHL-15	1,355,531.80	625,342.16	---
IHL-16	1,355,500.46	625,353.07	---
IHL-17	1,355,405.09	625,401.58	---

HPH = HIGH POINT ALONG HEADER PIPE
LPH = LOW POINT ALONG HEADER PIPE
IHL = INTERSECTION HEADER TO LATERAL

TABLE 3
APPROXIMATE ASBESTOS LOCATIONS (SEE NOTE 5)

ASBESTOS LOCATION	NORTHING	EASTING
5A	1,355,433.19	624,529.06
5B	1,355,705.88	624,502.40
5C	1,355,512.12	624,330.24
6A	1,355,729.67	625,066.80
6B	1,355,675.18	625,007.63
6C	1,355,663.05	625,018.37
6D	1,355,657.03	624,969.99
6E	1,355,735.77	625,013.05
6F	1,355,457.07	624,975.21
6G	1,355,923.45	625,212.08
6H	1,355,511.46	625,163.38
6I	1,355,566.07	625,061.29
6J	1,355,275.11	625,206.19
6K	1,355,420.70	624,991.30
6L	1,354,917.79	624,974.78
6M	1,355,572.09	625,109.67
6N	1,355,323.60	625,179.35

GENERAL NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. SEE DETAIL 1 ON SHEET 9 TO EVALUATE LENGTHS OF STICK-UP, SOLID PIPE, AND SLOTTED PIPE.
4. ELEVATIONS INDICATED REPRESENT ELEVATIONS FOR TOP OF PIPE, WHICH IS 3-FT BELOW THE TOP OF FINAL COVER AS INDICATED IN DETAIL 9 ON SHEET 10.
5. ASBESTOS COORDINATES INDICATED WERE PROVIDED BY OMNI ON 7 APRIL 2010. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY OMNI.
6. THE EXACT LOCATION OF THE EXISTING HEADER PIPES AND EXISTING CONDENSATE DRAIN WILL BE PROVIDED TO THE CONTRACTOR BY OMNI. A REPLACEMENT CONDENSATE DRAIN SHALL BE PROVIDED AT THE LOW POINT ALONG THE HEADER IN CELL 6.

CONSTRUCTION DRAWING

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GAS SYSTEM CONTROL POINTS

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

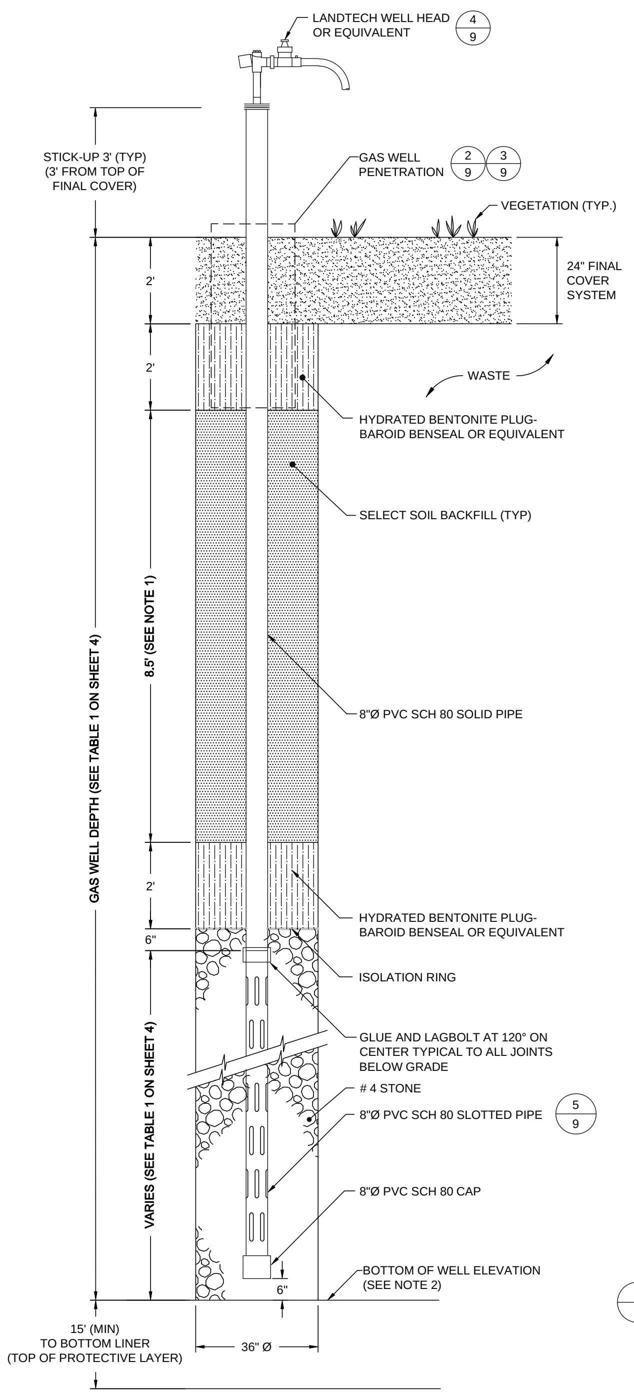
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

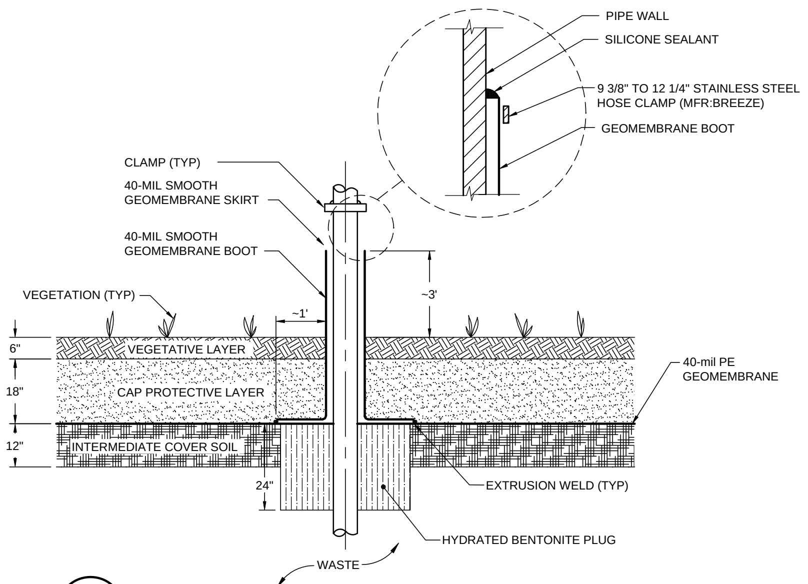
DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

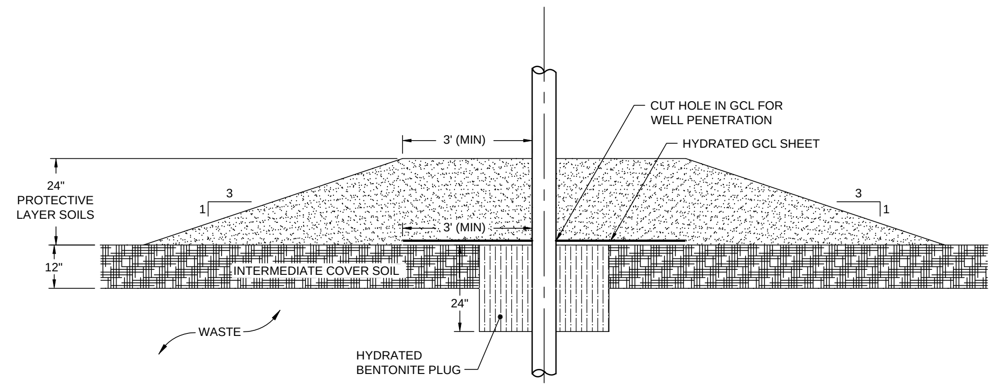
DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P040
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	8 OF 14	



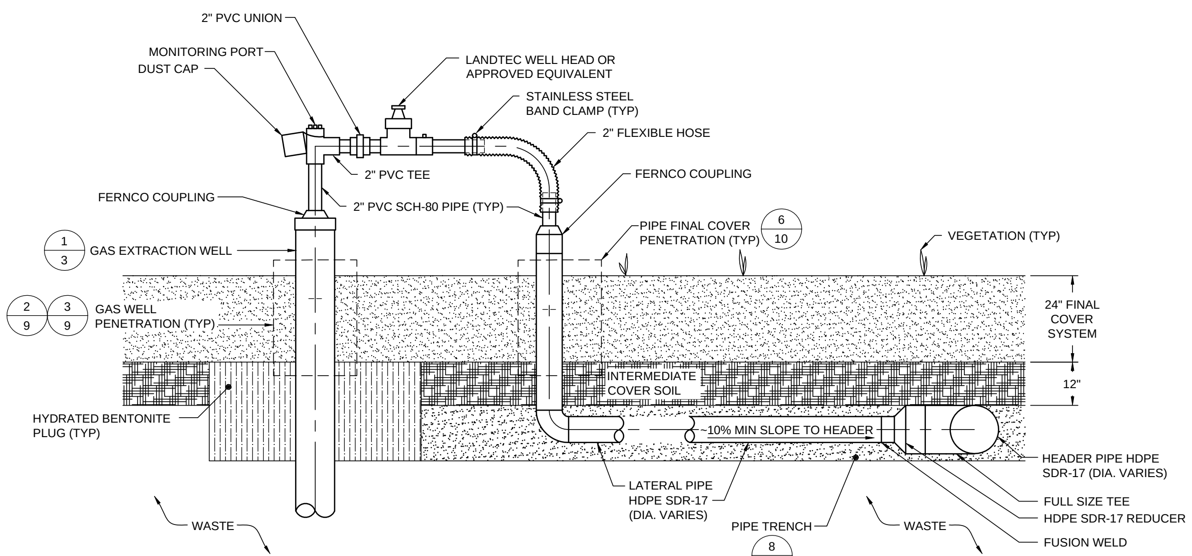
1/3 DETAIL
GAS EXTRACTION WELL
SCALE: N.T.S.
XREF: FL1452.03X021



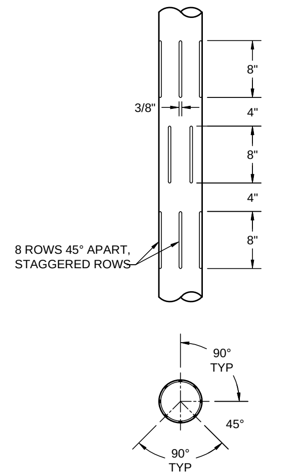
2/9 DETAIL
GAS WELL FINAL COVER PENETRATION
SCALE: N.T.S.
XREF: FL1452.03X022



3/9 DETAIL
GAS WELL SOIL COVER PENETRATION (PRE-FINAL COVER)
SCALE: N.T.S.
XREF: FL1452.03X039



4/9 DETAIL
WELLHEAD TO LATERAL
SCALE: N.T.S.
XREF: FL1452.03X024.DWG



5/9 DETAIL
PIPE SLOTS
SCALE: N.T.S.
XREF: 1452.03X020

NOTES:

1. THE LENGTH OF SOLID PIPE EXTENDING BELOW THE GEOMEMBRANE SHALL BE NO LESS THAN 13 FEET.
2. BOTTOM ELEVATION OF ALL GAS EXTRACTION WELLS SHALL BE MINIMUM 15' FROM THE BOTTOM LINER (TOP OF PROTECTIVE COVER LAYER).

NOTE:

1. ALL GAS SYSTEM COMPONENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN HEREIN AND TECHNICAL SPECIFICATIONS. CONTRACTOR SHALL REFER TO BOTH THESE DOCUMENTS.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI
Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: VERTICAL GAS EXTRACTION WELLS DETAILS

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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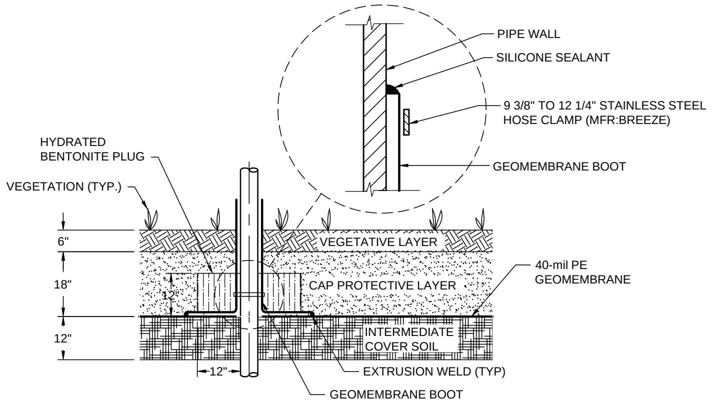
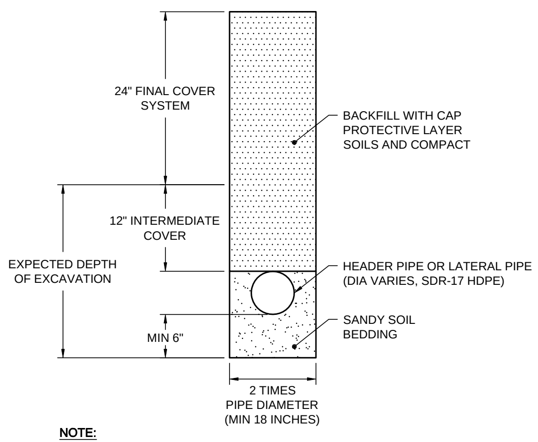
KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P050
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT		9 OF 14

CONSTRUCTION DRAWING



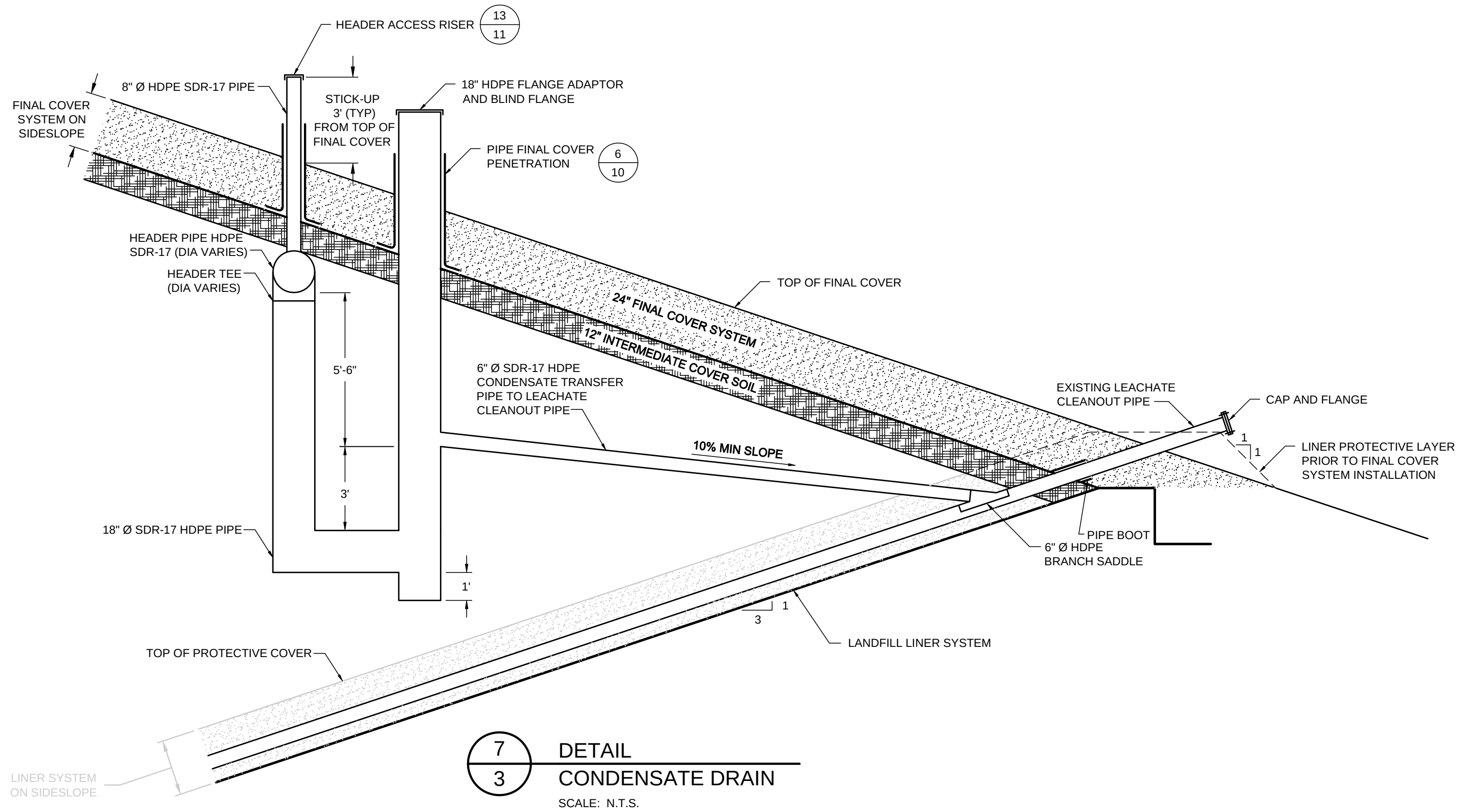
6
9
DETAIL
PIPE FINAL COVER PENETRATION
SCALE: N.T.S.
XREF: FL1452.03X023



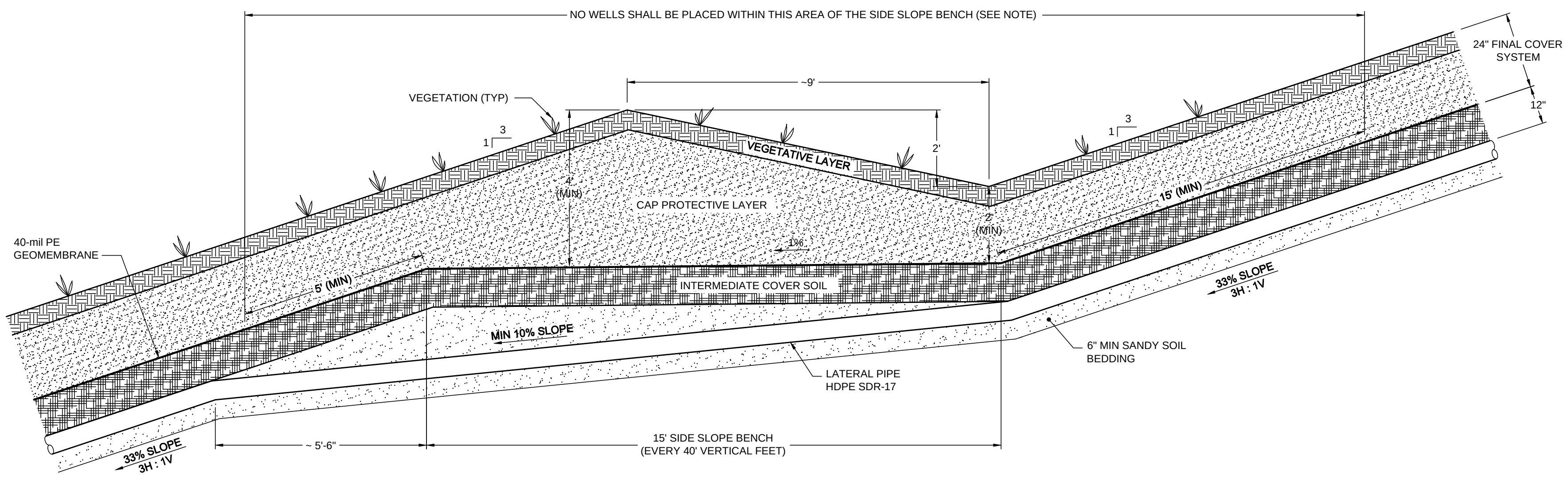
NOTE:

HEADER AND LATERAL PIPES SHALL TYPICALLY BE INSTALLED 3-FT BELOW THE TOP OF FINAL COVER AS INDICATED. HOWEVER, ALL PIPES SHALL BE INSTALLED AT CONSTANT SLOPE BETWEEN THE END POINTS.

8
4
DETAIL
PIPE TRENCH
SCALE: N.T.S.
XREF: FL1452.03X036



7
3
DETAIL
CONDENSATE DRAIN
SCALE: N.T.S.
XREF: FL1452.03X037



NOTE:

GAS EXTRACTION WELLS ADJACENT TO THE SIDE SLOPE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE 15-FT WIDE BENCH AS INDICATED.

9
3
DETAIL
LATERAL PIPE TRENCH AT BENCH CROSSING
SCALE: N.T.S.
XREF: FL1452.03X034

NOTE:

1. ALL GAS SYSTEM COMPONENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN HEREIN AND TECHNICAL SPECIFICATIONS. CONTRACTOR SHALL REFER TO BOTH THESE DOCUMENTS.

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1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GCCS DETAILS I

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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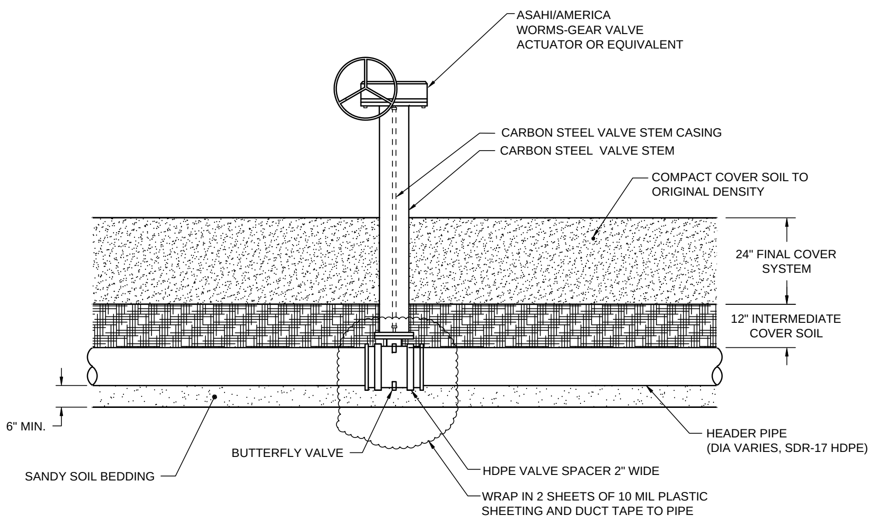
SIGNATURE

DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	FL1832B.01P070
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	10 OF 14	

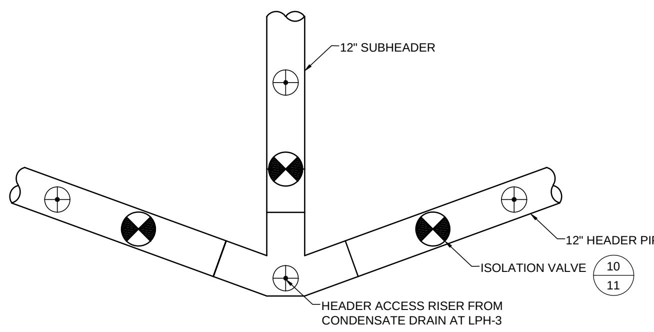
CONSTRUCTION DRAWING



NOTE:

ISOLATION VALVES SHALL BE INSTALLED AT LOCATIONS INDICATED ON SHEETS 3 AND 8.

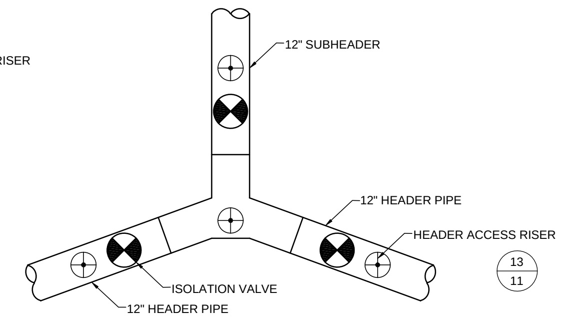
10/3 DETAIL
ISOLATION VALVE (TYP)
SCALE: N.T.S.
XREF: FL1452.03X025



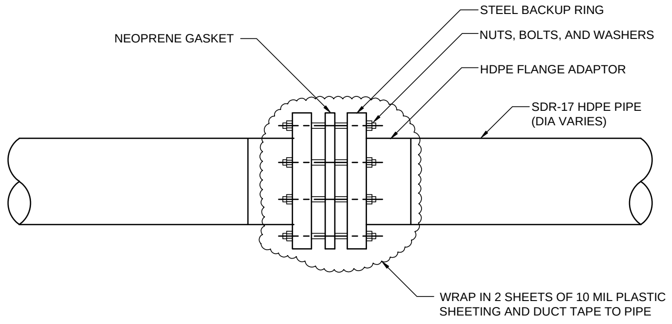
⊕ = HEADER ACCESS RISER

⊗ = ISOLATION VALVE

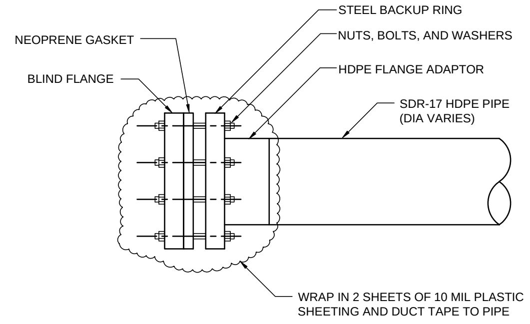
10A/- PLAN
ISOLATION VALVE LAYOUT AT SUBHEADER (LPH-3)
SCALE: N.T.S.
XREF: FL1832B.03X202



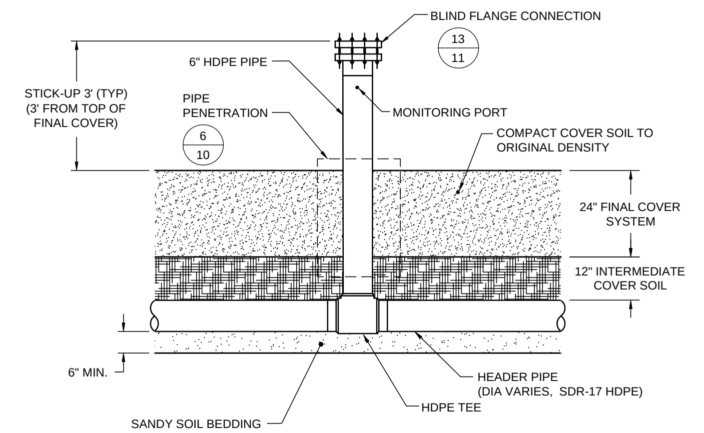
10B/- PLAN
ISOLATION VALVE LAYOUT AT SUBHEADER (HPH-1)
SCALE: N.T.S.
XREF: FL1832B.03X202



11/11 DETAIL
FLANGE CONNECTION (TYP.)
SCALE: N.T.S.
XREF: FL1452.03X026



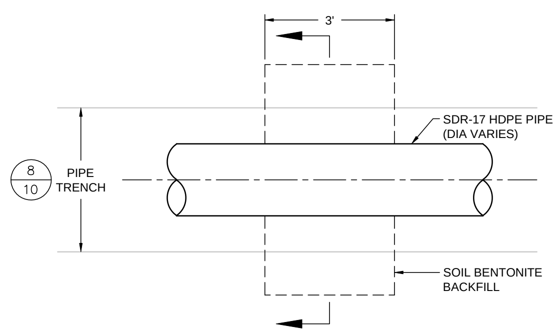
12/3 DETAIL
BLIND FLANGE (TYP)
SCALE: N.T.S.
XREF: FL1452.03X027



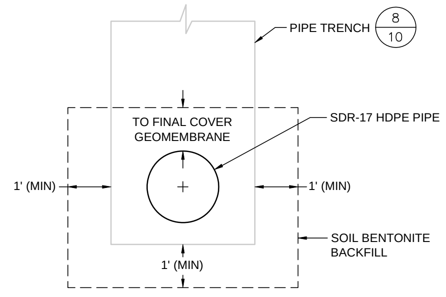
NOTE:

HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG THE HEADER PIPE (AT EACH HPH).

13/3 DETAIL
HEADER ACCESS RISER
SCALE: NTS
XREF: FL1452.03X028



PLAN



SECTION

14/5 DETAIL
ANTI-SEEP COLLAR
SCALE: N.T.S.
XREF: FL1452.03X030

NOTES:

1. THE ANTI-SEEP COLLAR SHALL EXTEND AT LEAST 1 FOOT BEYOND THE TRENCH IN EACH DIRECTION.
2. SOIL BENTONITE BACKFILL SHALL CONSIST OF MINIMUM 10% BENTONITE BY WEIGHT.

NOTE:

1. ALL GAS SYSTEM COMPONENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN HEREIN AND TECHNICAL SPECIFICATIONS. CONTRACTOR SHALL REFER TO BOTH OF THESE DOCUMENTS.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GCCS DETAILS II

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

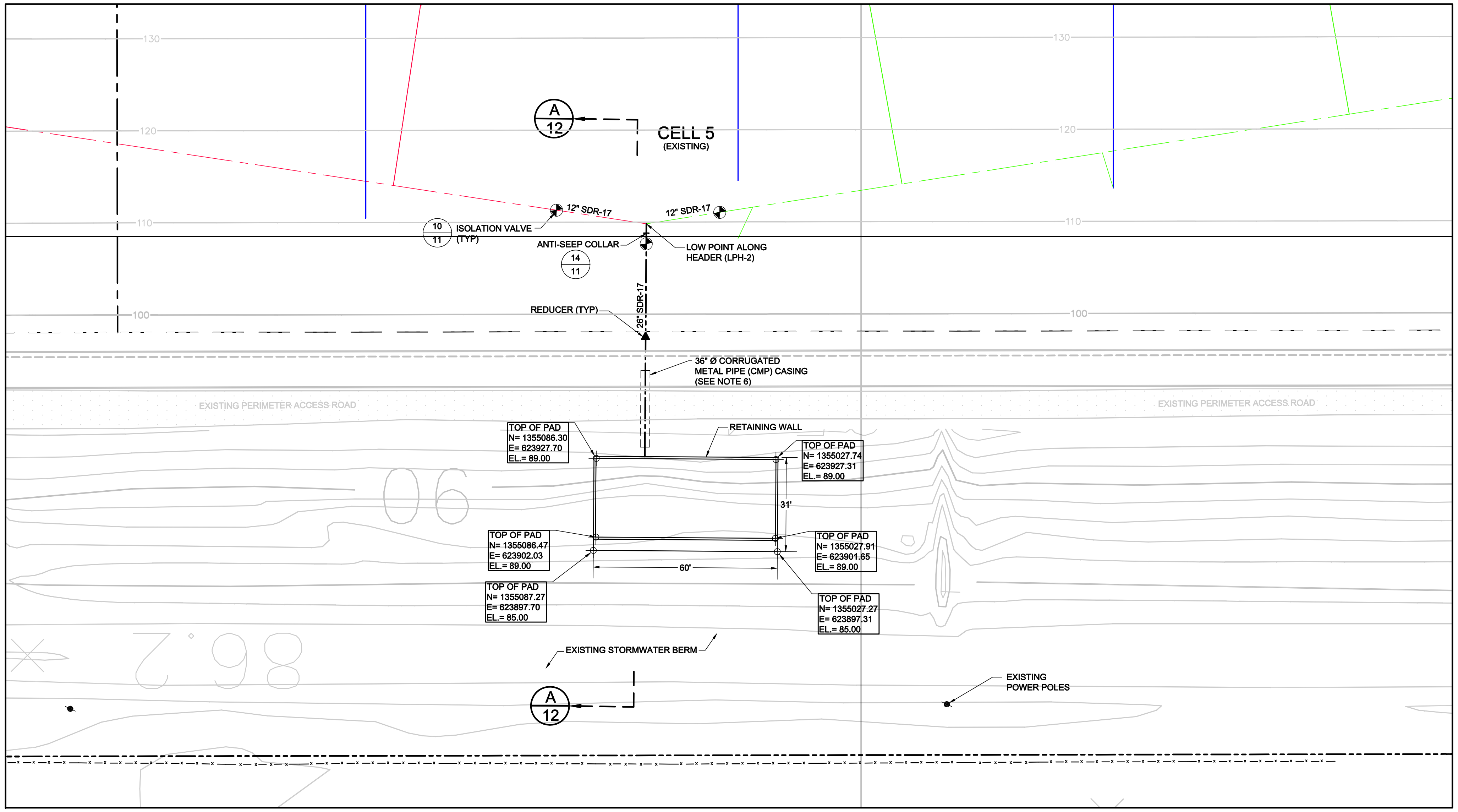
SIGNATURE

DATE

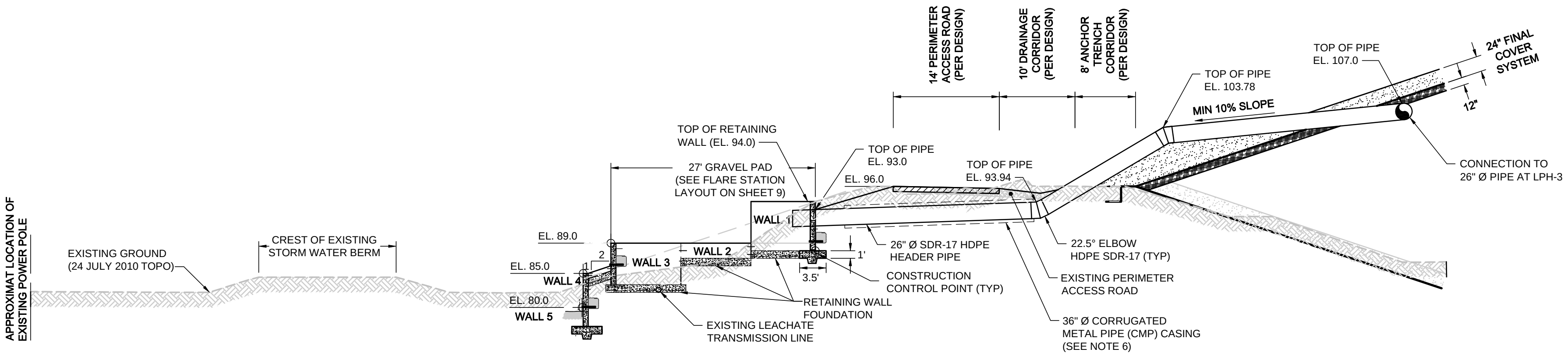
KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY: WT	DATE: DECEMBER 2010
DRAWN BY: JJA	PROJECT NO.: FL1832B.01
CHECKED BY: WT	FILE: FL1832B.01P080
REVIEWED BY: KBT	DRAWING NO.:
APPROVED BY: KBT	11 OF 14

CONSTRUCTION DRAWING



15
3
PLAN DETAIL
FLARE STATION LAYOUT
SCALE: 1" = 20'



A
12
SECTION
HEADER PIPE AT FLARE STATION # 1 (NOTE 7)
SCALE: 1" = 10'
XREF: FL1452.03X076

NORTH
0 20' 40'
SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- FINAL COVER ELEVATION (FEET)
- EXISTING FENCE LINE
- EXISTING LEACHATE TRANSMISSION LINE
- INSIDE EDGE OF BOTTOM LINER AT ELEVATION 96'
- HEADER PIPE
- REDUCER
- ISOLATION VALVE

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. THE TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING, INC. BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 24 JULY 2010.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.
6. CORRUGATED METAL PIPE OR AN EQUIVALENT APPROVED BY THE OWNER'S REPRESENTATIVE SHALL BE USED AS A CASING TO PROTECT PIPES ALONG THE ROAD CROSSING. THE ANNULUS BETWEEN THE PIPES AND CASING SHALL BE FILLED WITH CEMENT GROUT. OWNER'S REPRESENTATIVE MAY APPROVE CONSTRUCTION OF ROAD CROSSING WITHOUT A SLEEVE DEPENDING ON THE NATURE OF TRAFFIC EXPECTED ON THE ROAD, SIZE AND STRENGTH OF PIPE, PIPE COVER, ETC.
7. DETAILS FOR FLARE STATION PAD ARE PRESENTED HERE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL REFER TO CONSTRUCTION DRAWINGS PREPARED BY BAKER KLEIN ENGINEERING, P.L. FOR ALL DETAILS RELATED TO FLARE PAD CONSTRUCTION.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI
Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: FLARE STATION - PLAN AND CROSS SECTION (1)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
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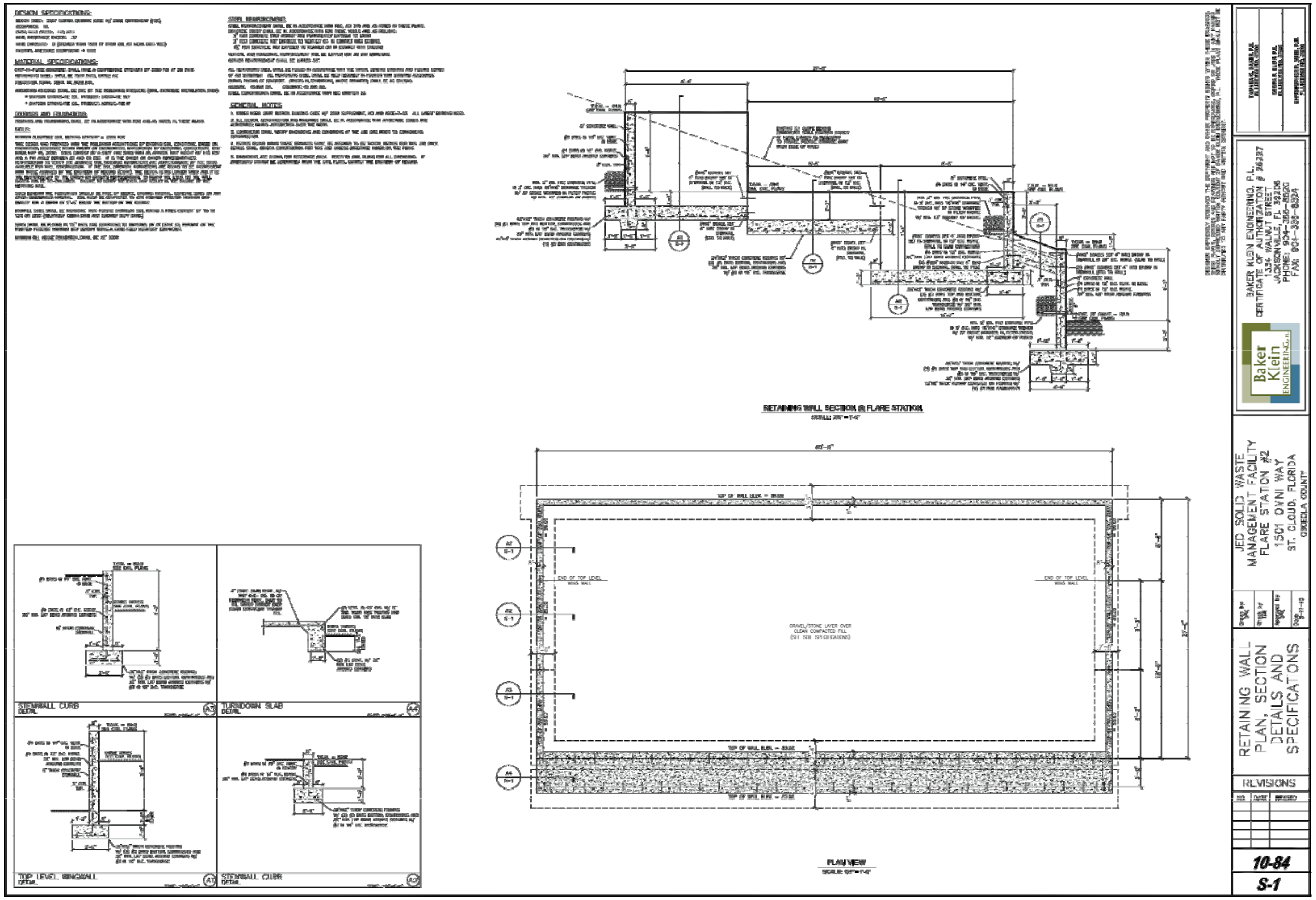
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	12 OF 14	

CONSTRUCTION DRAWING



NOTE:

1. DETAILS FOR FLARE STATION PAD ARE PRESENTED HERE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL REFER TO CONSTRUCTION DRAWINGS PREED BY BAKER KLEIN ENGINEERING, P.L. FOR ALL DETAILS RELATED TO FLARE PAD CONSTRUCTION.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: FLARE STATION - PLAN AND CROSS SECTION (2)

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS) PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

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DATE

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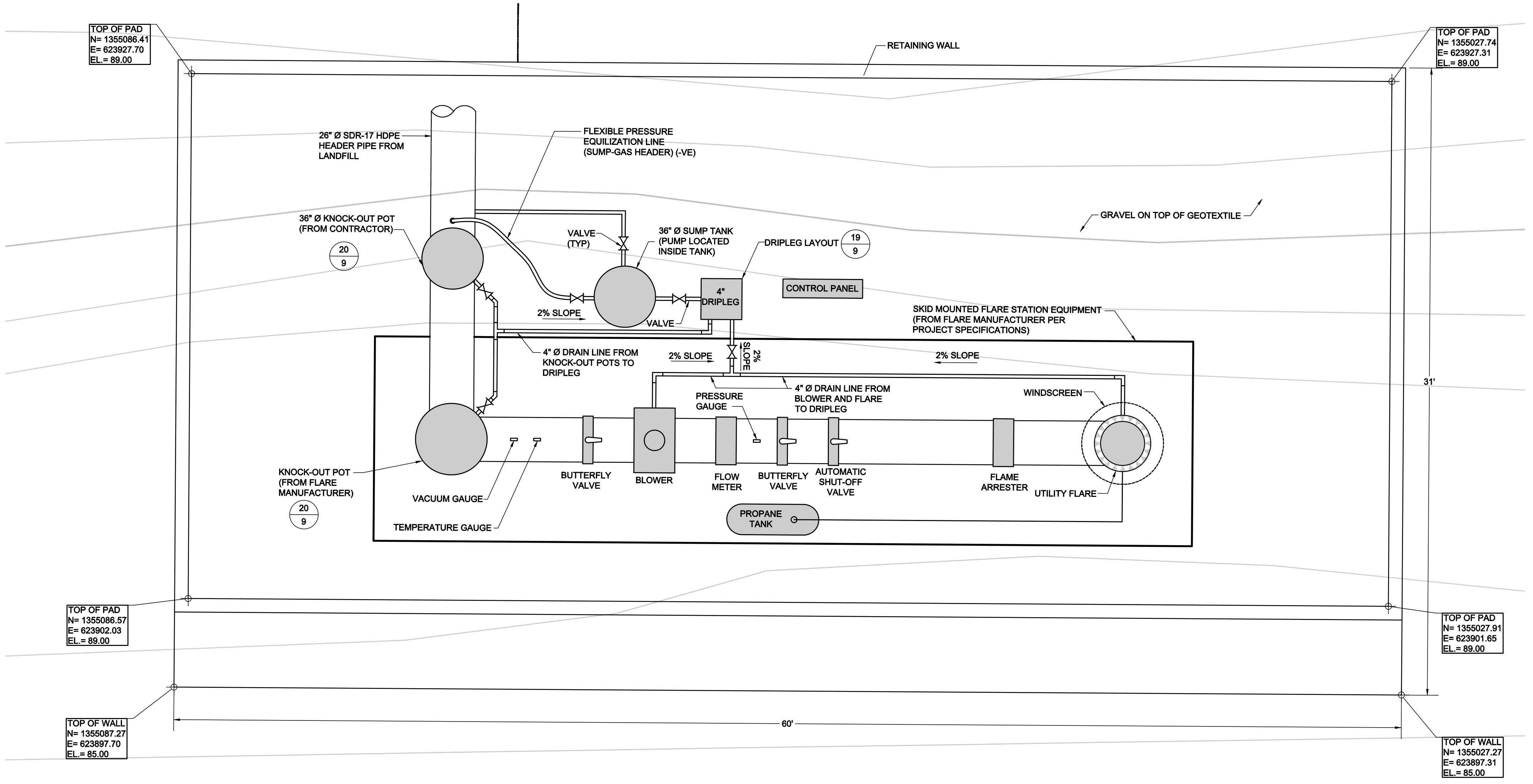
REVIEWED BY:	KBT	DRAWING NO.:	13 OF 14
APPROVED BY:	KBT		

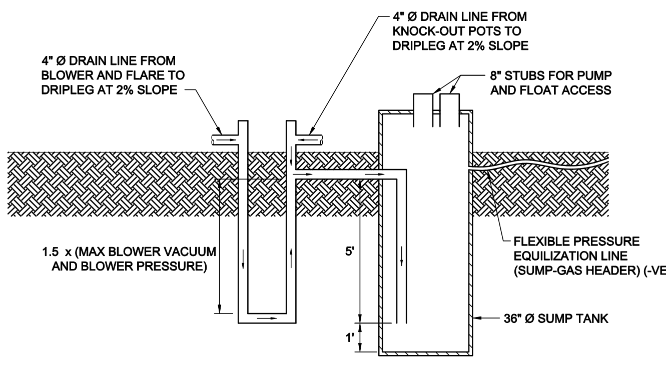
CONSTRUCTION DRAWING



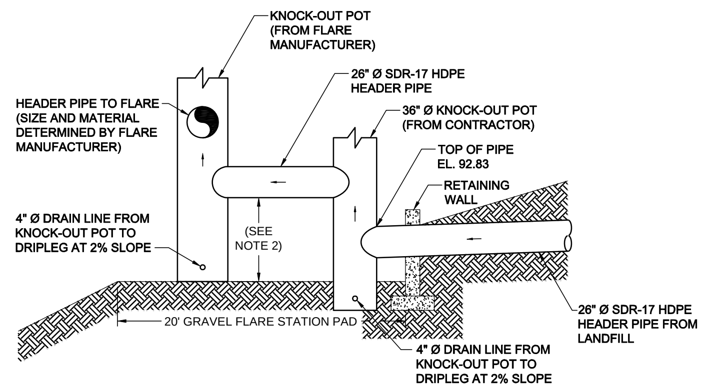
16/9 DETAIL
EQUIPMENT LAYOUT AT FLARE STATION
SCALE: 1" = 3'

NOTES:

1. FLARE STATION EQUIPMENT SHALL BE PROVIDED BY FLARE MANUFACTURER IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. EQUIPMENT ASSEMBLY INDICATED ON HERE IS FOR CONCEPT ONLY.
2. THE DETAILS FOR FLARE STATION LAYOUT, PIPING, EQUIPMENT, AND OTHER REQUIREMENTS WILL BE FINALIZED AFTER DISCUSSIONS WITH THE FLARE MANUFACTURER AND INSTALLER.
3. THE FLEXIBLE PRESSURE EQUALIZATION LINE SHALL BE INSTALLED NO LOWER THAN THE ELEVATION OF THE DRIPLEG PIPE THAT ENTERS THE CONDENSATE SUMP.



17/9 DETAIL
DRIPLEG LAYOUT
SCALE: 1" = 3'
XREF: FL1452.03X077



18/9 DETAIL
KNOCK-OUT POT LAYOUT
SCALE: 1" = 6'
XREF: FL1452.03X077

CONSTRUCTION DRAWING

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
1200 RIVERPLACE BOULEVARD, SUITE 710
JACKSONVILLE, FLORIDA 32207 USA
PHONE: 904.858.1818 - FAX: 904.396.1143
AUTHORIZATION CERTIFICATE NO. 4321

WSI
Omni Waste of Osceola County, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: FLARE STATION DETAIL

PROJECT: GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE 2 DISPOSAL AREA

SITE: J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

KWASI BADU-TWENEBOAH - LICENSE NO. 42460

DESIGN BY:	WT	DATE:	DECEMBER 2010
DRAWN BY:	JJA	PROJECT NO.:	FL1832B.01
CHECKED BY:	WT	FILE:	F1832B.01P100
REVIEWED BY:	KBT	DRAWING NO.:	
APPROVED BY:	KBT	14 OF 14	

APPENDIX B
TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

SECTION 02221

TRENCHING AND BACKFILLING INSIDE THE LIMITS OF WASTE

PART 1. GENERAL

1.01 SCOPE OF APPLICATION

A. Furnish all labor, material, tools, equipment and incidentals required to perform trench excavation and backfill operations necessary to achieve the specified grades and elevations shown on the Drawings. Review with the Owner's Representative the location, limits, and methods to be used prior to commencing work under this section. Provide support for as-built survey work by installing and removing survey markers.

1.02 REFERENCES

A. ASTM D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure).

1.03 SUBMITALS (RESERVED)

PART 2- PRODUCTS

2.01 PIPE BEDDING

A. Clean sandy soils or equivalent material approved by the Owner's Representative.

2.02 GENERAL FILL

A. Mineral soil, substantially free from organic materials, loam, wood, trash and other objectionable materials that may be compressible or that cannot be properly compacted. Common fill shall not contain stones larger than 4 in. in the largest diameter, broken concrete, masonry rubble, or other similar materials. Natural soils visually classified as SP-SM, SW-SM, SM, ML, SP-SC, SW-SC, SC, and CL or as mixtures of these soil types in Unified Soil Classification System (USCS) are acceptable soil types. Soils classifying as SW and SP can be used if they are mixed with adequate quantities of SM, ML, SC, and CL or amendments such as bentonite to facilitate tight compaction as approved by the Owner's Representative.

B. The soil shall be visually inspected and approved by the Owner's Representative before use. Contractor shall notify the Owner's Representative of any changes in the soil borrow source and submit new soil samples for inspection and approval.

2.03 STOCKPILES

A. All pipe bedding and other material purchased by the Contractor can be stockpiled on site as directed by the Owner's Representative.

B. General fill material soils are available onsite or in a borrow area adjacent to the site. The Contractor shall load and haul this material as directed by the Owner.

PART 3- EXECUTION

3.01 EXCAVATION

A. Trench excavation is anticipated to be through daily or intermediate soil cover and refuse.

B. Safety precautions must be taken during these construction activities that conform to all OSHA regulations, safety requirements of these specifications, and project Health and Safety Plan.

C. Contours of existing ground elevations are approximate and are based on aerial topographic mapping. The contours of the final cover are design future grades and may not represent conditions at the time of construction. The Contractor shall satisfy himself as to the existing contours and elevations at the time of construction.

D. Trenches shall be excavated to the alignments shown on the Drawings. Contractor shall be responsible for reviewing the field stakeouts along proposed trench alignments in the field before starting trenching work. Minimum bottom trench width shall be 2 times the pipe diameter but not less than 18 inches. If more than one pipe is to be installed in a common trench, pipes shall be separated by a horizontal distance of at least 1/4 times the larger pipe diameter.

E. Excavated cover material shall be separated from excavated refuse wherever possible and any cover material free of refuse shall be used as backfill material. Any material not suitable for backfill will be loaded and hauled to the working face by the Contractor for disposal as directed by the Owner.

F. The work area shall be cleared of refuse and litter at the end of each work day. The excavated refuse and collected litter are to be loaded and hauled by the Contractor to the operating portion of the landfill for disposal.

G. If waste disposal operations at the working face are not going on at a particular day or time, the Contractor shall store the excavated materials in stockpiles on the landfill

surface. These stock piles shall either be covered with: (i) temporary plastic covers that are anchored firmly by use of weights to prevent uplift by winds; or (ii) a minimum of 12 in of soil cover. The contractor shall haul and dispose the stored materials as soon as the waste disposal operations at the working face commence. The Contractor shall also clean the storage location of all excavated materials.

H. To the extent possible, the trench invert shall slope uniformly in accordance with the Drawings. Minimum trench slope will be 5 percent for all gas collection pipe trenches within waste footprint.

I. The Contractor may not excavate more trench than can be completely backfilled after installation of the pipe. Excavations shall not be left open overnight.

J. All excavation shall be open cut unless otherwise permitted by the Owner's Representative.

3.02 LIQUIDS & WATER

A. Perched pockets of leachate may be encountered during trenching operations. The Contractor shall notify the Owner's Representative immediately if leachate is encountered. The Owner's Representative will furnish revised construction plans which may include backfilling the affected area, realignment of the trench, sump installation, or placement of a gravel French drain (or some combination of these alternatives).

B. The Contractor shall take every precaution to prevent water from entering an open trench. Should water enter the trench the water shall be removed so as to return the trench bottom to a firm, dry condition.

3.03 ROAD CROSSING

A. Schedule all road crossings with Owner's Representative to minimize disruption to waste disposal operations and traffic.

B. Corrugated metal pipe or an equivalent approved by the Owner's Representative shall be used as a casing to protect pipes along the road crossing. The annulus between the pipes and casing shall be filled with cement grout. Owner's Representative may approve construction of road crossing without a sleeve depending on the nature of traffic expected on the road, size and strength of pipe, pipe cover, etc.

3.04 BLASTING

A. Blasting will not be permitted for purposes of excavation.

3.05 BACKFILL

A. Pipe bedding shall be placed and compacted (maximum of 9 inch lifts) using hand compaction tools, as required. The depth of bedding shall be a minimum of 6 inches below and above the pipe. This bedding material shall provide continuous support for the pipe and be well-compacted and free of rocks and other debris.

B. Next, the trench shall, be backfilled with general fill, placed and compacted in 8-12 inch layers using mechanical compaction equipment. The compaction of this material shall conform to the surrounding material and to the satisfaction of the Owner's Representative. During common fill placement all roots, debris and stones larger than 4 inches in largest dimension shall be completely removed from the backfill material.

3.06 FINISH GRADING

A. All areas covered by the work, including excavated and filled sections, shall be uniformly back-bladed to the finished ground elevations. The finish surface shall be reasonably smooth and free of irregularities and shall provide a presentable and well-drained area.

B. Excess backfill material shall be stockpiled onsite as directed by the Owner's Representative.

C. The work area shall be cleaned and restored by the Contractor to a condition ready for re-vegetation or final cover construction by the Owner.

3.07 COMPACTION

A. Compaction of backfill material shall be by tracking over the fill material with Contractor's onsite pipeline equipment to be consistent with the surrounding daily or intermediate cover material.

3.08 PROTECTION OF UNDERGROUND PIPING AND UTILITIES

A. The Contractor shall take all necessary precautions to protect underground piping during the course of the construction. The Owner's Representative/Owner shall make available information pertaining to the location and existence of underground piping and utilities. Contractor shall be responsible for field verification of the locations. Contractor shall perform excavation using hand tools close to the anticipated pipe locations.

3.09 FIELD SURVEYING SUPPORT

A. Proposed trench routes shall be marked on the ground using stakes by the surveyor. The Contractor shall review the staked out route and discuss with the Owner's Representative and obtain approval before commencing work.

B. The Contractor shall provide markers to perform as-built survey along the trench location to survey the pipe line route and elevations generally at 100 feet intervals and more frequently if the alignment of the route changes. The markers shall be 6-in diameter PVC pipes or equivalent installed to stand vertically while touching the buried pipes. As an alternative, the contractor may choose to leave the top of pipe exposed at similar intervals, to be backfilled with soil following completion of the as-built survey. All marker pipes shall be removed by the Contractor after the as-built survey to be performed by the Owner. The marker pipe locations shall be backfilled with soil by the Contractor.

3.10 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. Field quality control shall be the responsibility of the Contractor. Field quality assurance shall be the responsibility of the Owner's Representative.

B. Visual soil classification and approval of soil by the Owner's Representative.

C. Field inspection of all construction materials and approval by the Owner's Representative.

D. Field inspection of trenching and backfilling work and approval by the Owner's Representative.

END OF SECTION

SECTION 02222

TRENCHING AND BACKFILL OUTSIDE THE LIMITS OF WASTE

PART 1. GENERAL

1.01 SCOPE OF APPLICATION

A. Furnish all labor, material, tools, equipment and incidentals required to perform trench excavation and backfill operations necessary to achieve the specified grades and elevations shown on the Drawings. Review with the Owner's Representative the location, limits and methods to be used prior to commencing work under this section. Provide support for as-built survey work by installing and removing survey markers.

1.02 REFERENCES

A. ASTM D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure).

1.03 SUBMITALS (RESERVED)

PART 2- PRODUCTS

2.01 PIPE BEDDING

A. Clean sandy soils or equivalent material approved by the Owner's Representative.

2.02 GENERAL FILL

A. Mineral soil, substantially free from organic materials, loam, wood, trash and other objectionable materials that may be compressible or that cannot be properly compacted. Common fill shall not contain stones larger than 4 in. in the largest diameter, broken concrete, masonry rubble, or other similar materials. Natural soils visually classified as SP-SM, SW-SM, SM, ML, SP-SC, SW-SC, SC, and CL or as mixtures of these soil types in Unified Soil Classification System (USCS) are acceptable soil types. Soils classifying as SW and SP can be used if they are mixed with adequate quantities of SM, ML, SC, and CL or amendments such as bentonite to facilitate tight compaction as approved by the Owner's Representative.

B. The soil shall be visually inspected and approved by the Owner's Representative before use. Contractor shall notify the Owner's Representative of any changes in the soil borrow source and submit new soil samples for inspection and approval.

2.03 STOCKPILES

A. All pipe bedding and other material purchased by the Contractor can be stockpiled on site as directed by the Owner's Representative.

B. General fill material soils are available onsite at the designated borrow area. The Contractor shall load and haul this material as directed by the Owner.

PART 3- EXECUTION

3.01 EXCAVATION

A. Trench excavation is anticipated to be in the berms constructed on-site and/or in the native soils.

B. Safety precautions must be taken during these construction activities that conform to all OSHA regulations, safety requirements of these specifications, and project Health and Safety Plan. If refuse is encountered, inform the Owner's Representative immediately.

C. Contours of existing ground elevations are approximate and are based on aerial topographic mapping. The contours and elevations of the present ground are believed to be reasonably correct, and are presented only as an approximation. However, the Contractor shall satisfy himself as to the existing contours and elevations.

D. Trenches shall be excavated to the alignments shown on the Drawings. Contractor shall be responsible for reviewing the field stakeouts along proposed trench alignments in the field before starting trenching work. Minimum bottom trench width shall be 2 times the pipe diameter but not less than 18 inches. If more than one pipe is to be installed in a common trench, pipes shall be separated by a horizontal distance of at least 1/4 times the larger pipe diameter.

E. Excavated material shall be reused as backfill material. Any material not suitable for backfill will be loaded and hauled to the working face by the Contractor for disposal as directed by the Owner.

F. The Contractor may not excavate more trench than can be completely backfilled after installation of the pipe. Excavations shall not be left open overnight.

G. If waste disposal operations at the working face are not going on at a particular day or time, the Contractor shall store the excavated materials in stockpiles near the excavation without obstruction to traffic and other landfill operations. These stock piles shall be covered with temporary plastic covers and anchored firmly by use of weights to prevent uplift by winds. The contractor shall haul and dispose the stored materials as soon as the

waste disposal operations at the working face commence. The Contractor shall also clean the storage location of all excavated materials.

H. To the extent possible, the trench invert shall slope uniformly in accordance with the Drawings. Minimum trench slope will be 1 percent for gas pipe trenches. Slight adjustments in the depths and alignments may be necessary to maintain a minimum cover of 2 feet. Decrease in pipe slope is not acceptable. There are no minimum slope requirements for trenches that will not have gas collection pipes installed in them (i.e. no minimum slope requirements for compressed air, condensate forcemain, and leachate forcemain pipe trenches).

I. All excavation shall be open cut or ditch witched unless otherwise permitted by the Owner's Representative.

3.02 LIQUIDS & WATER

A. The Contractor will be responsible for the furnishing, operation, and maintaining of dry excavations, and shall pump out or otherwise remove and dispose of as fast as it may collect, any water, other liquids, which may be found or may accumulate in the excavations, regardless of whether it be water or liquid from groundwater, storm water runoff, or from existing conduits and works. If such water be muddy or carrying settleable solids, it shall be disposed of in a proper manner.

B. There shall be at the work site, at all times during construction, proper and approved machinery of sufficient capacity to meet the maximum requirements for the removal and disposal of water or other liquids, in such manner as not to interfere with the proper laying of pipeline or other work under this or other contract, nor endanger existing structures.

C. The Contractor shall take every precaution to prevent water from entering an open trench. Should water enter the trench the water shall be removed so as to return the trench bottom to a firm, dry condition.

3.03 ROAD CROSSING

A. Schedule all road crossings with Owner's Representative to minimize disruption to waste disposal operations and traffic.

B. Corrugated metal pipe or an equivalent approved by the Owner's Representative shall be used as a casing to protect pipes along the road crossing. The annulus between the pipes and casing shall be filled with cement grout. Owner's Representative may approve construction of road crossing without a sleeve depending on the nature of traffic expected on the road, size and strength of pipe, pipe cover, etc.

3.04 BLASTING

A. Blasting will not be permitted for purposes of excavation without approval of the Owner's Representative and obtaining all relevant permits.

3.05 BACKFILL

A. Pipe bedding shall be placed and compacted (maximum of 9 inch lifts) using hand compaction tools, as required. The depth of bedding shall be a minimum of 6 inches below and above the pipe. This bedding material shall provide continuous support for the pipe and be well-compacted and free of rocks and other debris.

B. Next, the trench shall be backfilled with general fill, placed and compacted in 8-12 inch layers using mechanical compaction equipment. The compaction of this material shall conform to Part 3, Section 3.07 of this specification. During common fill placement all roots, debris and stones larger than 4 inches in largest dimension shall be completely removed from the backfill material.

C. Remove excessively wet soil before placement or additional lifts.

3.06 FINISH GRADING

A. All areas covered by the work, including excavated and filled sections, shall be uniformly back-bladed to the finished ground elevations. The finish surface shall be reasonably smooth and free of irregularities and shall provide a presentable and well-drained area.

B. Excess backfill material shall be stockpiled onsite as directed by the Owner's Representative.

C. The work area shall be cleaned and restored to a condition ready for revegetation by the Owner.

3.07 COMPACTION

A. Compaction of backfill material within the waste footprint shall be accomplished by tracking with construction equipment (e.g. bulldozer) to match the grades of the surrounding cover material.

B. For compaction of backfill outside the waste boundary, backfill shall be compacted to at least 95 percent of the maximum standard Proctor dry unit weight at a moisture content generally within ±3 percent of the optimum moisture content as determined by ASTM D 698, or as directed by the Owner's Representative.

C. After completion of the work, or when so ordered by the Owner's Representative, the material remaining in stockpile areas and not needed for other works, shall be rough graded to the grades and elevations directed by the Owner's Representative.

3.08 PROTECTION OF UNDERGROUND PIPING AND UTILITIES

A. The Contractor shall take all necessary precautions to protect underground piping during the course of the construction. The Owner's Representative/Owner shall make available information pertaining to the location and existence of underground piping and utilities. Contractor shall be responsible for field verification of the locations. Contractor shall perform excavation using hand tools close to the anticipated pipe locations.

3.09 FIELD SURVEYING SUPPORT

A. Proposed trench routes shall be marked on the ground using stakes by the surveyor. The Contractor shall review the staked out route and discuss with the Owner's Representative and obtain approval before commencing work.

B. The Contractor shall provide markers to perform as-built survey along the trench location to survey the pipe line route and elevations generally at 100 feet intervals and more frequently if the alignment of the route changes. The markers shall be 2-in diameter PVC pipes or equivalent installed to stand vertically while touching the buried pipes. All marker pipes shall be removed by the Contractor after the as-built survey to be performed by the Owner. The marker pipe locations shall be backfilled with bentonite by the Contractor.

3.10 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. Field quality control shall be the responsibility of the Contractor. Field quality assurance shall be the responsibility of the Owner's Representative.

B. Visual soil classification and approval of soil by the Owner's Representative.

C. Field inspection of all construction materials and approval by the Owner's Representative.

D. Field inspection of trenching and backfilling work and approval by the Owner's Representative.

END OF SECTION

SECTION 02610

LANDFILL GAS WELL

PART 1 - GENERAL

1.01 SCOPE OF APPLICATION

A. Supply all equipment, materials, and labor needed to install landfill gas (LFG) extraction wells, wellheads, well hoses, and connections to lateral gas collection pipes as specified herein and as indicated on the Drawings.

1.02 REFERENCES

A. ASTM D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure).

1.03 SUBMITTALS

A. Submit to the Owner's Representative Certificates of Compliance on materials furnished, and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, and inspection of pipe and appurtenances furnished.

B. The Contractor shall submit to the Owner's Representative samples of all well backfill materials furnished.

C. The Contractor shall keep detailed well logs and construction diagrams for all wells drilled, including the total depth of the well, the static water level, the temperature of spoils, depth, thickness, and description of soil or waste strata, (including dates from any readable material), and the occurrence of any water bearing zones. Well logs shall be submitted to the Owner's Representative.

D. The Contractor shall obtain the ground surface elevation and location survey data from the Owner after the as-built survey and include them on the well construction logs.

1.04 SITE CONDITIONS

A. Obstructions and saturated conditions such as sludge, and foundry sands are sometimes encountered when drilling in a landfill, many of which can be drilled through. Contractor is expected to make reasonable effort to drill through obstructions and saturated conditions and will be paid for offset re-drilling and boring abandonment only if approval is given by the Owner's Representative. Contractor will be paid for abandonment of abandoned hole and for well installation at new location. Wells shall not be relocated under any circumstances without the permission of the Owner's Representative.

PART 2- PRODUCTS

2.01 AGGREGATE

A. The aggregate shall be classified as GP in accordance with the Unified Soil Classification System (per ASTM D 2487), and shall meet the AASHTO M43 gradation requirements for No. 57 coarse aggregate. Sieve analysis for this coarse aggregate shall be performed in accordance with ASTM C 136. The gradation for #57 coarse aggregate, by AASHTO standards, is as follows:

- 100% passing a 1.5 inch sieve;
- 95-100% passing a 1 inch sieve;
- 25-60% passing a ½ inch sieve;
- 0-10% passing the #4 sieve; and
- 0-5% passing the #8 sieve.

B. The aggregate shall have less than 2 percent by weight passing the No. 200 sieve when tested in accordance with ASTM C 136.

C. The aggregate shall be tested for carbonate content by means of ASTM D 3042 – "Standard Test Method for Insoluble Residue in Carbonate Aggregates" with the following revision to the method: the aggregate shall have less than 5 percent loss of weight when tested at a pH of 4 instead of the pH specified in ASTM D 3042.

2.02 BENTONITE SLURRY MIX

A. Coarse-ground, granualized bentonite from an approved source is to be mixed thoroughly with potable water at a ratio of 5 gallons of water to every 50 lbs. of bentonite.

B. "Soil/bentonite plug," if used, shall refer to a mixture consisting of four parts soil backfill to one part bentonite.

2.03 GENERAL FILL

A. Mineral soil that is substantially free from organic materials, loam, wood, trash, and other objectionable materials that may be compressible or that cannot be properly compacted. Common fill shall not contain stones larger than 4 in. in the largest diameter, broken concrete, masonry rubble, or other similar materials. Natural soils visually classified as SP-SM, SW-SM, SM, ML, SP-SC, SW-SC, SC, and CL or as mixtures of these soil types in Unified Soil Classification System (USCS) are acceptable soil types. Soils classifying as SW and SP can be used if they are mixed with adequate quantities of bentonite to facilitate construction of low permeability backfill around the wells as approved by the Owner's Representative.

B. The soil shall be visually inspected and approved by the Owner's Representative before use. Contractor shall notify the Owner's Representative of any changes in the soil borrow source and submit new soil samples for inspection and approval.

2.04 FILTER FABRIC

A. 8 oz/yd^2 Non-woven Geotextile donut shaped filter fabric isolation ring with a 36-in diameter and 8-in opening.

2.05 SOLID WALL PIPE

A. All pipe and fittings shall be rigid PVC Schedule 80. Refer to Section 15061 for PVC pipe.

2.06 SLOTTED PIPE

A. Slots in PVC extraction well piping shall be 8 inch long by 3/8 inch wide, spaced 90° around the circumference of pipe and 4 inch along the length of the pipe. Contractor shall present other configuration types to the Owner's Representative for approval. Slotting may be done in the factory, or in the field. If slotting is performed in the field, the slotting must be completed per the specs and approved by the Owner's Representative on site.

2.07 WELLHEAD

A. All wellheads shall be 2-in LandTec Accu-Flo wellheads or equivalent approved by the Owner's Representative and consistent with the Drawings.

2.08 WELLHOSE

A. All well hoses shall be standard 2-in LandTec well hoses or equivalent approved by the Owner's Representative and consistent with the Drawings.

PART 3- EXECUTION

3.01 DRILLING

A. Extraction wells shall be drilled at the locations marked on the field by the Owner's Representative. Contractor shall verify all field markings with the Owner's Representative before starting drilling work. Wells shall not be relocated under any circumstances without the permission of the Owner's Representative.

B. Extraction wells are to be 36 inch diameter, drilled to the depth shown on the Drawings. Contractor must use dry drilling equipment; wet rotary drilling equipment may not be used. All borings shall be made with bucket type augers.

C. The boring depths shall be evaluated based on the information presented on the Drawings. The boring depths may be adjusted in the field by the Owner's Representative. Three reasons limiting depth might be as follows:

1. If water is encountered in a boring, the Contractor may be directed to drill beyond the point at which it was encountered. If wet conditions remain, the boring may be terminated and the length of perforated pipe adjusted by the Owner's Representative, or the well may be relocated. If wet conditions cease (e.g. due to trapped water layer), then drilling will continue to the design depth.

2. If a no-progress obstruction is encountered, the Contractor shall make a conscious effort to drill through the obstruction. If drilling through is not possible, the Contractor shall immediately contact the Owner's Representative and as directed by the Owner's Representative install a shorter well or relocate the well and abandon the drill hole. If the drill rates drop below 2 linear feet of drilling per hour due to the presence of any obstructions, the Contractor shall immediately contact the Owner's Representative/Owner to inform them of the situation. If the Owner's Representative/Owner asks the Contractor to continue drilling through the obstruction, the Contractor can charge the Owner at the hourly drilling rate provided in the bid form until the drilling rate increases above 2 linear feet of drilling per hour or the Owner's Representative/Owner instructs the Contractor to stop the drilling.

3. If for any reason the Contractor suspects that drilling may have advanced to or beyond the liner system. The Contractor shall immediately notify the Owner and the Owner's Representative in this case.

E. As soon as drilling is completed, a safety screen shall be placed over the top of the bore. This screen shall stay in place until backfilling is within 4 feet of the surface. Safety screen size should be large enough to accommodate all backfill materials and any tools used during backfill yet not large enough for any human to accidentally fall through.

F. The bore for the well shall be both vertical and straight and the well pipe shall be installed in the center of the bore hole. The Contractor will take all tension off of the pipe by mechanical means and center the pipe in the middle of the borehole before starting to backfill. Contractor shall use clamping devices, or other method approved by Owner's Representative, to aid in centering of the pipe. Wells that are leaning more than 5 degrees from the vertical shall be replaced by the Contractor at his own expense.

G. PVC well pipe shall be solvent cemented and lag bolted.

H. Contractor shall leave a minimum 5 feet stickup of the solid well casing above the existing landfill grades (daily or intermediate cover) at the well location.

I. Contractor shall remove all working platforms constructed for the drill rig after the installation of the well. Hauling, construction, removal and other work tasks related to well installation shall be carried out with minimal disturbance to the vegetation on the landfill.

3.02 BACKFILLING

A. Backfilling of the well shall commence immediately after well drilling is completed and the well piping has been installed in the borehole. Backfill materials shall be installed as indicated on the Drawings and as approved by the Owner's Representative.

B. Gravel pack shall be poured or scooped through the screen at a rate that will not endanger the integrity of the well casing. Care shall be taken during backfilling to prevent bridging.

C. The filter fabric shall be installed after the gravel backfill reached the level shown on the Drawings.

D. The well seal will be formed by evenly distributing two 50 lb. bags of bentonite material around the annulus of the well and then adding 10 gallons of fresh water in a manner that will allow for a thorough saturation of the bentonite material. This process will be continued until a minimum plug thickness of 2 feet has been achieved. Alternatively, well seal can be formed by mixing bentonite with water in a surface mixer and then pouring the slurry down hole.

E. Soil backfill shall be rodded in the boring to provide even distribution and compaction. Finished grade at the well location shall prevent any water accumulation near the well location by promoting drainage away from the well.

F. All material layer thicknesses shall be verified by taking measurements before, during, and after installation of each layer.

3.03 WELLHEAD AND HOSE INSTALLATION

A. Wellheads and hoses shall be installed per the manufacturer specifications.

B. Wellhead and hose installations shall provide the flexibility to make adjustments to accommodate differential settlements. Installation shall be at 1 feet above minimum wellhead adjustment.

C. Well hose connection shall be about 4 feet length and shall be fitted in a manner that prevents the accumulation of condensate.

D. The well pipe and lateral pipe vertical extension shall be spaced at 2 feet ± 6 inches. The lateral pipe vertical extension shall be sticking up about 4 feet from the existing grades (daily or intermediate cover) of the landfill. This would result in the well casing pipe being 1 feet above the lateral pipe vertical extension.

3.04 DISPOSAL

A. Excavated refuse is to be loaded and hauled by the Contractor to the operating portion of the landfill for disposal as directed by the Owner.

B. If waste disposal operations at the working face are not going on at a particular day or time, the Contractor shall store the excavated materials in stockpiles on the landfill surface. These stock piles shall either be covered with: (i) temporary plastic covers that are anchored firmly by use of weights to prevent uplift by winds; or (ii) a minimum of 12 in of soil cover. The contractor shall haul and dispose the stored materials as soon as the waste disposal operations at the working face commence. The Contractor shall also clean the storage location of all excavated materials.

3.05 INITIAL DEWATERING

A. The Contractor shall dewater the wells after the installation if needed. The Contractor shall provide all materials required to dewater and shall also dispose of the pumped liquid as directed by the Owner/Owner's Representative.

3.06 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. Field quality control shall be the responsibility of the Contractor. Field quality assurance shall be the responsibility of the Owner's Representative.

B. Visual soil classification and approval of soil by the Owner's Representative.

C. Field inspection of all construction materials and approval by the Owner's Representative.

D. Field inspection of well installation work and approval by the Owner's Representative.

E. All wells shall be inspected by the Owner's Representative after setting the well casing in the borehole and backfilling with gravel, but before placement of bentonite, unless as directed otherwise by the Owner's Representative on a case by case basis. The Contractor shall inform the Owner's Representative before backfilling with bentonite for each well.

END OF SECTION

SECTION 15051
HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART I GENERAL

1.01 SCOPE OF APPLICATION

A. Supply and installation of SDR 17 High Density Polyethylene (HDPE) single contained gas collection pipe and fittings in nominal pipe sizes of 2, 4, 6, 8, 12, 14, 18, 20, and 26 inches.

B. Supply and installation of SDR 17 High Density Polyethylene (HDPE) single contained condensate gravity drain or transfer pipe and fittings in nominal pipe size of 4 and 6 inches.

1.02 REFERENCES (Reserved)

1.03 SUBMITTALS

A. The Contractor shall submit all manufacturer quality assurance certificates to the Owner's Representative and obtain approval before using the materials in construction.

B. The Contractor shall submit all field pressure testing results to the Owner's Representative for approval.

1.04 MANUFACTURER'S QUALITY ASSURANCE

A. The pipe and fittings manufacturer shall have an established quality assurance program responsible for inspecting incoming and outgoing materials.

B. The pipe and fittings manufacturer shall have an established quality assurance program responsible for assuring the long term performance of materials and products.

C. The pipe and fitting manufacturer shall maintain permanent QC and QA records.

1.05 PACKAGING DELIVERY AND HANDLING

A. The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport by commercial carrier. When delivered, a receiving inspection shall be performed by the Contractor, and any shipping damage reported to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed,

and tested in accordance with manufacturer's recommendations, and the requirements of this specification.

PART 2- PRODUCTS

2.01 PHYSICAL PROPERTIES:

A. Materials used for the manufacture of polyethylene pipe and fittings shall meet all industry standards.

B. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density and other physical properties.

2.02 PIPE AND FITTINGS:

A. DIMENSIONS:

1. Pipe Dimensions: The nominal inside diameter of the pipe shall be true to the specified pipe size in accordance with ASTM D 2513. Standard laying lengths shall be 40 feet ±2". Exceptions may be made for 2 inch diameter pipes in coils if suitable strengthening devices are used.

2. Fitting Dimensions: Fittings such as coupling, flanges, wyes, tees, adaptors, etc. for use in laying pipe shall have standard dimensions that conform to ASTM.

B. Where possible, pipe and fittings should be produced by the same manufacturer from identical materials meeting the requirements of this specification. Special or custom fittings may be exempted from this requirement.

C. Pipe and fittings shall be pressure rated to meet the service pressure requirements specified by the Owner's Representative. Whether molded or fabricated, fittings shall be fully pressure rated to at least the same service pressure rating as the pipe to which joining is intended.

D. Marking:

A. Each standard and random length of pipe and fitting in compliance with this standard shall be clearly marked with the following information:

1. ASTM Standard Designation

2. Pipe Size

3. Class & Profile Number

4. Production Code

5. Standard Dimension Ratio

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Field quality control is the responsibility of the Contractor. The Owner's Representative shall inspect and approve the Contractor's field quality control measures.

B. Pipe shall be rejected for failure to conform to Specifications or the following:

1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 in. in length at either end of pipe which could be cut off and discarded. Pipes within one shipment shall be rejected if defects exist in more than 5% of shipment or delivery.

2. Cracks sufficient to impair strength, durability or serviceability of pipe.

3. Defects indicating improper proportioning, mixing, and molding.

4. Damaged ends, where such damage prevents making satisfactory joint.

C. Acceptance of fittings, stubs or other specifically fabricated pipe sections shall be based on visual inspection at job site and documentation of conformance to these Specifications.

3.02 INSTALLATION

A. Trench, backfill, and compact in accordance with Sections 02221 and 02222.

B. Heat Fusion of Pipe:

1. Weld in accordance with manufacturer's recommendation for butt fusion methods. Provide at least one fusion operator certified by the pipe manufacturer and with prior field experience in at least 3 projects to manage the fusing operations for the project.

2. Butt fusion equipment for joining procedures shall be capable of meeting conditions recommended by pipe manufacturer including, but not limited to, temperature requirements, alignment, and fusion pressures.

3. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations.

4. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.

5. Do not subject pipe to strains that will overstress or buckle piping or impose excessive stress on joints.

6. Branch saddle fusions shall be joined in accordance with manufacturer's recommendations and procedures. Branch saddle fusion equipment shall be of size to facilitate saddle fusion within trench.

7. Before butt fusing pipe, inspect each length for presence of dirt, sand, mud, shavings, and other debris or animals. Remove debris from pipe.

8. Cover at end of each working day open ends of fused pipe. Cap to prevent entry by animals or debris.

9. Use compatible fusion techniques when polyethylenes of different melt indexes are fused together. Refer to manufacturer's specifications for compatible fusion.

C. Flange Jointing:

1. Use on flanged pipe connection sections.

2. Connect slip-on carbon steel backup flanges with stainless steel nuts and bolts.

3. Butt fuse fabricated flange adapters to pipe.

4. Observe following precautions in connection of flange joints.

a. Align flanges or flange valve connections to provide tight seal. Require nitrile-butadiene gaskets if needed to achieve seal. Gaskets are required for flange/valve connections.

b. Place U.S. Standard round washers as may be required on some flanges in accordance with manufacturer's recommendations. Bolts shall be lubricated in accordance with manufacturers recommendations.

c. Tighten flange bolts in sequence and accordance with manufacturer's recommendations. Do not over-torque bolts.

5. Pull bolt down by degrees to uniform torque in accordance with manufacturer's recommendation.

6. Protect below grade bolts and flanges by covering with a polyethylene wrap. Duct tape warp to HDPE pipe.

7. Electrofusion couplers, where used, installed per manufacturer's specifications.

D. Pipe Placement:

1. Grade control equipment shall be of type to accurately maintain design grades and slopes during installation of pipe.

2. Dewatering: Remove standing water in trench before pipe installation.

3. Unless otherwise specifically stated, install pipe in accordance with manufacturer's recommendations.

4. Maximum lengths of fused pipe to be handled as one section shall be placed according to manufacturer's recommendations as to pipe size, pipe SDR, and topography so as not to cause excessive gouging or surface abrasion; but not to exceed 500 ft.

5. Cap pipe sections longer than single joining (usually 40 ft.) on both ends during placement except during fusing operations.

6. Notify Owner's Representative prior to installing pipe into trench and allow time for Owner's Representative's inspection. Correct irregularities found during inspection.

7. Complete tie-ins within trench whenever possible to prevent overstressed connections.

8. Allow pipe sufficient time to adjust to trench temperature prior to testing, segment tie-ins or backfilling activity.

9. Install reducers adjacent to laterals and tees.

10. To reduce branch saddle stress, install saddles at slope equal to and continuous with lateral piping.

11. Place in trench by allowing minimum 12 inch/100 ft for thermal contraction and expansion.

12. Coordinate construction of pipes near access roads with OWNER to limit impediment of landfill operations or operations of other Contractors.

3.03 PIPE TESTING

A. Air Test all pipe sections and fittings after placement in trench, in accordance with manufacturer's recommendations. Wells and other system openings should be blocked off for testing. Pressure test below ground systems (only). Special precautions are required for this type of testing. It is not recommended that above ground systems be pressure tested.

B. Keep all persons at a safe distance during pressure testing.

C. Disconnect the test section from all GCCS components that are not being tested. Failure of a section should result in compressed air being released to atmosphere.

D. Completely backfill extraction pipes before pressure testing to provide adequate restraint.

E. Heat fusion joints most be properly cooled before pressure testing. Mechanical connections should be installed and tightened per manufacturer instructions.

F. Repair work should be carried out only after release of pressure. Release pressure gradually.

3.04 VALVES

A. Valves shall be provided at the locations specified on the Drawings.

B. Valves shall be provided in accordance with the details provided on the project construction drawings. All valves shall meet the industry standard requirements.

C. Valves shall include monitoring ports at either side in accordance with the details provided by the Owner's Representative.

END OF SECTION

SECTION 15061

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF APPLICATION

A. Supply 8 inch diameter polyvinyl chloride (PVC) Schedule 80 pipe and fittings for well casings. Both solid and slotted pipes are required to be provided.

1.02 REFERENCES

A. ASTM D-2855: Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and fittings

B. ASTM D-402: Standard Practice for Safe Handling of Solvent Cements Primers, and Cleaners used for Joining Thermoplastic Pipe and Fittings

1.03 SUBMITTALS

A. The Contractor shall submit all manufacturer quality assurance certificates to the Owner's Representative and obtain approval before using the materials in construction.

PART 2 PRODUCTS

2.01 PIPE & FITTINGS

A. Materials used for the manufacture of polyethylene pipe and fittings shall meet all industry standards.

B. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density and other physical properties.

2.02 SLOTTED PIPE

A. Refer to Section 02610 for Gas Well slotting requirements.

PART 3 EXECUTION

3.01 PVC PIPE HANDLING

A. PVC pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Derricks, ropes, or other suitable equipment shall be used for lowering the pipe into the extraction well borings. Pipe and pipe fittings shall not be dropped or dumped.

3.02 PVC PIPE INSTALLATION

A. PVC pipe installation shall conform to these specifications and manufacturer's recommendations.

3.03 JOINING OF PVC PIPES

A. Joining of pipes shall be in accordance with ASTM D-2855.

B. All pipe shall be inspected for cuts, scratches, or other damages prior to installation. Pipe with imperfections shall not be used.

C. All burrs, chips, etc., shall be removed from pipe interior and exterior.

D. All loose dirt and moisture shall be wiped from the interior and exterior of the pipe end and the interior of the fitting.

E. All pipe cuts shall be square, perpendicular to the center line of pipe.

F. Pipe ends shall be beveled prior to applying primer and solvent cement so that the cement does not get wiped off during insertion into the fitting socket.

G. A coating of CPS primer as recommended by pipe supplier shall be applied to the entire interior surface of the fitting socket, and to an equivalent area on the exterior of the pipe prior to applying solvent cement.

H. The solvent cement shall be applied in strict accordance with manufacturer's specifications.

I. Pipe shall not be primed or solvent welded when it is raining or when atmospheric temperature is below 40°F or above 90°F when under direct exposure to the sun. This requirement may be waived by the Owner's Representative for extraction well pipe joining vertically by utilizing lag screws as specified in Section 02610.

J. After solvent welding, the pipe shall remain undisturbed until cement has thoroughly set. As a guideline for joint settling time, use 1 hour for ambient temperatures 60-100°F, or 2 hours when ambient temperature is 40-60°F. This requirement may be waived for extraction well piping utilizing lag screws as specified in Section 02610.

K. Pipe and pipe fittings shall be selected so that there will be as small a deviation as possible at the joints, and so that inverts present a smooth surface. Pipe and fittings which do not fit together to form a tight fitting will be rejected.

END OF SECTION

SECTION 11315

CONDENSATE MANAGEMENT SYSTEM

PART 1 GENERAL

1.01 SCOPE OF APPLICATION

A. This section covers the minimum requirements for the supply, installation, and startup of: (i) six condensate "U tube" drains installed at all low points along the header (i.e., at all LPHs except LPH-3) with gravity drain connections to existing leachate cleanouts; (ii) one 36 inch diameter condensate knockout pot with gravity drain connection to the proposed condensate sump tank; (iii) one condensate "U tube" drain with connections to condensate drains from flare and blower on the pressure side stub and the two knockout pots near the flare station on the vacuum side stub, and a condensate gravity drain connection to the proposed condensate sump tank; and (iv) one 36 inch diameter condensate sump tank with an electrical pump and force main line connection to Cell 1 leachate sump/cleanout.

B. Equipment supplied under this section shall have a proven performance of not less than two years in actual landfill condensate liquid collection and pump service.

1.02 SITE CONDITIONS

A. Condensate liquid from the gas collected from several wells will flow through a section of the gas collection pipe to an engineered low point within the gas piping system. Condensate liquid shall freely drain to a sealed condensate "U tube" drain to be installed at this engineered low point within waste limits. Liquid collected in the condensate "U tube" drain shall gravity drain through a 6 inch diameter pipe to an existing cleanout as shown on the Drawings.

B. A 36-inch diameter condensate knockout pot with gravity drain connection to the proposed condensate sump tank will be installed outside the waste limits as shown on the Drawings to remove condensate before the gas enters the knockout pot (provided by the Manufacturer) located on the flare skid.

C. A condensate "U tube" drain is installed near the flare station to provide separation of drain pipes under positive pressure (flare and blower condensate connections) and vacuum (two knockout pots) before connecting the drain to the proposed condensate sump tank.

D. A 36-inch diameter condensate sump tank with an electrical pump and force main line connection to Cell 1 leachate sump/cleanout is installed to provide adequate storage for condensate in case of pump failure.

1.03 GENERAL PRODUCT DESCRIPTION

A. The condensate “U tube” drain shall be 6 inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

B. The condensate knockout pot shall be 36-inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

C. The condensate sump tank shall be 36 inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

D. Integral to the condensate sump shall be an automatic electrical pump that meets the requirements set forth in Part 2, Section 2.06 of this specification.

C. The equipment shall be rated for service in harsh and potentially explosive environments.

1.04 CONDENSATE SYSTEM DIMENSIONS

A. The condensate system dimensions shall be as shown on the drawings.

1.05 SUBMITTALS

A. The condensate knockout pot, sump tank, and pump manufacturer’s specifications.

B. A piping and instrumentation diagram showing the workings of the automatic electrical pump system.

1.06 REFERENCES

A. Pipe Material

1. The sump used as part of the condensate liquid sump shall meet the following ASTM specifications:
   HDPE Pipe 03350 standard specifications for polyethylene plastic pipe and fittings materials.

PART 2 PRODUCTS

2.01 CONDENSATE “U TUBE” DRAIN

A. The condensate “U tube” drain shall be 6 inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

B. The condensate “U tube” drain shall have 6 inch diameter HDPE SDR 17 gravity drain connections to existing leachate cleanouts as shown on the Drawings.

2.02 CONDENSATE KNOCKOUT POT

A. The condensate knockout pot shall be 36-inch diameter HDPE SDR 17 with dimensions as shown on the Drawings. The knockout pot shall be liquid and gas tight and shall be designed to withstand vacuum of 100 inches of water and pressure of 5 psig.

B. The condensate knockout pot shall have 4 inch diameter HDPE SDR 17 gravity drain connection to the proposed condensate sump tank as shown on the Drawings.

2.03 CONDENSATE SUMP TANK AND "U TUBE"

A. The condensate sump tank shall be 36-inch diameter HDPE SDR 17 with dimensions as shown on the Drawings. A 6-inch HDPE "U tube" connection shall be used to drain liquid into the sump. The sump shall be liquid and gas tight and shall be designed to withstand vacuum of 100 inches of water and pressure of 5 psig.

B. The condensate "U tube" drain shall have connections to condensate drains from flare and blower on the pressure side stub and the two knockout pots near the flare station on the vacuum side stub, and a condensate gravity drain connection to the proposed condensate sump tank. Isolation valves shall be installed on drain lines as shown on the Drawings.

C. The sump shall be designed to have an 8 inch deep solids settling area. Further, the design shall be such that solids will not affect the pump or control system operation.

2.04 EQUIPMENT ENCLOSURE HOUSING (VAULT)

A. All operable components of the condensate pump and control assembly shall be located in a polyethylene vault assembly that is integrally mounted to the top of the condensate liquid sump. The vault shall be able to withstand continuous high temperatures near the flare station.

B. All equipment in the vault shall be arranged to be easily accessible for operation and maintenance.

C. Service connections including the liquid discharge and electrical lines shall be bulkhead mounted on a common wall of the vault.

2.05 PIPING

A. Piping requirements are addressed in HDPE specifications Section 15051.

2.06 LIQUID PUMP

A. The pump installed in the condensate sump shall be an EPG Companies SurePump Vertical Sump Drainer. The specific model selected must use 3-phase

power and be capable of pumping rates of 20 to 30 gallons per minute with 20 feet of head. Equivalent pumps must be approved by the Owner's Representative.

2.07 LEVEL CONTROL AND ALARM

A. An adjustable level control shall be provided for the pump. Peak head levels that determine initiation of pumping shall be decided upon when actual field conditions are known. The upper limit shall not exceed 1 foot below the height of the equalization line or condensate inlet pipe (whichever is lower), as installed on the condensate sump. The lower limit should not exceed the point at which air will be pulled into the pump as installed.

B. An alarm display shall be provided for high level alarm conditions.

2.08 CONNECTIONS

A. All materials used in the high pressure liquid discharge line shall be rated for 100 psig pressure with a safety factor of 3.

B. The pressure equalizing line which runs between the landfill condensate liquid pump system and the top of the LFG header shall be PVC hose, PVC or PE pipe, or other non-corrosive material with 1 inch diameter or larger.

2.09 SEALS

A. A PVC flexible membrane seal shall be used to seal the excavation as part of the backfill operations.

2.10 BACKFILL MATERIAL

A. Soil backfill shall not have any large stones or other foreign materials present and should be suitable for adequate compaction as approved by the Owner's Representative. Care shall be taken that the materials adjacent to the condensate sump are fine graded and that no objects are present that could cause damage to the sump.

PART 3 EXECUTION

3.01 HANDLING AND SETTING THE CONDENSATE SUMP UNIT

A. The condensate sump unit and the knockout pot unit shall be lifted and handled according to written procedures supplied by the manufacturer.

B. The units are to be set within 1/4 percent of vertical.

C. The units shall be set so that it is concentrically located in the prepared hole.

D. The units shall be installed in an area that does not allow accumulation or ponding of water. The vault assembly shall be at least 6 inches higher than surrounding grade unless installed in a water tight vault

3.02 CONDENSATE SUMP AND PUMP CONNECTIONS

A. Prior to making connections, all lines shall be purged of debris and thoroughly cleaned.

C. Condensate liquid discharge: The condensate liquid discharge line shall be connected to the condensate sump using good engineering practices. Materials and installation shall be as indicated on the Drawings.

D. Equalizing line: A pressure equalizing line shall be connected between the condensate sump and the top of the LFG header. The equalizing line shall be free draining to either the landfill gas collection pipe or the sump and shall be free of kinks or other obstructions to liquid or air flow.

3.03 TESTING

A. Check sump storage tank, lines and block valve positions prior to operation.

B. Testing shall include the minimum operations:

1. Pressure test to verify that all connections are tight.
2. Leak test connections prior to setting and backfill.
3. Dry operation of the pump for two minutes.

3.04 ACCEPTANCE

A. Prior to acceptance the following verifications shall be made:

1. Verify units are installed vertically.
2 Verify units have been installed per manufacturer's recommendations.
3. Verify all connections have been: pressure tested per the manufacturer's recommendations.
4. Verify the pipes and connections are clean and free of debris.
5. Verify the level switch displacers are installed at elevations appropriate for the installation. As-built displacer elevations shall be recorded and submitted to the Owner's Representative by the Contractor prior to project acceptance.
6. Verify all required functional testing has been completed.

END OF SECTION

SECTION 11910

LANDFILL GAS FLARE/BLOWER SKID

PART 1 - GENERAL

1.01 SCOPE OF APPLICATION

A. Provide all materials, equipment, and labor needed to install the blower/flare skid assemblies and appurtenances in accordance with the Drawings.

1.02 REFERENCES (RESERVED)

1.03 SUBMITTALS

A. Submit to the Owner's Representative for approval manufacturer's literature, shop drawings, or other information pertaining to the assembly, operation, lubrication, adjustments, and other maintenance and repairs of equipment installed under this Section, together with detailed parts lists, drawings, and/or photographs. The Contractor shall also prepare and submit shop drawings showing the layout, orientation and dimensions of the flare, blower/motor assembly, condensate knockout pot, piping, valves and fittings to be installed. All electrical and mechanical drawings for the flare control system shall be submitted.

B. Submit blower characteristic curves indicating capacity for flow versus pressure head and efficiency as tested at the factory for approval prior to shipment.

C. Submit signage layout drawings.

D. Submit operation and maintenance manual.

E. Submit all applicable warranty documents.

F. Submit additional field services rate information for a year.

PART 2- PRODUCTS

2.01 FLARE

A. A utility flare manufactured by John Zink, LFG Specialties, Perennial Energy, or equivalent approved by the Owner's Representative can be used. The flare shall be designed in accordance with the United States of Environmental Protection Agency (USEPA) established criteria for open flares, 40 CFR 60.18. The flare shall be capable of burning low Btu gas and shall include a burner; automatic pilot ignition; electric igniter; pilot gas automatic valves and pilot gas pressure

regulator; stack; automatic gas safety shut-off valve; high and low pressure switches; control panel; flame arrester; piping and all other necessary appurtenances to have a complete operational system. The flare shall be capable of combusting LFG with the following composition:

1. Btu Content - 300 to 600 Btu/scf

2. LFG Flow Rate – 360 to 3600 scfm

3. Carbon Dioxide - 20 to 45 percent

4. Hydrogen Sulfide - up to 1,500 ppm

5. Moisture Content - saturated

6. LFG Supply Pressure - 1 to 15 in. w.c.

The flare shall have a minimum destruction efficiency of 98%. The emission factors for the flare shall not exceed the following:

1. CO: 0.37 lb/MMbtu or 374 lb/million dscf of methane (using conversion factor of 1012 Btu/scf)

2. NOx: 0.07 lb/MMbtu or 71 lb/million dscf of methane (using conversion factor of 1012 Btu/scf)

B. Stack: The flare stack shall be carbon steel with rust preventive coating, fitted with necessary connections. The portion of the stack exposed to flame and high temperatures shall be stainless steel. The flare shall be designed for 110 mph wind loading.

C. The electrical connections shall be 480 volts, 60 Hz, and 3 phase.

2.02 FLAME ARRESTER

A. Supply a flame arrester compatible with the required LFG flow rates. Flame arrester shall be sized to match the blower discharge pipe or flare inlet pipe, whichever is larger, with 125 lb. rating ANSI flanged connections. The housing construction shall be cast aluminum. Maximum head loss through the flame arrester shall not exceed 5 in. w.c. at 3,600 cfm as supplied by Varec, Groth, Protectoseal, or other manufacturer approved by Owner’s Representative.

2.03 PILOT PROPANE (LPG) TANK AND PIPING

A. The propane tank shall be a standard 200 lb tank equipped with fuel gauges. The pressure of the gas shall meet the requirements of the flare pilot system. Mechanical force shall be provided to boost the gas pressure as required.

2.04 CONDENSATE DRAIN PIPES FOR FLARE COMPONENTS

A. The flame arrester, flare stack, and other parts of the system recommended by the flare manufacturer shall be equipped with condensate drain piping. Pipes shall be sized in accordance with the manufacturer's recommendations.

B. Condensate drains on the pressure side of the blower shall include an automatic drip trap as supplied by Varec, Groth, Protectoseal, or other manufacturer approved by the Owner's Representative.

2.05 AUTOMATIC GAS INLET (SHUTOFF) VALVE

A. Supply electrically operated automatic inlet (shutoff) valve at the discharge of the blower. Automatic valve shall also include a mechanism to close upon loss of power.

2.06 CONTROLS

A. The controls shall provide for automatic and manual operation and ignition of the flare unit, and shall include a weatherproof control panel, trouble light contacts, automatic start/stop for pilot ignition, controllers, spark plugs, orifices, ultraviolet (UV) scanners, thermocouplers, timers, and all other necessary components for a complete operational, automatic system. The controls shall include an automatic dialer with capacity to store and dial up to 6 phone numbers in a hierarchical order, with the provision to stop dialing other receivers as soon as the call is acknowledged as accepted by one receiver.

2.07 IGNITION PROCEDURE AND CONTROL SEQUENCE

A. Remote spark ignition of propane gas/air mixture creates pilot flame that ignites LFG main flame.

B. Once pilot is proven, blower turns on and electric gas inlet valve is opened.

C. When main flame is successfully ignited (as detected by an UV scanner), pilot gas is automatically shut off.

D. If pilot is not ignited within the preselected time interval (as set on the timer), pilot gas is shut off and "Pilot Ignition Failure" is signalled with trouble light.

E. If main flame is not ignited within the preselected time interval, pilot gas is shut off and "Flare Ignition Failure" is signaled with trouble light.

F. If main flame is extinguished after successful ignition, pilot is automatically turned on and reignition attempted for a designated time interval. The waiting time before starting reignition procedures after a main flame failure should be programmable by the operator.

G. If the main flame is not successfully reignited in the designated time interval after being extinguished during normal operation or upon initial ignition, the automatic shutoff valve is closed, the blower(s) shut down, and the telephone dialer and alarm is activated to notify the locations stored in memory.

2.08 BLOWER ASSEMBLIES

A. The blower assemblies shall be, variable frequency drive (VFD), multistage centrifugal-type blowers capable of delivering 3,600 cubic feet per minute (cfm) of landfill gas at 55 inches of water column (in-w.c.) total pressure head. Blowers manufactured by Gardener Denver, New York Blower, Aerovent, Hoffman, Hauck or equivalent approved by the Owner's Representative can be used. The assembly shall be factory mounted on the flare steel skid and delivered to the site as a complete unit. A total of two blowers (to be used alternatively with one serving as a backup) shall be supplied and installed.

B. The motor and blower housings shall each be provided with a nameplate which states the manufacturer, model number, serial number, and the pertinent information regarding electrical requirements, size, capacity, etc.

C. Each blower motor shall be 25 HP, or as recommended by the blower manufacturer to be compatible with electrical service of 480-volt, 3-phase, and 60-hertz. The blower motors shall be high efficiency, non-sparking, totally enclosed, fan cooled (TEFC), explosion proof motor.

D. Motor starter shall be equipped with ammeter (meter relay), Hand-Off Automatic switch, red run light, time switch, and hour meter. Combination controller shall incorporate I-T-E Type ETI, or equal, motor circuit protector and full-voltage, non-reversible starter, in NEMA 1 enclosure with acrylic window for viewing indicators.

E. The blowers shall be supplied with a factory applied phenolic coating or other coating to protect all internal parts that will be in contact with landfill gas and to provide resistance to corrosion. Impellers, if constructed of aluminum or stainless steel, shall not require coating.

F. The blower controls shall include a thermal protection package to monitor the blower inlet and outlet bearing temperatures. Sufficient wiring shall be provided by the Contractor to span the distance between the control panel and the blower bearings.

2.09 EXPANSION JOINTS

A. Expansion joints between the blower inlet and outlet and connected piping shall be supplied by the blower manufacturer and shall be manufactured by Lamson or equivalent approved by the Owner's Representative.

2.10 VALVES

A. Butterfly valves located on the inlet of each blower shall be supplied by the blower manufacturer and shall be a Lamson, wafer-type with a lever or equivalent approved by the Owner's Representative.

B. Flanged butterfly valves may require spacers between the flange adapters and the valve body in order to allow full travel of the internal disk. If spacers are necessary for any butterfly valve, the Contractor will install valve spacers subject to approval by the Owner's Representative.

C. Butterfly control valves shall be provided upstream and downstream side of the blower as shown on the Drawings. These valves shall have wheel-type controls.

2.11 CONDENSATE KNOCKOUT POT

A. A 36-in diameter and 72-inch high condensate knockout pot shall be provided with flanged inlet and outlet connectors.

B. The knockout pot shall include a stainless steel demister pad with a 98% filtration efficiency for free liquid and solid particles of 20 micron or larger.

C. The knockout pot shall have an appropriate internal coating to resist acidic condensate. The external finish shall be rust resistant.

D. The knockout pot shall have a removable lid for inspection and repair.

E. The knockout pot shall have a heavy duty gage glass liquid level indicator, a liquid level switch for high condensate level alarm/shutdown, and a 2-in gravity drain connection with a manual valve.

2.12 SIGNAGE

A. Gas direction arrows shall be placed on all piping in the blower pad area. The moisture trap shall be marked "MOISTURE TRAP". Letters and numerals shall be at least 3 inches high. Numerals identifying Blower Nos. 1 and 2 shall be mounted on the blower coupling guard.

B. "Danger - No Smoking" signs shall be prominently displayed on all tour sides of the fenced enclosure. Signs shall be metal or approved equivalent construction with 2" high lettering. The Contractor shall submit signage layout Drawings for the Owner's Representative's approval.

2.13 SPARE PARTS

A. The Contractor shall provide the following spare parts:
   1. 20 ounces of approved grease, or equivalent
   2. One each vacuum and pressure gauge
   3. Parts recommended by the blower manufacturer.

2.14 INTRUMENTATION

A. Provide a pressure gauge on the outlet and a vacuum gauge on the inlet side of each blower. Pressure and vacuum gauges shall be capable of measuring 0 to 20 and 0 to 70 in w.c., respectively, with the smallest measurement unit of at least 1 in. w.c. Gauges shall have at least a 2.5-inch-diameter dial as supplied by the blower manufacturer.

B. Instrumentation for the flare such as thermocouples as specified in Section 2.06 shall be provided.

C. Provide a digital flow meter manufactured by Fluid Components, Thermal Instruments, or equivalent approved by the Owner's Representative. The flow meter shall be capable of measuring 0 to 4,000 scfm landfill gas flow rate, with the smallest measurement unit of at least 1 scfm. The flow meter shall be capable of directly reading the flow rate in standard cubic feet per minute (scfm). The flow meter shall be installed in a straight section of the gas pipe away from installations such as valves and reducers that may cause flow disturbances.

D. Provide a temperature gage capable of measuring from 0 to 200°F with the smallest measurement unit of at least 1°F at the upstream side of the blower.

2.15 DATA RECORDER

A. Provide an electronic data recorder manufactured by Yokogawa or equivalent manufacturer approved by the Owner's Representative capable of recording data from all electronic gages on the flare/blower skid. Flare temperature and gas flow rate are required by regulations to be recorded. Some other gages that should be recorded are vacuum (inlet side of blower), pressure (out let side of blower), landfill gas temperature etc.

2.16 SKID

A. Provide a heavy duty structural steel sub-base with non-skid floor plate welded over all open areas. The skid shall be constructed to withstand all loads and hauling forces. All necessary bracing, mounting pads, and piping supports shall be provided for proper equipment installation and alignment.

B. The skid shall have adequate grounding and lightening protection.

PART 3- EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with the Drawings and Specifications.

B. Install the blower assemblies in compliance with the manufacturer's recommendations, the referenced codes, the Drawings, and as specified below. The flare and controls shall be installed in accordance with manufacturer's recommendations. All necessary support angles and anchor bolts shall be furnished and installed per the flare manufacturer's recommendations. The connection requirements and stack sizes vary from one manufacturer to another. The Contractor shall prepare the installation surfaces only after the flare unit is approved by the Owner's Representative and stack sizes and piping connections are determined.

C. The blower assemblies shall be mounted on neoprene isolation pads provided with the blower. Do not bolt down the blower motor assemblies directly to the skid without isolation pads.

D. The Contractor shall check and, if necessary, adjust the alignment of the motor coupling in accordance with the instructions of the blower manufacturer.

E. Equipment shall be field-tested to verify proper alignment and operation, including: freedom from binding, scraping, vibration, shaft runout, or other defects.

F. Shop-painted items which have damage to the shop coatings shall be touched up to match the basic color of the equipment, as approved by the Owner's Representative.

3.02 STARTUP AND TESTS

A. Furnish all equipment, materials, and labor necessary for testing the operation of the complete system, valves and appurtenances, upon completion of the installation. The blowers shall be tested to assure proper operation and delivery of specified flow rates and vacuums.

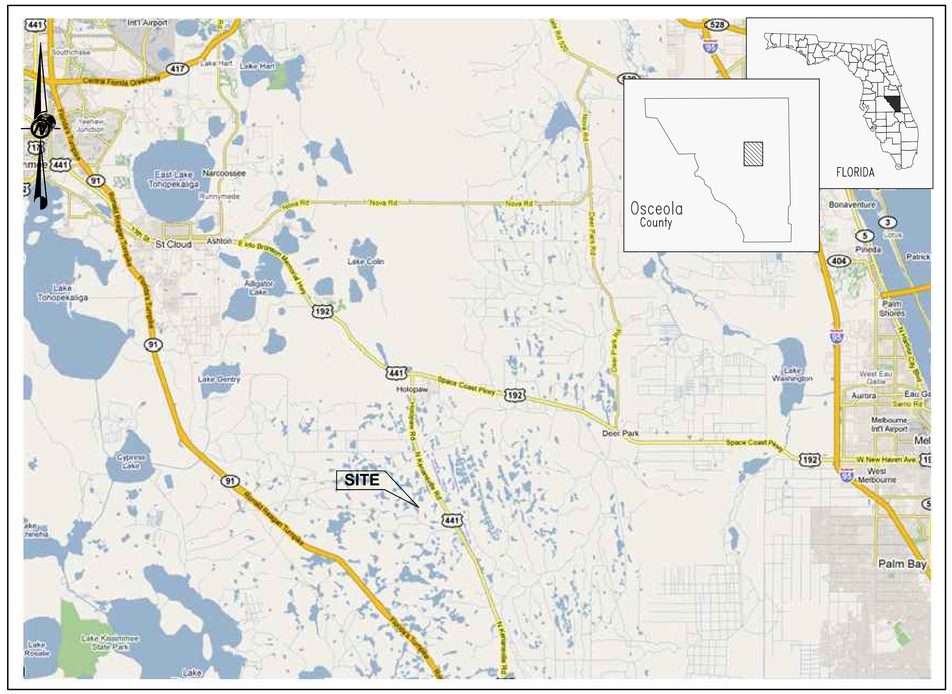
B. Adequate startup training shall be provided. Training schedule shall be submitted and approved by the Owner.

END OF SECTION

APPENDIX C
DESIGN DRAWINGS

J.E.D. SOLID WASTE MANAGEMENT FACILITY
HORIZONTAL GAS COLLECTOR AND GCCS/LEACHATE SUMP CONNECTIONS
INTERMEDIATE PERMIT MODIFICATION

ST. CLOUD, OSCEOLA COUNTY, FLORIDA



SITE LOCATION MAP

INDEX TO DRAWINGS

Prepared for:

OMNI WASTE OF OSCEOLA COUNTY, LLC
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

Prepared by:

Golder Associates
Jacksonville, Florida

September 2010

J.E.D. SOLID WASTE MANAGEMENT FACILITY
OSCEOLA COUNTY
FLORIDA

TITLE SHEET/LIST OF DRAWINGS

DRAWING 1

PROJECT No.083-82734 FILE No.08382734D001 CADD BCL DATE 09/10/10
Drawing File: 08382734D001.dwg Sep 10, 2010 - 4:25pm

NORTH

0 300' 600'

SCALE IN FEET

LEGEND

- 120 — TOP OF FINAL COVER (FEET, NGVD)
- MAIN HEADER LINE
- GEW-186 — PROPOSED VERTICAL GAS EXTRACTION WELL
- CT — CONDENSATE TRAP AT LOW POINT
- CONTROL VALVE/MONITORING PORT
- FLARE STATION
- GW-1 — GAS MONITORING PROBE
- HORIZONTAL GAS COLLECTOR (1st LEVEL)
- HORIZONTAL GAS COLLECTOR (2nd LEVEL)
- SIDESLOPE GAS COLLECTOR
- MAIN GAS HEADER
- LEACHATE COLLECTION SUMP
- SSC-1 — SIDE SLOPE COLLECTOR
- GAS LATERAL PIPE

NOTES:

1. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE THE LAYOUT OF HORIZONTAL GAS COLLECTOR WELLS IN PHASE 2 AND 3, CELLS 7, 8, 9, & 10, IN RELATIONSHIP TO THE GAS COLLECTION AND CONTROL SYSTEM SHOWN ON PERMIT DRAWING 29.
2. AS WASTE FILLING OCCURS IN CELLS 7, 8, 9, & 10, THE HORIZONTAL GAS COLLECTORS WILL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON DRAWINGS 29B, 32A, AND 32B.
3. THE EXISTING VERTICAL WELL NETWORK AND MAIN GAS HEADER ARE DESIGNED BY OTHERS AND WILL BE INSTALLED ACCORDINGLY.

300 0 300 600

SCALE FEET

Golder Associates
Jacksonville, Florida

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RW
1	09/09/10	DEG	SHOW SSC-1 AND LSC CONNECTIONS, REVISED REFERENCE CAL. CUTS	BCL		

Kevin Brown, P.E.
P.E. License No. _____

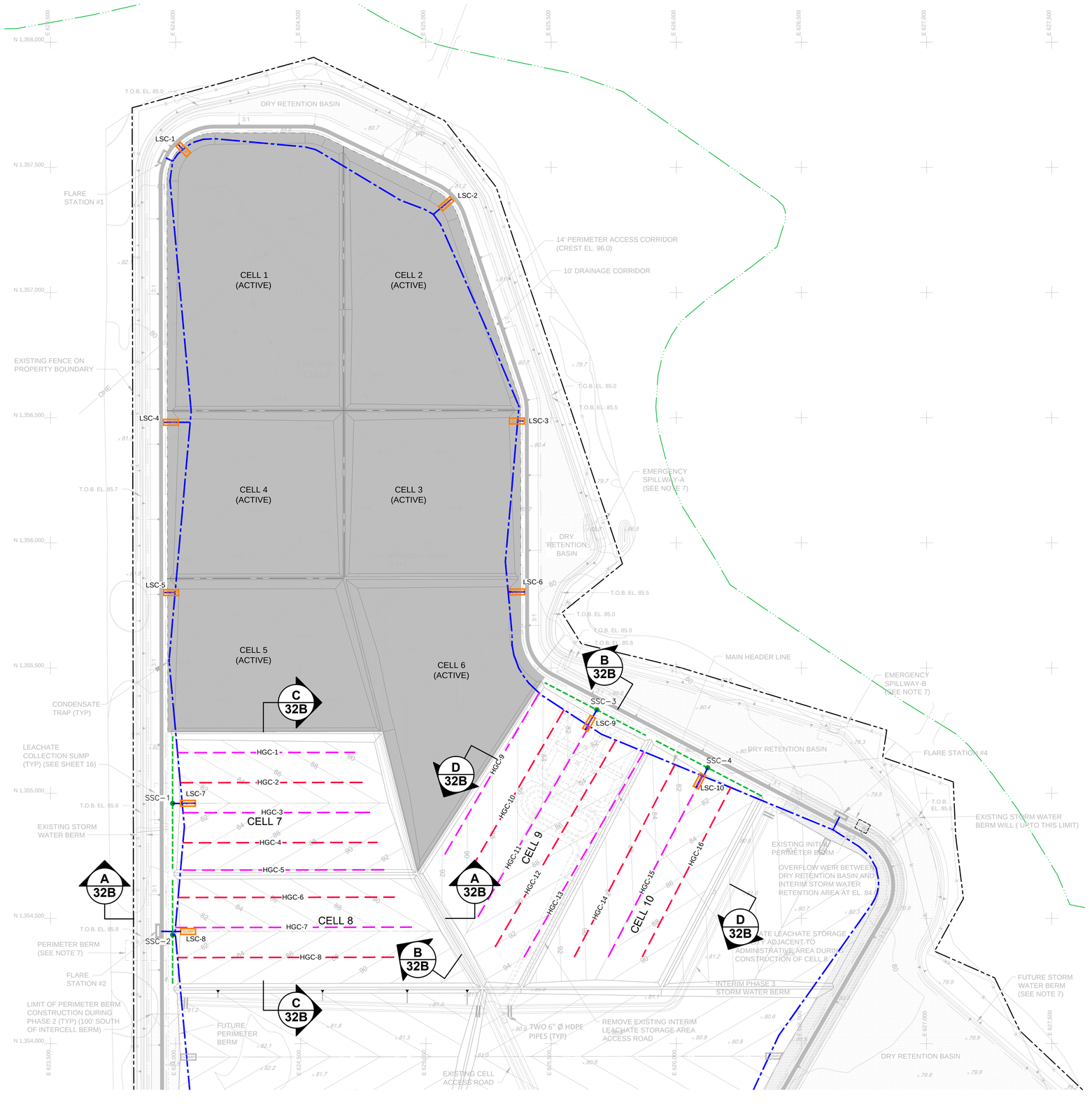
PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
GAS MANAGEMENT PLAN
HORIZONTAL GAS COLLECTORS

PROJECT No.	083-82734		
FILE No.	08382734D029A		
REV. 0	SCALE	AS SHOWN	
DESIGN	DEG	03/23/10	
CADD	BCL	09/03/10	
CHECK	DEG		
REVIEW			

29A OF 40

Drawing File: 08382734D029A.dwg Dec 01, 2010 - 9:06am



LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- 80 — EXISTING GROUND ELEVATION (FEET) (SEE NOTE 2)
- 80 — SUBBASE ELEVATION (FEET)
- EXISTING FENCE
- STORMWATER MANAGEMENT BASINS
- BORROW AREA BOUNDARY
- MAIN HEADER LINE
- HORIZONTAL GAS COLLECTOR (1st LEVEL)
- HORIZONTAL GAS COLLECTOR (2nd LEVEL)
- SIDESLOPE GAS COLLECTOR
- LEACHATE COLLECTION SUMP
- SSC-1 — SIDE SLOPE COLLECTOR
- GAS LATERAL PIPE

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29) (FEET).
3. HORIZONTAL GAS COLLECTOR'S FIRST 120 FEET TO BE SOLID PIPE. SEE SHEET 32A FOR DETAILS

REFERENCES

1. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
2. THE TOPOGRAPHIC INFORMATION SHOWN IN SECTION 11 AND THE NORTH HALF OF SECTION 14 WAS PROVIDED BY AERIAL CARTOGRAPHICS OF AMERICA, ORLANDO, FLORIDA BASED ON AN AERIAL PHOTOGRAPH FLOWN ON NOVEMBER 7, 2001. IN AREAS OUTSIDE THE LIMITS OF CONSTRUCTION, TOPOGRAPHIC INFORMATION WAS ADDED FROM USGS QUAD MAP FOR HOLOPAW SE, FLORIDA.

LANDFILL - RELATED NOTES

1. PHASE 1 AND 2 (CELLS 1 THROUGH 6) HAVE BEEN CONSTRUCTED AND WASTE DISPOSAL ACTIVITIES ARE ACTIVE IN THESE CELLS.
2. PHASE 2 CELL 7 IS CURRENTLY UNDER CONSTRUCTION.
3. FUTURE CELLS (CELLS 7 THROUGH 21) WILL BE CONSTRUCTED IN ACCORDANCE WITH THE VERTICAL EXPANSION PERMIT DRAWINGS DATED SEPTEMBER 2007.

200 0 200 400
SCALE FEET

Golder Associates
Jacksonville, Florida

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	09/09/10	DEG	SHOW SSCs AND LSC CONNECTIONS, REVISED REFERENCE, CAL. CUTS	BCL		

Kevin Brown, P.E.
P.E. License No. _____

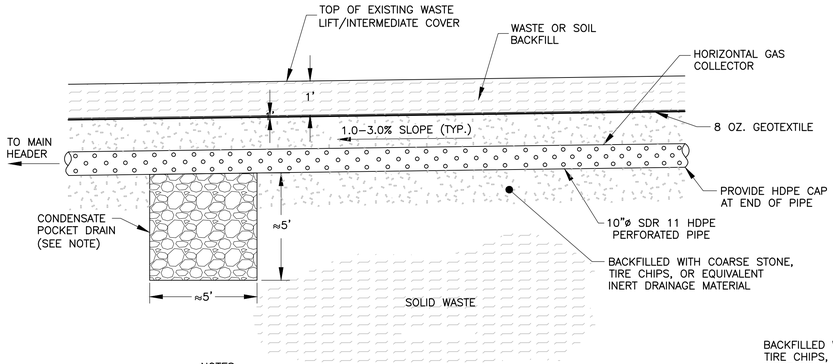
PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
HORIZONTAL GAS COLLECTORS PLAN LAYOUT (CELL 7 TO CELL 10)

PROJECT No.	083-82734		
FILE No.	08382734D029B		
REV. 0	SCALE	AS SHOWN	
DESIGN	DEG	03/23/10	
CADD	BCL	09/03/10	
CHECK	DEG		
REVIEW			

DRAWING 29B OF 40

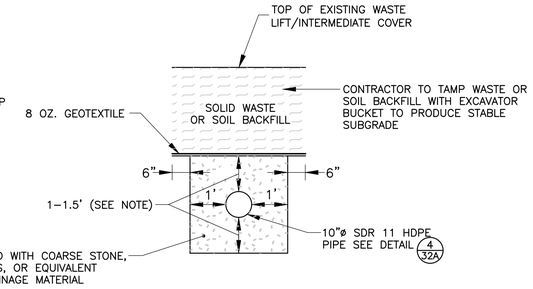
Drawing File: 08382734D029B.dwg Dec 01, 2010 - 9:07pm



NOTES:
1. CONDENSATE POCKET DRAIN TO BE INSTALLED APPROXIMATELY EVERY 150 LINEAR FEET ALONG HORIZONTAL GAS COLLECTOR. DRAINS TO BE APPROXIMATELY 5'x5'x5' AND BACKFILLED WITH COARSE STONE, TIRE CHIPS, OR EQUIVALENT INERT DRAINAGE MATERIAL.

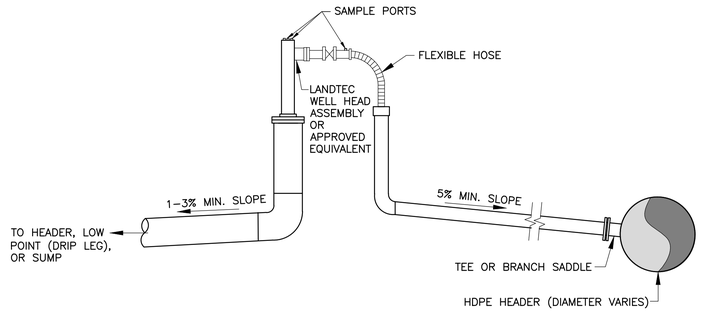
2. TO ALLOW FOR INCREASED SETTLEMENT AND COMPRESSIBILITY WHEN USING TIRE CHIPS AS BACKFILL MEDIA, INCREASE DEPTHS TO 1.5' ABOVE AND BELOW PIPE. DIMENSIONS OF TRENCH ARE MINIMUM. OWNER MAY INCREASE SIZE OF TRENCH BASED ON MATERIAL USED.

1/32A TYPICAL PROFILE OF HORIZONTAL GAS COLLECTOR
NTS



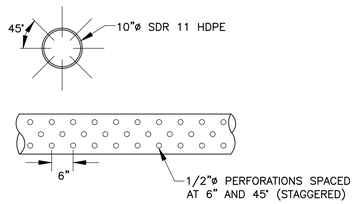
NOTE: TO ALLOW FOR INCREASED SETTLEMENT AND COMPRESSIBILITY WHEN USING TIRE CHIPS AS BACKFILL MEDIA, INCREASE DEPTHS TO 1.5' ABOVE AND BELOW PIPE. DIMENSIONS OF TRENCH ARE MINIMUM. OWNER MAY INCREASE SIZE OF TRENCH BASED ON MATERIAL USED.

2/32A TYPICAL SECTION OF 10"Ø HDPE HORIZONTAL GAS COLLECTOR
NTS

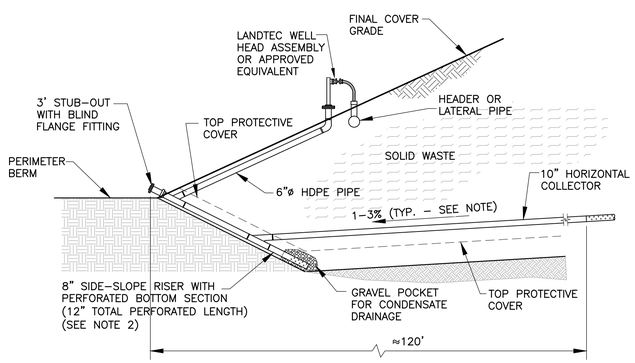


NOTE: ACTUAL CONNECTION MAY VARY BASED UPON FILL OPERATIONS AND LOCATION OF CONNECTION.

3/32A STUB-OUT & CONNECTION DETAIL FOR 10"Ø HDPE HORIZONTAL GAS COLLECTOR
NTS



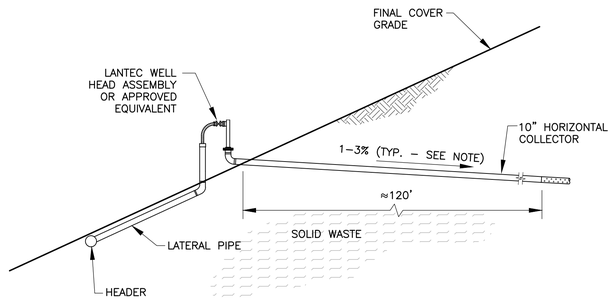
4/32A HDPE PERFORATED PIPE DETAIL
NTS



NOTES:
1. SLOPE DIRECTION AND GRADE OF HORIZONTAL GAS COLLECTOR WILL BE BASED ON SLOPE DIRECTION AND GRADE OF FILL OPERATIONS.

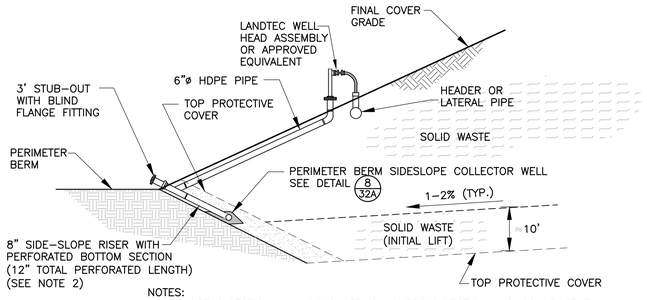
2. 8" SIDESLOPE RISER TO BE INSTALLED DIRECTLY ON UNDERLYING BASE OF GEOCOMPOSITE LINER DURING CELL CONSTRUCTION. PLACE ADDITIONAL STRIP OF GEOCOMPOSITE BENEATH PIPE FOR ADDITIONAL CUSHION.

5/32A CONNECTION DETAIL HORIZONTAL GAS COLLECTOR 1ST LEVEL
NTS



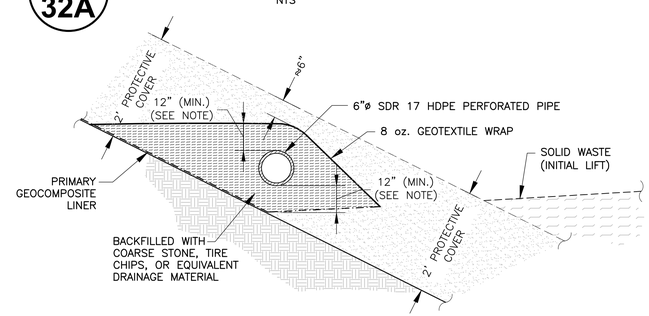
NOTE: SLOPE DIRECTION AND GRADE OF HORIZONTAL GAS COLLECTOR WILL BE BASED ON SLOPE DIRECTION AND GRADE OF FILL OPERATIONS.

6/32A CONNECTION DETAIL HORIZONTAL GAS COLLECTOR 2ND LEVEL
NTS



NOTES:
1. SLOPE DIRECTION WILL BE BASED ON SLOPE DIRECTION AND GRADE OF FILL OPERATIONS.
2. 8" SIDESLOPE RISER TO BE INSTALLED DIRECTLY ON UNDERLYING BASE OF GEOCOMPOSITE LINER DURING CELL CONSTRUCTION. PLACE ADDITIONAL STRIP OF GEOCOMPOSITE BENEATH PIPE FOR ADDITIONAL CUSHION.

7/32A CONNECTION DETAIL PERIMETER BERM SIDESLOPE GAS COLLECTOR
NTS



NOTE: TO ALLOW FOR INCREASED SETTLEMENT AND COMPRESSIBILITY WHEN USING TIRE CHIPS AS BACKFILL MEDIA, INCREASE DEPTHS TO 1.5' ABOVE AND BELOW PIPE.

8/32A TYPICAL SECTION OF 6"Ø HDPE PERIMETER BERM SIDESLOPE GAS COLLECTOR
NTS

Golder Associates
Jacksonville, Florida

REV	DATE	DES	DEG	REVISION DESCRIPTION	CADD	BCL	CHK	RVW
1	09/09/10			REVISED DETAIL 1–32A				

Kevin Brown, P.E.
P.E. License No. ——

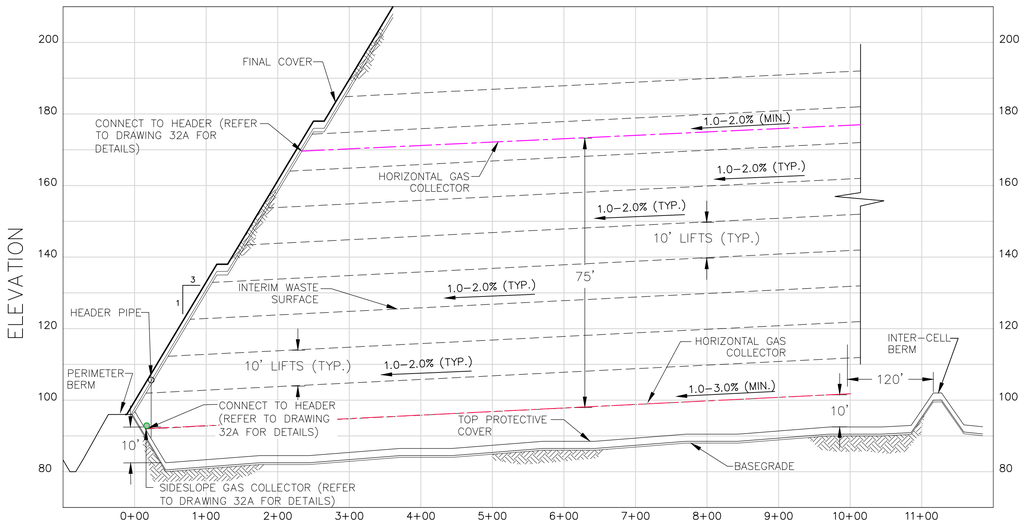
PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
HORIZONTAL GAS COLLECTORS DETAILS

PROJECT No.	083–82734		
FILE No.	08382734D032A		
REV. 0	SCALE	AS SHOWN	
DESIGN	DEG	03/23/10	
CADD	BCL	09/03/10	
CHECK	DEG		
REVIEW			

DRAWING
32A OF 40

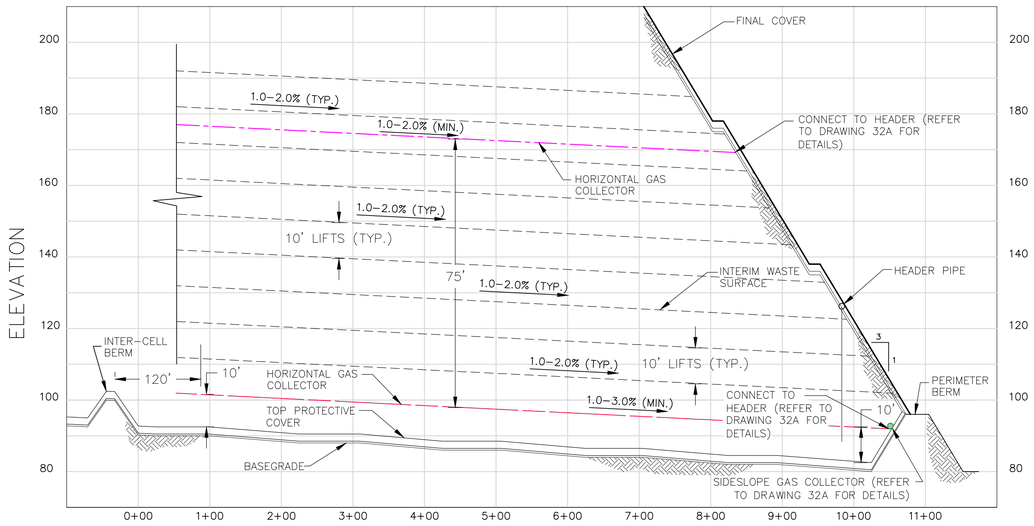
Drawing file: 08382734D032A.dwg Dec 01, 2010 - 9:07pm



NOTE: ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.

A 32B CELLS 7 & 8 TYPICAL CROSS SECTION

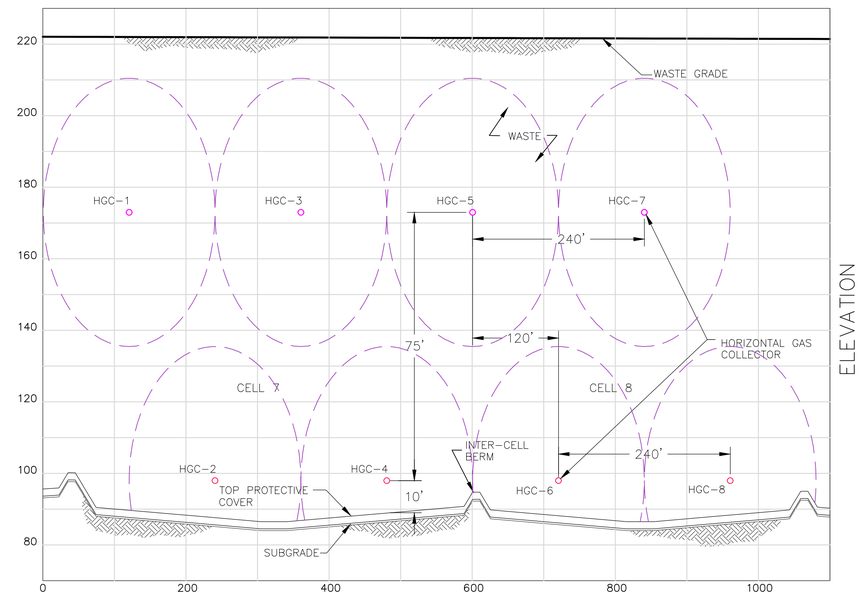
20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET



NOTE: ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.

B 32B CELLS 9 & 10 TYPICAL CROSS SECTION

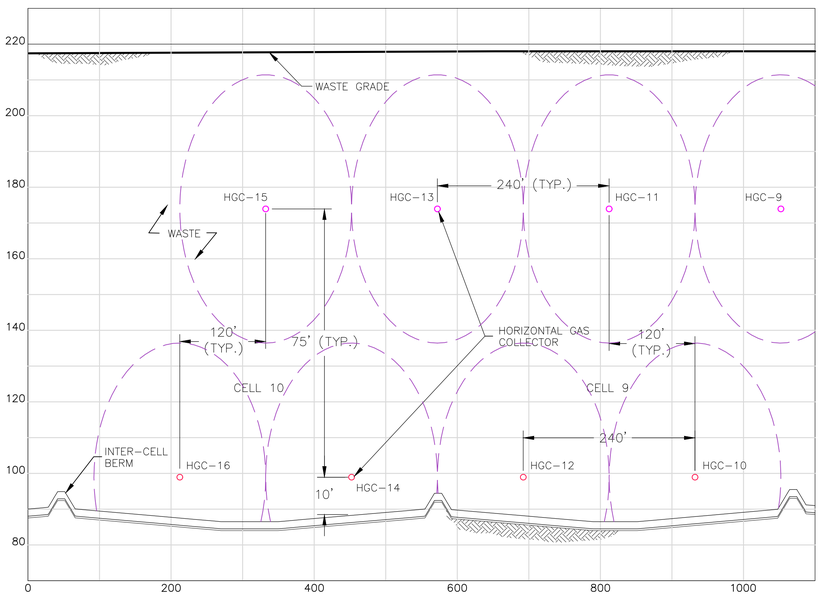
20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET



NOTES:
1. ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.
2. NUMBER SEQUENCE OF HORIZONTAL COLLECTORS MAY VARY DEPENDING ON ORDER OF INSTALLATION. NUMBERING WILL BE CONSECUTIVE AS INSTALLATION OCCURS.

C 32B SECTION THRU CELLS 7 AND 8

20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET



NOTES:
1. ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.
2. NUMBER SEQUENCE OF HORIZONTAL COLLECTORS MAY VARY DEPENDING ON ORDER OF INSTALLATION. NUMBERING WILL BE CONSECUTIVE AS INSTALLATION OCCURS.

D 32B SECTION THRU CELLS 9 AND 10

20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET

Golder Associates
Jacksonville, Florida

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	10/21/10	DEG	REVISED WASTE GRADE CALLOUT	BCL		
1	09/09/10	DEG	ADDED Z01 (ROI) TO HGCs	BCL		

Kevin Brown, P.E.
P.E. License No. _____

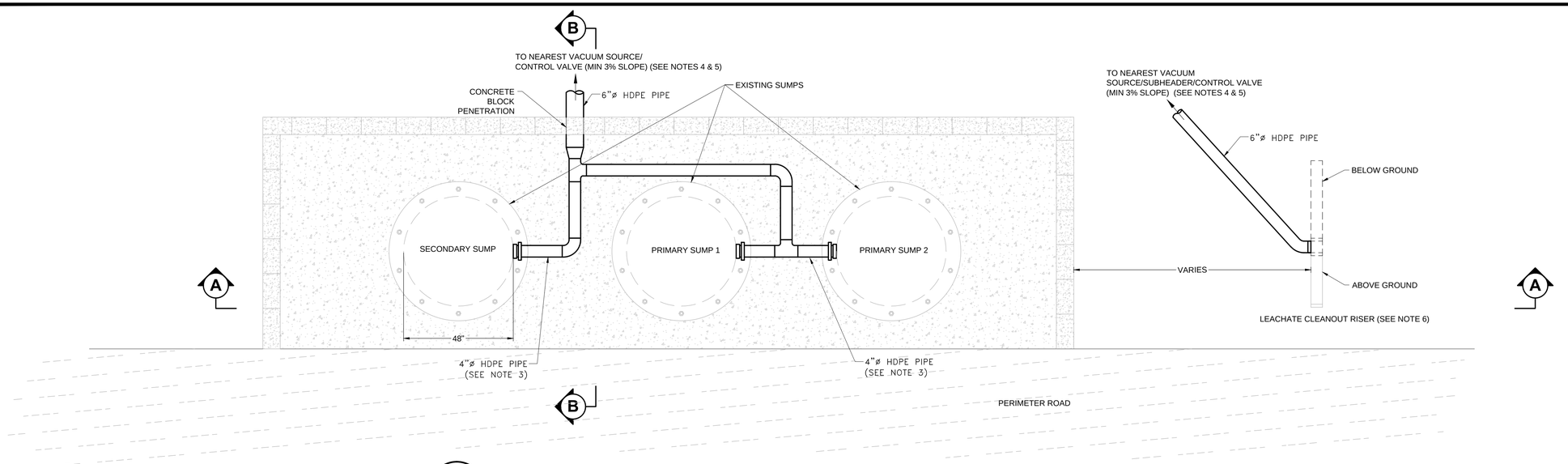
PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
HORIZONTAL GAS COLLECTORS CROSS SECTIONS

PROJECT No.	083–82734	
FILE No.	08382734D032B	
REV. 0	SCALE	AS SHOWN
DESIGN	DEG	03/23/10
CADD	BCL	09/03/10
CHECK	DEG	
REVIEW		

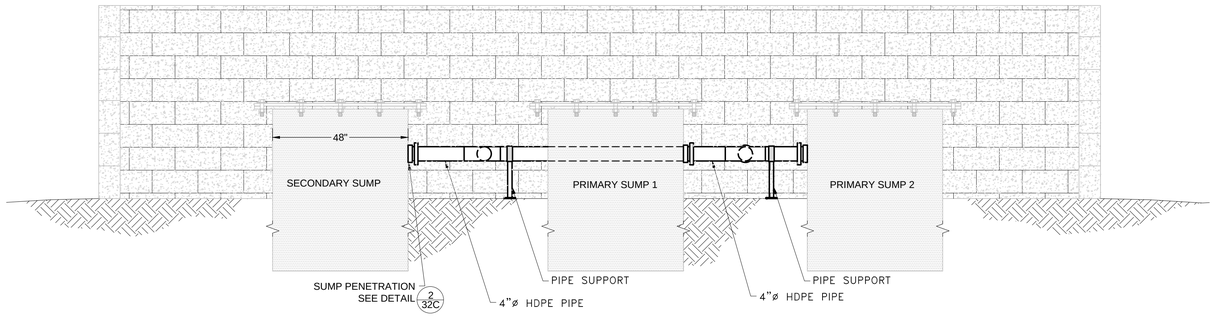
DRAWING 32B OF 40

Drawing file: 08382734D032B.dwg Dec 01, 2010 - 9:08am



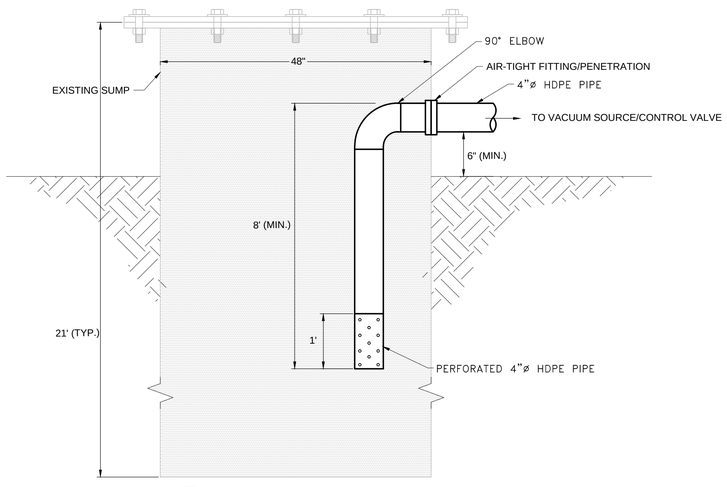
1 / 32C LFG TYPICAL SUMP CONNECTION

NTS



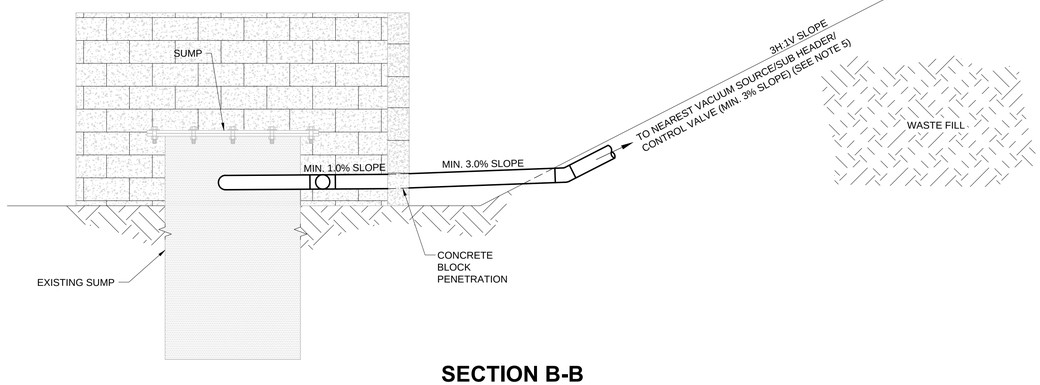
SECTION A-A

NTS



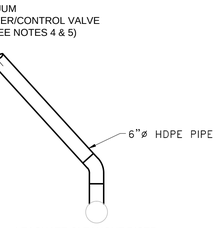
2 / 32C SUMP DETAIL

NTS



SECTION B-B

NTS



NOTES

1. LFG PIPES WITHIN SUMP AREA TO BE SLOPED MINIMUM 1.0% TOWARDS SUMPS.
2. LEACHATE PIPE CONTROLS, METERS, VALVES, AND PIPING AT SUMP PADS NOT SHOWN FOR CLARITY.
3. ORIENTATION OF LFG PIPING AT SUMP PAD MAY VARY DEPENDING ON ORIENTATION OF LEACHATE PIPE, METERS, AND VALVES AT EACH SUMP LOCATION.
4. LATERAL PIPES LOCATED IN AREAS WITH FINAL COVER SHALL BE BURIED NO MORE THAN 12 INCHES BELOW TOP OF FINAL COVER VEGETATION LAYER. LATERAL PIPES LOCATED ON AREAS WITH NO FINAL COVER SHALL BE BURIED A MINIMUM OF 2 FEET BELOW EXISTING WASTE/INTERMEDIATE COVER GRADE.
5. PIPING FROM SUMPS AND LEACHATE CLEANOUT RISER WILL BE CONNECTED TO NEAREST UPSLOPE SUB HEADER OR LATERAL RISER. A LANDTEC CONTROL VALVE WILL BE INSTALLED AT THE CONNECTION LOCATION FOR MONITORING PURPOSES.
6. CONNECTION TO A LEACHATE CLEANOUT RISER WILL ONLY BE MADE IF THE RISER IS LOCATED ADJACENT TO THE SUMP PAD.

Golder Associates
Jacksonville, Florida

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

Kevin Brown, P.E.
P.E. License No. _____

PROJECT
J.E.D. SOLID WASTE
MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY,
FLORIDA

TITLE
LFG TYPICAL SUMP
CONNECTION DETAILS

PROJECT No.		083-82734
FILE No.		08382734D032C
REV. 0	SCALE	AS SHOWN
DESIGN	DEG	03/23/10
CADD	BCL	07/19/10
CHECK	DEG	07/19/10
REVIEW	KSB	07/19/10

DRAWING
32C OF 40

Drawing File: 08382734D032C.dwg Dec 01, 2010 - 9:08am

APPENDIX D

AS-BUILT SURVEY

2011 CELLS 3, 4, 5, AND 6 GCCS EXPANSION AS-BUILT SURVEY

SURVEYOR's NOTES:

1.) North and coordinate basis is the East Zone of the Florida State Plane Coordinate System, and are based on NGS Control Station Numbers AJ7660(J496) and verified Pickett & Associates Targets 1 and 2 from Topographic Survey dated 12/13/01 as provided. The published values used for this survey are NAD 83 2007 adjustment. The Mapping data shown hereon is based on Pickett & Associates Survey as provided by client.

2.) Vertical information depicted on this report are GPS derived elevations based on the National Geodetic Vertical Datum of 1929 (NGVD29) utilizing site control as provided PK13 with an elevation of 92.92 and 001406 with an elevation of 80.91.

ASBUILT SURVEY - GCCS
PH1&2 CELLS 3 THROUGH 7
J.E.D. SOLID WASTE MANGEMENT FACILITY
1501 OMNI WAY ST. CLOUD, FL

CLIENT:
Omni Waste of Osceola County, LLC
Waste Services, Inc.
1501 Omni Way
St. Cloud, Fl 34773

PEAVEY & ASSOCIATES
SURVEYING AND MAPPING, PA
690 ALICE PLACE
BARTOW, FLORIDA 33830
PHONE: (863) 738-4960
FAX: (863) 533-6872

Drawn By: DLP
Party Chief: DR
Field Book:
Page:

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

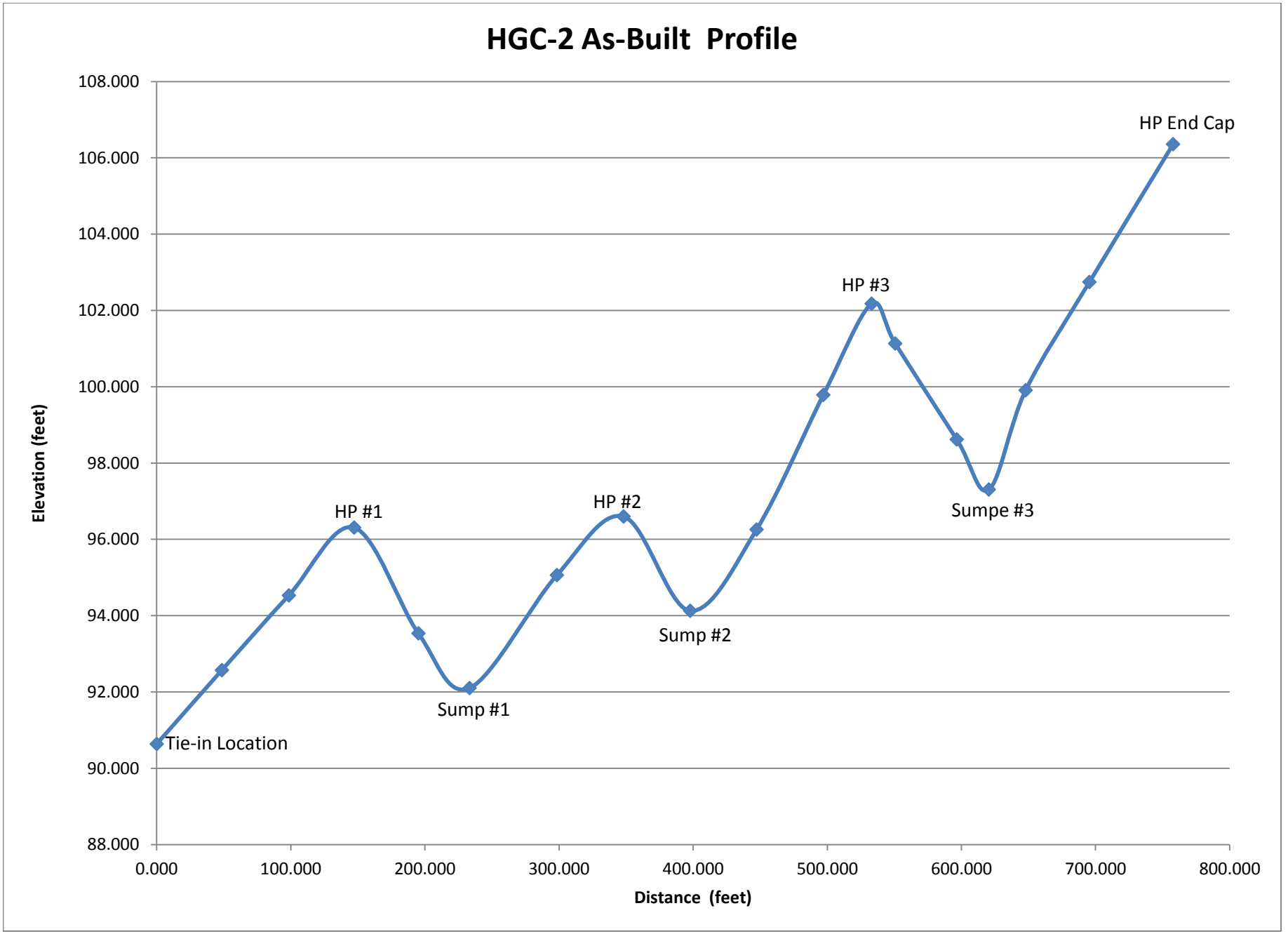
FILE NAME: 617-jed-gaspipe-12-14-2011

NO.	DATE	REVISION

SCALE: 1"=100'
PROJECT NO: 617
SURVEY DATES: 12/24/2011
DRAWING NO: 213
SHEET 1 OF 1

DEBORAH L. PEAVEY, P.S.M.
PROFESSIONAL SURVEYOR AND MAPPER
NUMBER 6345
STATE OF FLORIDA

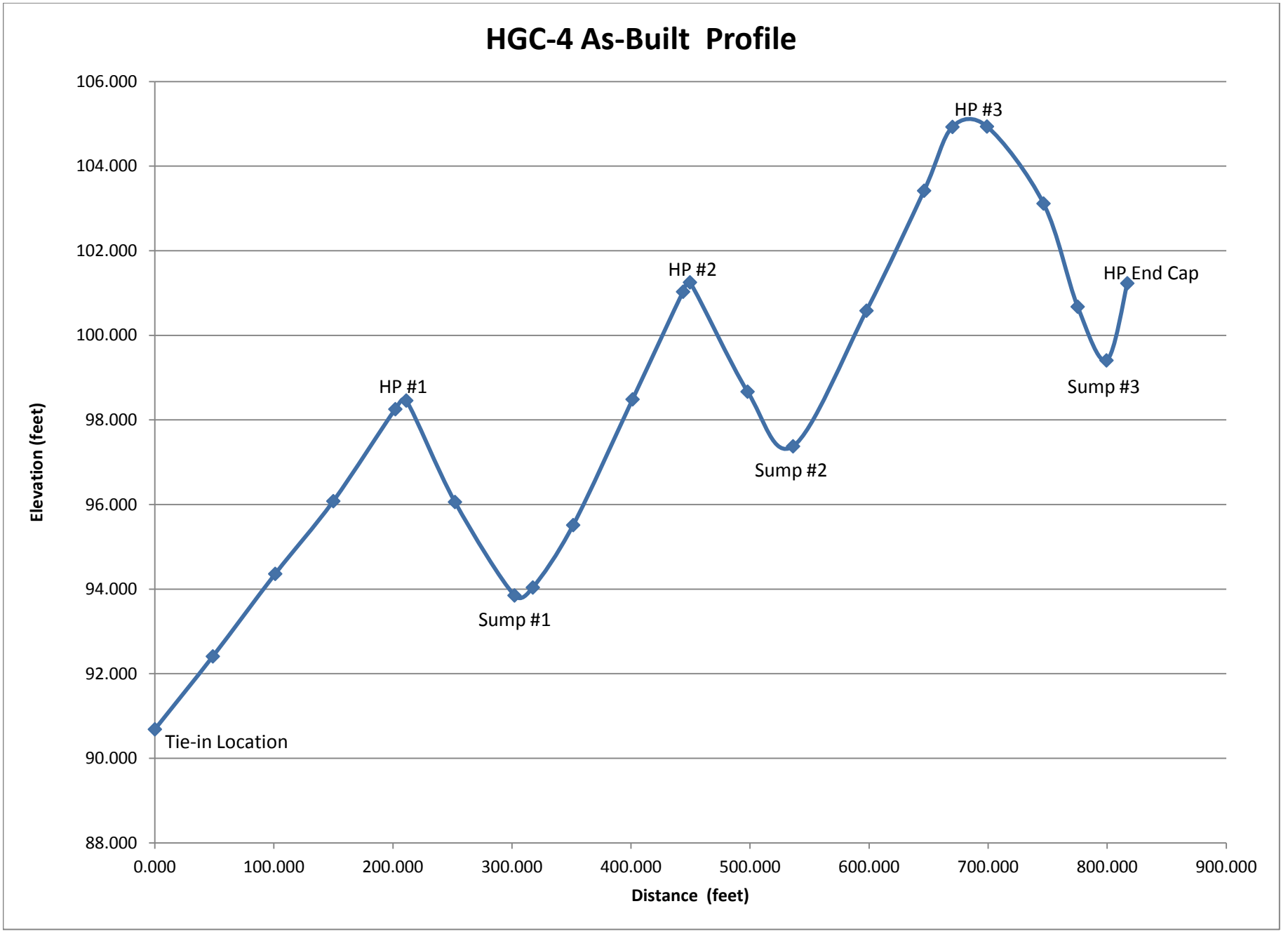
2011 CELL 7 GCCS EXPANSION AS-BUILT SURVEY


HGC-2 As-Built Profile
108.000
106.000
104.000
102.000
100.000
98.000
96.000
94.000
92.000
90.000
88.000
Elevation (feet)
0.000
100.000
200.000
300.000
400.000
500.000
600.000
700.000
800.000
Distance (feet)
Tie-in Location
HP #1
Sump #1
HP #2
Sump #2
HP #3
Sumpe #3
HP End Cap

HGC-2 As-Built Survey

Survey Performed by JED Facility Operations

Point Name	Measured Northing	Measured Easting	Measured Elevation
HGC-2 Tie In	1355043.152	623997.720	90.636
HGC-2 TP 10 inch	1355043.539	624046.311	92.572
HGC-2 TP 10 inch	1355044.084	624096.249	94.531
HGC-2 HP-1	1355043.705	624144.933	96.310
HGC-2 TP 10 inch	1355044.185	624192.868	93.536
HGC-2 Sump 1	1355045.714	624230.942	92.103
HGC-2 TP 10 inch	1355043.947	624296.024	95.063
HGC-2 HP-2	1355042.350	624345.723	96.600
HGC-2 Sump 2	1355040.805	624395.345	94.128
HGC-2 TP 10 inch	1355043.560	624444.767	96.258
HGC-2 TP 10 inch	1355041.593	624494.510	99.786
HGC-2 HP-3	1355042.652	624530.341	102.177
HGC-2 TP 10 inch	1355043.331	624548.075	101.134
HGC-2 TP 10 inch	1355044.557	624593.938	98.619
HGC-2 Sump 3	1355045.655	624617.817	97.307
HGC-2 TP 10 inch	1355046.274	624645.281	99.908
HGC-2 TP 10 inch	1355045.677	624692.834	102.747
HGC-2 End Cap HP	1355044.870	624755.191	106.358


HGC-4 As-Built Profile
106.000
104.000
102.000
100.000
98.000
96.000
94.000
92.000
90.000
88.000
Elevation (feet)
0.000
100.000
200.000
300.000
400.000
500.000
600.000
700.000
800.000
900.000
Distance (feet)
Tie-in Location
HP #1
Sump #1
HP #2
Sump #2
HP #3
Sump #3
HP End Cap

HGC-4 As-Built Survey

Survey Performed by JED Facility Operations

Point Name	Measured Northing	Measured Easting	Measured Elv
HGC-4 tie in	1354801.875	623994.989	90.685
HGC-4 50	1354803.733	624043.662	92.409
HGC-4 100	1354802.840	624096.083	94.360
HGC-4 150	1354802.068	624144.857	96.079
HGC-4 200	1354801.704	624196.951	98.254
HGC-4 HP-1	1354801.109	624206.163	98.458
HGC-4 250	1354801.488	624247.080	96.059
HGC-4 300	1354803.190	624297.052	93.850
HGC-4 Sump 1	1354802.290	624312.453	94.038
HGC-4 350	1354804.858	624346.253	95.513
HGC-4 400	1354803.465	624396.095	98.486
HGC-4 450	1354803.424	624438.525	101.030
HGC-4 HP-2	1354803.190	624444.322	101.252
HGC-4 500	1354804.831	624492.703	98.668
HGC-4 Sump 2	1354802.613	624530.837	97.376
HGC-4 550	1354804.362	624592.482	100.582
HGC-4 600	1354803.472	624640.871	103.419
HGC-4 TP 10"	1354802.450	624664.611	104.927
HGC-4 HP-3	1354802.428	624664.671	104.937
HGC-4 650	1354804.418	624693.581	103.116
HGC-4 700	1354804.065	624741.069	100.676
HGC-4 Sump 3	1354804.047	624769.791	99.407
HGC-4 750	1354803.096	624793.955	101.230
HGC-4 End cap	1354803.189	624811.478	102.966

APPENDIX E
AS-BUILT WELL SCHEDULE

AS-BUILT WELL SCHEDULE - 2011 CELLS 3, 4, 5, AND 6 GCCS EXPANSION
J.E.D. Solid Waste Management Facility

Well ID	Northing[1] (ft)	Easting[1] (ft)	Ground Elevation[1] (ft)	Total Borehole Depth (ft)	Slotted Length (ft)	Solid Length[2] (ft)
GW-22	1356491.92	624682.84	261.2	97	84	24
GW-28	1356288.67	624682.12	267.5	85	70	23
GW-58	1356401.48	624904.43	237.3	76	60	24
GW-61	1356202.03	624905.45	236.0	83	68	24
GW-64	1356016.13	625105.31	175.3	58	40	26
GW-65	1356003.97	624903.48	234.6	103	85	28
GW-68	1355810.14	624901.13	234.8	88	72	28
GW-70	1355617.9	625102.95	177.9	52	35	19
GW-89	1355508.05	624252.62	173.0	69	53	30
GW-92	1355466.68	624082.85	134.9	34	17.5	25
GW-14R1	1356942.61	624442.85	240.3	55	40	20
GW-15R2	1356893.27	624602.48	258.3	78	62	22
GW-30R1	1356169.45	624443.09	238.3	60.5	48	24
Totals	---	---	---	1032.5	734.5	317

Notes:

[1] Ground elevations, northings, and eastings provided by Peavey & Associates Surveying and Mapping, PA dated December 14, 2011.

[2] Solid length includes below ground solid pipe and above ground (stick up) solid pipe. The above ground (stick up) solid pipe accommodates final closure cover elevations.

Golder Associates

APPENDIX F
WELL BORING LOGS

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-89 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite
GAI Rep: Josh Richards

Date/Time Began Drilling: 11/21/11 9:35 AM
Date/Time Complete Drilling: 11/21/11 1:10 PM
Northing: 1,355,508.05

Date/Time Began Well Install: 11/21/11 1:21 PM
Date/Time Complete Well Install: 11/21/11 4:00 PM
Easting: 624,252.62
Top of Well Casing Elevation: 187.54'
Ground Elevation: 173.0'

		Design	Actual
A	Total Depth:	69'	69'
B	Screen Length:	53.5'	53'
C	Solid Pipe Length:	15+15=30'	15+15=30'
	# of Centralizers:	0	0

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	69' (ends at 68.5' BGS)
E	◉ #57 Stone? ○ #89 Stone?	☑	68.5' (ends at 14.5' BGS)
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	14.5' (ends at 12.5' BGS)
H	Soil Fill to 3' bgs?	☑	12.5' (ends at 3' BGS)
I	2nd Bentonite Seal?	☑	3' (ends at 1' BGS)

Depth to Top Liner: 15' (As provided by Geosyntec)

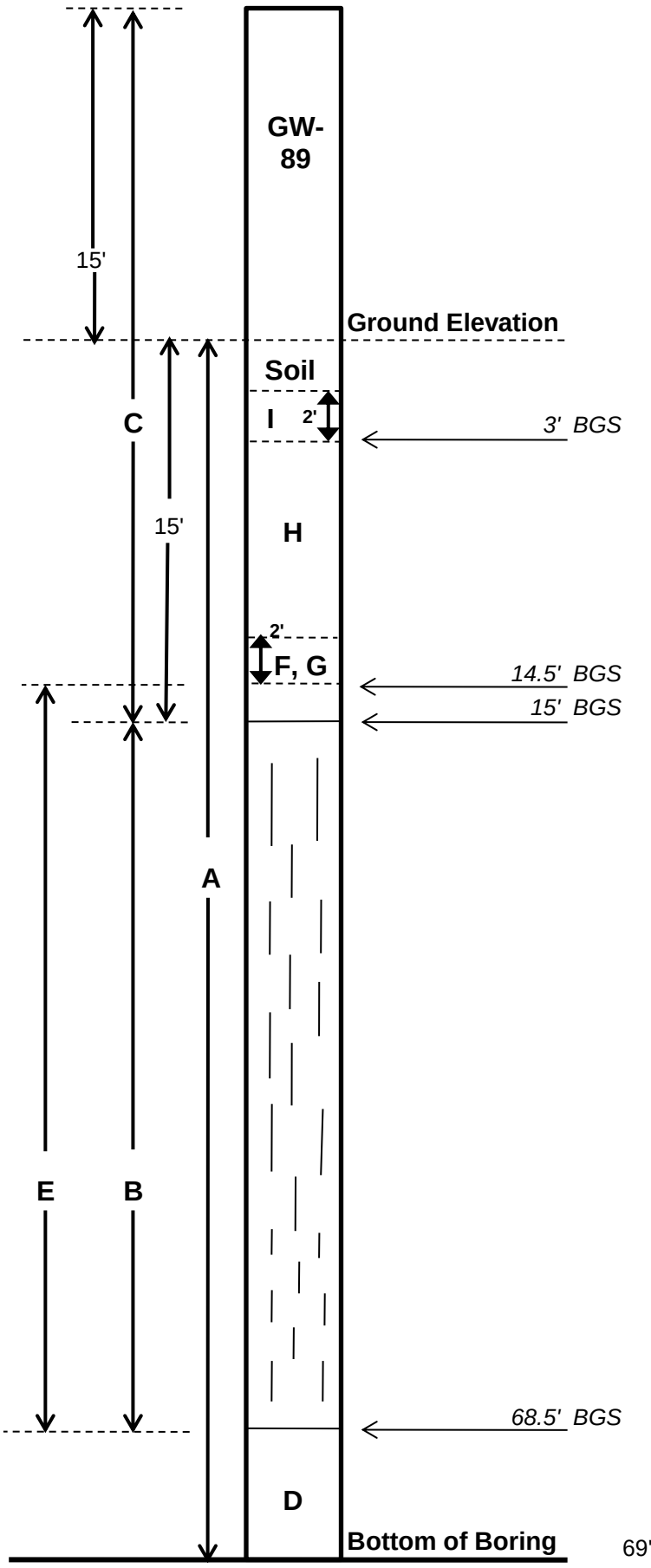
Depth to Waste: 0.5' BGS

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW, soil 20% M=10%, D=Little	108.6	10:00
10-20	MSW, soil 10% M=15%, D=Moderate	114	10:20
20-30	MSW, soil 10% M=20%, D=Moderate	120	10:38
30-40	MSW, soil 10% M=20%, D=Moderate	127	11:40
40-50	MSW, soil 5% M=25%, D=Moderate	121	12:15
50-60	MSW, soil 5% M=25%, D=Moderate	118	12:35
60-69	MSW, soil 5% M=25%, D=Moderate	127	13:10

*Key: M=Moisture Content, D=Decomposition

Notes: Drilled to design depth.

CQA Tech Signature: Date: 11/21/11



Landfill Gas Extraction Well Boring and Construction Log

Project #: 083-82734.19

Well ID: GW-92 **Site:** J.E.D. SWMF

Onsite
GAI Rep: Josh Richards

Date/Time Began Drilling: 11/21/11 7:45 AM
Date/Time Complete Drilling: 11/21/11 9:25 AM
Northing: 1,355,466.68

Date/Time Began Well Install: 11/21/11 9:30 AM
Date/Time Complete Well Install: 11/21/11 11:27 AM
Easting: 624,082.85
Top of Well Casing Elevation: 143.97
Ground Elevation: 134.9'

		Design	Actual
A	Total Depth:	33'	34
B	Screen Length:	17.5'	17.5
C	Solid Pipe Length:	15+5=20'	15+10=25'
	# of Centralizers:	0	0

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	34' (ends at 32.5' BGS)
	◉ #57 Stone?	☑	
E	○ #89 Stone?		32.5' (ends at 14.5' BGS)
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	14.5' (ends at 12.5' BGS)
H	Soil Fill to 3' bgs?	☑	12.5' (ends at 3' BGS)
I	2nd Bentonite Seal?	☑	3' (ends at 1' BGS)

Depth to Top Liner: 15' (As provided by Geosyntec)

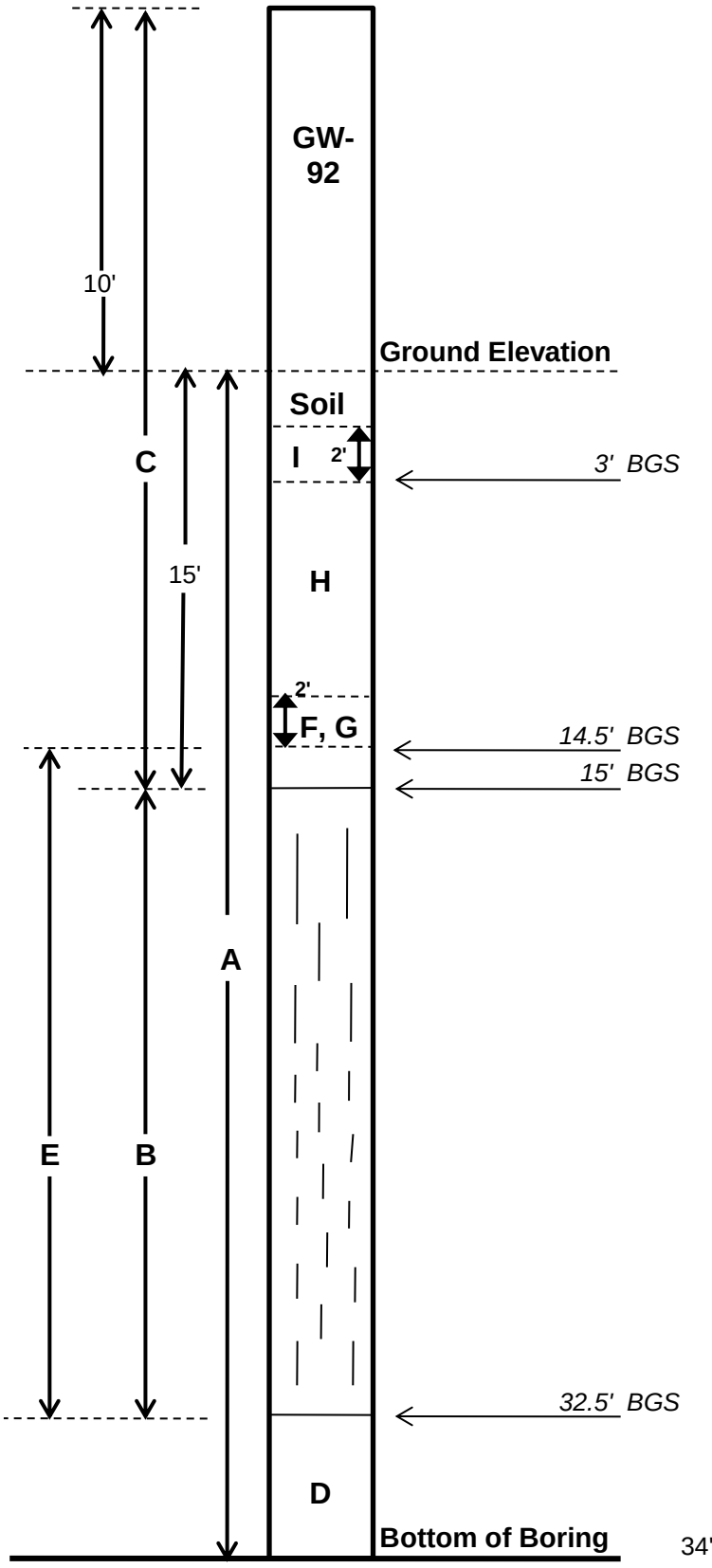
Depth to Waste: 0.5' BGS

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW, soil 5% M=10%, D=Little	108.6	8:02
10-20	MSW, soil 5% M=10%, D=Little	127.9	8:18
20-34	MSW, soil 25% M=20%, D=Moderate	105.7	8:50

*Key: M=Moisture Content, D=Decomposition

Notes: Drilled to design depth.

CQA Tech Signature: Date: 11/21/11



Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-70 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 11/28/11 10:45am
Date/Time Complete Drilling: 11/28/11 3:25pm
Northing: 1,355,617.90

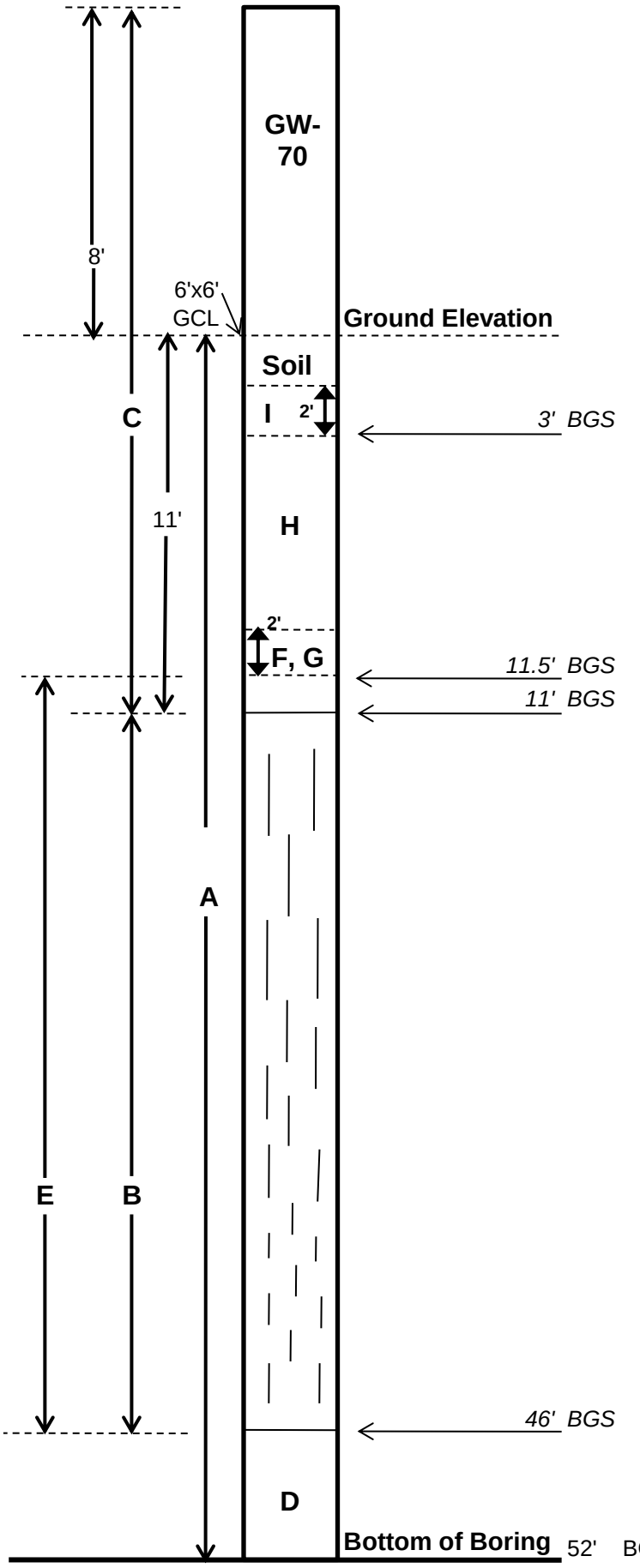
Date/Time Began Well Install: 11/28/11 3:25pm
Date/Time Complete Well Install: 11/25/11 5:00pm
Easting: 625,102.95
Top of Well Casing Elevation: 185.28
Ground Elevation: 177.9

		Design	Actual
A	Total Depth:	80'	52'
B	Screen Length:	64.5'	35'
C	Solid Pipe Length:	15+9+24'	11+8('AG)=19'
	# of Centralizers:	0'	0'

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	52' (ends at 46')
E	◉ #57 Stone? ○ #89 Stone?	☑	46" (ends at 11.5')
F	GeoDisc?	☑	11.5'
G	1st Bentonite Seal?	☑	11.5' (ends at 9.5')
H	Soil Fill to 3' bgs?	☑	9.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 0'



Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW, some soil M= 10%, D= little	98.1	11:19am
10-20	Mostly soil MSW= 25%, M= 10%, D= little	114.8	11:57am
20-30	MSW= 75% soil M= 10%, D= little,	111.3	12:20pm
30-40	Soils 85% MSW M= 10% D= little	124.4	12:43pm
40-50	Soils & ash, Wet at 45' M= 30%, D= some	127.7	1:06pm
50-52	Soils M= 30%, D= none	--	3:25pm

*Key: M=Moisture Content, D=Decomposition

Notes: Drilled to 52', at this depth we continued to remove moist soils for over an hour but did not advance in depth. Based on the large amount of recovered soil, it appears that the portion of the borehole was coming in on itself. Soil was not wet only moist. Got approval from WSI to set well at 52'. By the time we set the well, the borehole had filled in 6' and we were only able to set it at 46' (35' perf.; 11' solid BG, and 8' solid AG)

CQA Tech Signature: Veronica K. Figueroa Date: 11/28/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-68 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 11/29/11 7:40am
Date/Time Complete Drilling: 11/29/11 12:44pm
Northing: 1,355,810.14

Date/Time Began Well Install: 11/29/11 12:44pm
Date/Time Complete Well Install: 11/29/11 2:00pm
Easting: 624,901.13
Top of Well Casing Elevation: 246.58
Ground Elevation: 234.8'

		Design	Actual
A	Total Depth:	132'	88'
B	Screen Length:	116.5'	72'
C	Solid Pipe Length:	15+13=28'	15+13=28'
	# of Centralizers:	0'	0'

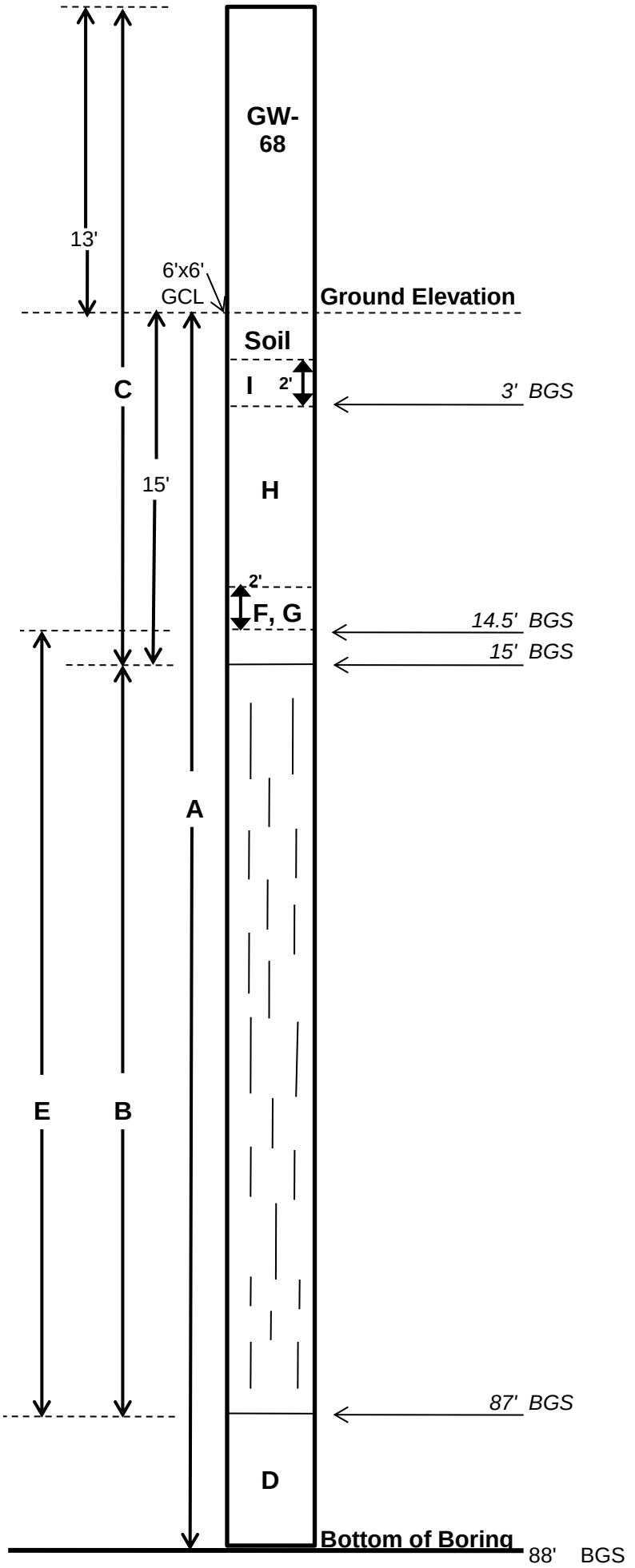
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	88' (ends at 87')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		87' (ends at 14.5')
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	14.5' (ends at 12.5')
H	Soil Fill to 3' bgs?	☑	12.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' top soil

Depth (bgs)	Description*	Temp (F)	Time
0-10	2' top soil, MSW M= 10%, D= little	116.4	7:56am
10-20	MSW=50%, soils= 50% M= 15%, D=some	124.3	8:08am
20-30	MSW M= 15%, D= some	110	8:24am
30-40	MSW M= 20%, D= some	116	8:53am
40-50	MSW, soils M= 25%, D= some	112	9:17am
50-60	Soils wt at 55', lots of liquids M=45%, D= some	107	10:50am
60-70	MSW M=30%, D= some	120	11:30am
70-80	MSW, soils 50% M=30%, D= some	121.6	11:52am
80-88	Soils M=30%, D= some M= 30%, D=some	120.1	12:44pm

*Key: M=Moisture Content, D=Decomposition



Notes: Encountered saturated materials for 1hr 9:30-10:30am and only advanced 4'. Installed bucket disks at 11:00am and was able to drill through wet area. At 87' we continue to remove moist soils but did not advance in depth. Based on the large amount of recover soil, we believe the borehole was caving in on itself. Got approval from WSI to set well at 87', 72' perf 15' BG solid and 13' HG solid.

CQA Tech Signature: Veronica M. Figueroa Date: 11/29/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-65 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 11/30/11 7:45am
Date/Time Complete Drilling: 11/30/11 2:05pm
Northing: 1,356,003.97

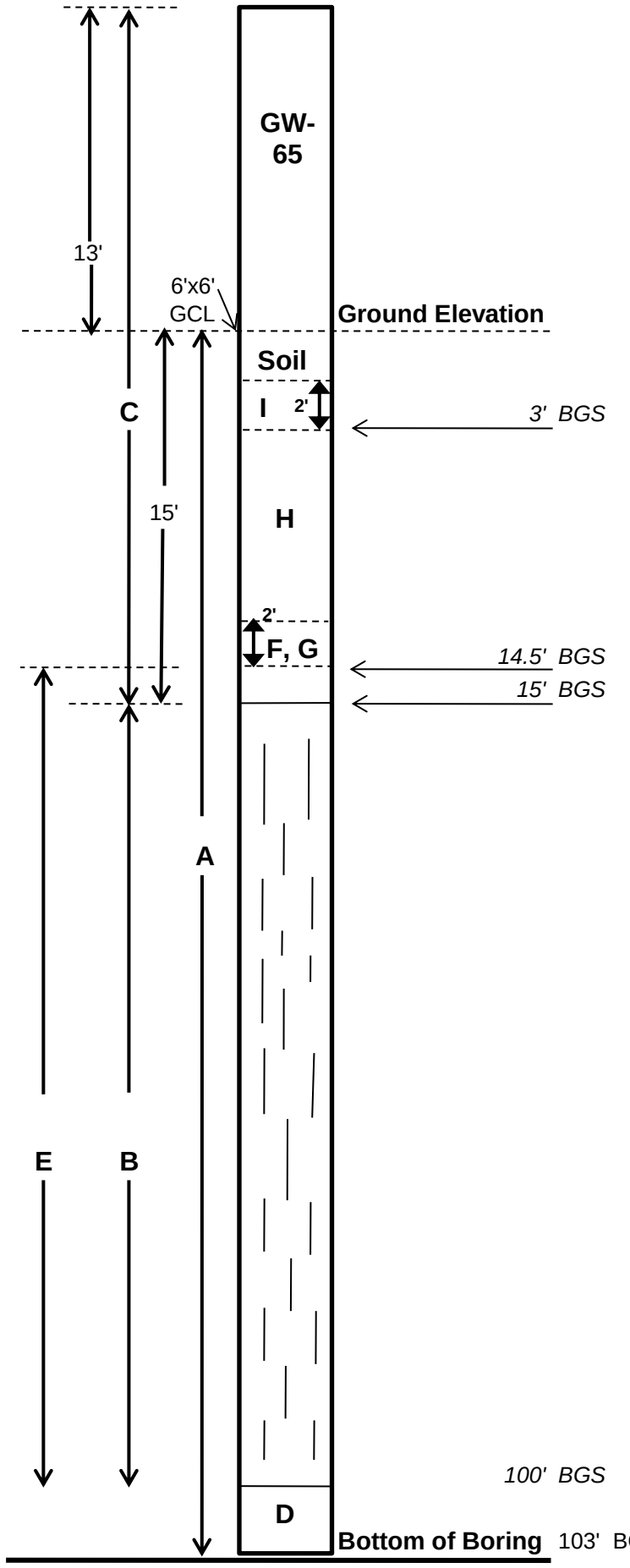
Date/Time Began Well Install: 11/30/11 2:05pm
Date/Time Complete Well Install: 11/30/11 3:40pm
Easting: 624,903.48
Top of Well Casing Elevation: 246.76
Ground Elevation: 234.6'

		Design	Actual
A	Total Depth:	124'	103'
B	Screen Length:	108.5'	85'
C	Solid Pipe Length:	15+13=28'	15+13=28'
	# of Centralizers:	0'	0'

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	103' (ends at 100')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		100' (ends at 14.5')
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	14.5' (ends at 12.5')
H	Soil Fill to 3' bgs?	☑	12.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2-3' top soil



Depth (bgs)	Description*	Temp (F)	Time
0-10	2-3' of top soil, MSW M= 10%, D= little	117.5	7:56am
10-20	MSW m= 15%, D= little	125.3	8:20am
20-30	Soils, 10% MSW M= 10%, D= little	124.6	8:35am
30-40	Soils 755, MSW, D	125.2	9:32am
40-50	MSW M= 15%, D= some	111.1	10:01am
50-60	MSW M=20%, D= moderate	119.3	10:40am
60-70	MSW, large pieces of bark M=25%, D= moderate	108.7	11:11am
70-80	MSW, Soils M= 25%, D= moderate	128.7	11:54am
80-90	MSW, wet soils M=35%, D= moderate	128.9	12:39am
90-100	Wet muck M= 45%, D= severe	133.8	1:21pm
100-103	Wet muck M= 45%, D= severe	108.9	2:05pm

*Key: M=Moisture Content, D=Decomposition

Notes: Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set well at 100' after drilling for 1hr with no advancement. Set well above muck at 100".

CQA Tech Signature: Veronica A. Figueroa Date: 11/30/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-61 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/1/11 7:05am
Date/Time Complete Drilling: 12/1/11 12:20pm
Northing: 1,356,202.03

Date/Time Began Well Install: 12/1/11 12:20pm
Date/Time Complete Well Install: 12/1/11 2:05pm
Easting: 624,905.45
Top of Well Casing Elevation: 248.49'
Ground Elevation: 236.0'

		Design	Actual
A	Total Depth:	128'	83'
B	Screen Length:	115.5'	68'
C	Solid Pipe Length:	12+12=24'	12+12=24'
	# of Centralizers:	0'	0'

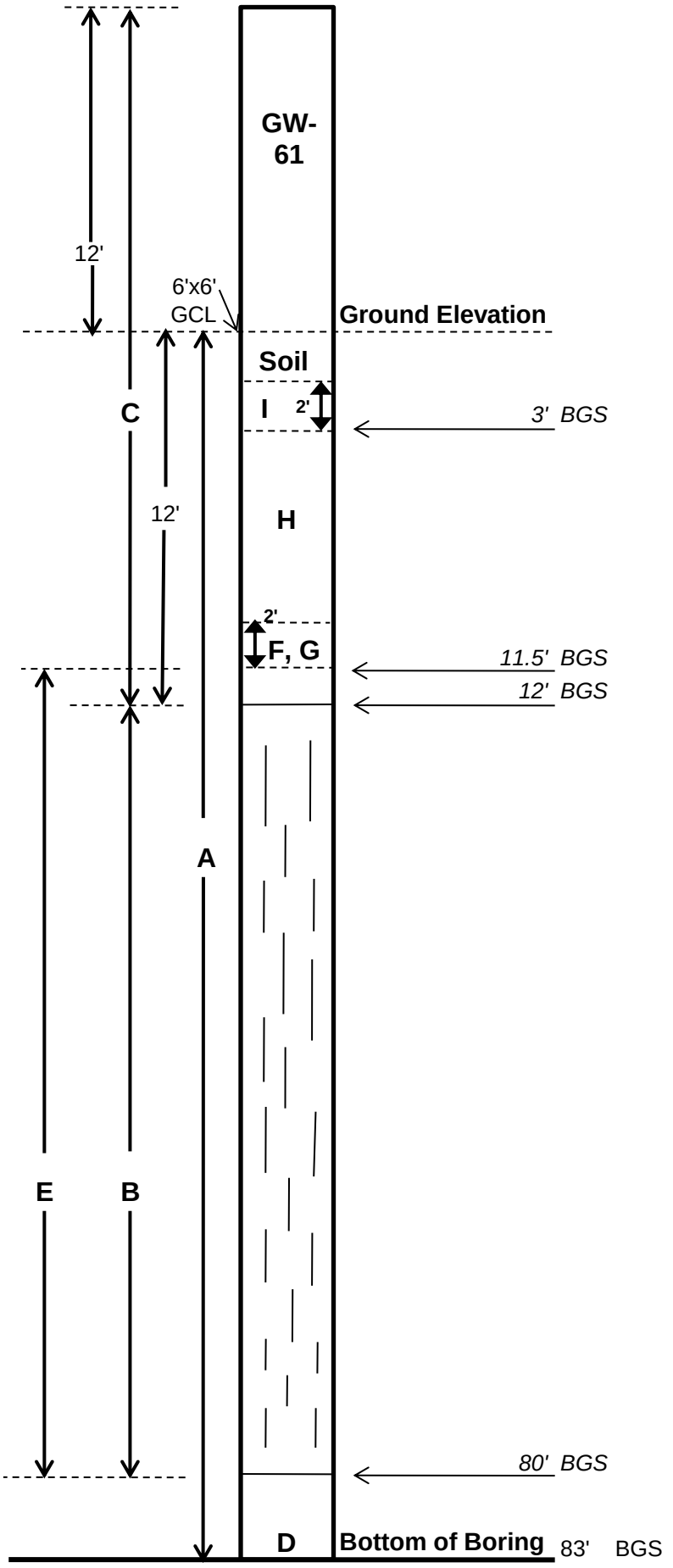
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	83' (ends at 80')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		80' (ends at 11.5')
F	GeoDisc?	☑	11.5'
G	1st Bentonite Seal?	☑	11.5' (ends at 9.5')
H	Soil Fill to 3' bgs?	☑	9.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' topsoil

Depth (bgs)	Description*	Temp (F)	Time
0-10	2' topsoil, MSW M= 15%, D= little	102.8	7:25am
10-20	MSW M= 20%, D= little	95.9	7:45am
20-30	MSW, soils M= 20%, D= little	109.5	8:08am
30-40	MSW M= 40% (wet), D= moderate	104.6	8:40am
40-50	MSW M= 30%, D= moderate	114.8	9:30am
50-60	MSW M= 30%, D= moderate	107.1	9:56am
60-70	MSW, wet at 68' soils M= 35%, D= moderate	110.3	10:39am
70-80	Mush at 75% (wet) 11am	101.5	11:40am
80-83	Mush wet M= 40%, D= severe	101.2	12:16pm

*Key: M=Moisture Content, D=Decomposition



Notes: Slush plates are on. Encountered saturated materials for 1hr and did not make footage progress. WSI gave approval to set well at 83'. Muck from 83' to ~80'. Set well at 80" (78' slotted, 12' solid BG and 12' solid AG)

CQA Tech Signature: Veronica K. Figueroa Date: 12/1/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-58 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/2/11 7:10am
Date/Time Complete Drilling: 12/2/11 11:23am
Northing: 1,356,401.48

Date/Time Began Well Install: 12/2/11 11:25am
Date/Time Complete Well Install: 12/2/11 12:15pm
Easting: 624,904.43
Top of Well Casing Elevation: 248.6
Ground Elevation: 237.3

		Design	Actual
A	Total Depth:	132'	76'
B	Screen Length:	118.5'	60'
C	Solid Pipe Length:	13+11=24	13+11=24'
	# of Centralizers:	0'	0'

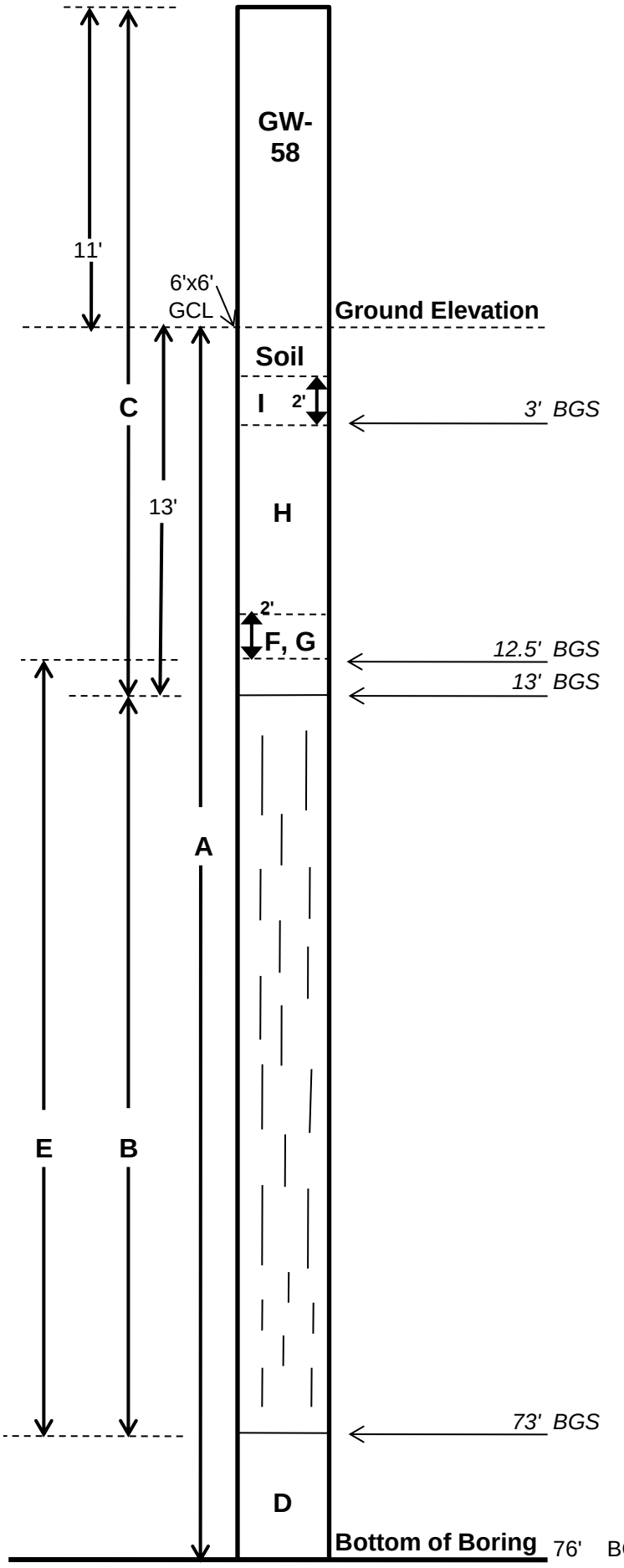
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	76' (ends at 73')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		73' (ends at 12.5')
F	GeoDisc?	☑	12.5'
G	1st Bentonite Seal?	☑	12.5' (ends at 10.5')
H	Soil Fill to 3' bgs?	☑	10.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' topsoil

Depth (bgs)	Description*	Temp (F)	Time
0-10	2' topsoil, MSW M= 10%, D= little	99.8	7:22am
10-20	MSW M= 15%, D= little	109.4	7:43am
20-30	MSW M= 15%, D= little	100.9	7:58am
30-40	MSW M= 15%, D= little	97.2	8:20am
40-50	MSW M=20%, D= some	114.8	9:03am
50-60	MSW M= 20%, D= Some	102.4	9:32am
60-70	MSW M= 35%, D= moderate	111.5	10:04am
70-76	at 72' soils (wet) and concrete M= 40%, D= moderate	110.2	11:23am

*Key: M=Moisture Content, D=Decomposition



Notes: Slush plates installed during drilling. Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set at 73' after drilling for line with little advancement. Bucket could go to 75' but we set the well at 73' (above the muck).

CQA Tech Signature: Veronica A. Figueroa Electronic Date: 12/2/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-64 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/2/11 12:30pm
Date/Time Complete Drilling: 12/2/11 3:27pm
Northing: 1,356,016.13

Date/Time Began Well Install: 12/2/11 3:30pm
Date/Time Complete Well Install: 12/2/11 4:45pm
Easting: 625,105.31
Top of Well Casing Elevation: 185.89'
Ground Elevation: 175.3'

		Design	Actual
A	Total Depth:	68'	58'
B	Screen Length:	52.5'	40'
C	Solid Pipe Length:	15+11=26'	15+11=26'
	# of Centralizers:	0'	0'

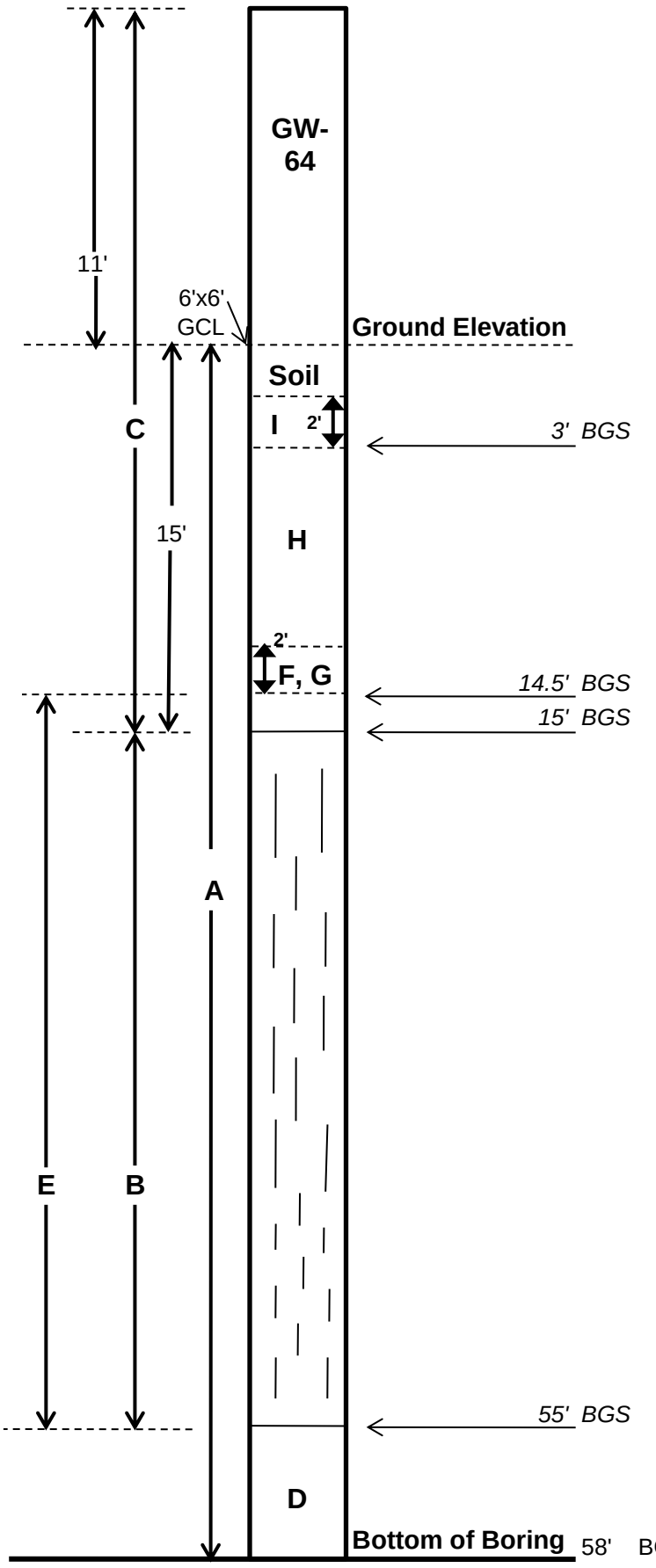
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	58' (ends at 55')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		55" (ends at 14.5')
F	GeoDisc?	☐	14.5'
G	1st Bentonite Seal?	☑	14.5' (ends at 12.5')
H	Soil Fill to 3' bgs?	☑	12.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' top soil

Depth (bgs)	Description*	Temp (F)	Time
0-10	2' topsoil MSW M= 10%, D= little	106.7	12:44pm
10-20	MSW M= 15%, D= little	111.3	1:00pm
20-30	MSW M= 20%, D= some	129.8	1:22pm
30-40	MSW M= 25%, D= some	106.5	2:00pm
40-50	MSW (wet) sludge M= 25%, D= some	111.8	2:29pm
50-60	MSW (wet sludge) M= 45%, D= severe	105.4	3:27pm
60-70			

*Key: M=Moisture Content, D=Decomposition



Notes: Slush plates installed during drilling. Encountered saturated materials that could not be excavated using a buck auger. Mike S. gave approval to set well at 55'' after drilling for 1hr with little advancement. Bucket could go 58' but we set the well at 55' above the muck.

CQA Tech Signature: Veronica Figueroa Date: 12/2/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-22 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/3/11 7:15am
Date/Time Complete Drilling: 12/3/11 1:02pm
Northing: 1,356,491.92

Date/Time Began Well Install: 12/3/11 1:05pm
Date/Time Complete Well Install: 12/3/11 2:15pm
Easting: 624,682.84
Top of Well Casing Elevation: 270.28'
Ground Elevation: 261.2'

		Design	Actual
A	Total Depth:	143'	97'
B	Screen Length:	129'	84'
C	Solid Pipe Length:	13.5+11=24.5'	13+11=24'
	# of Centralizers:	0'	0'

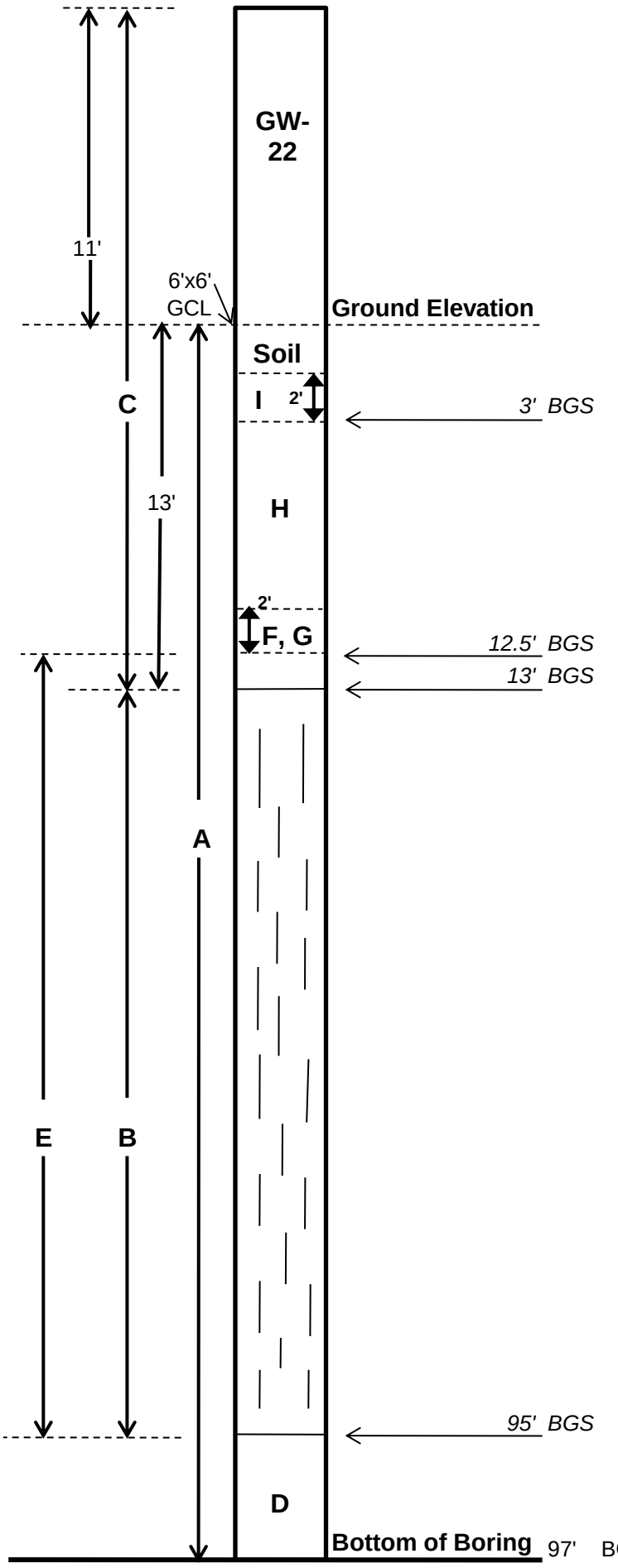
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	97' (ends at 95')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		95' (ends at 12.5')
F	GeoDisc?	☑	12.5'
G	1st Bentonite Seal?	☑	12.5' (ends at 10.5')
H	Soil Fill to 3' bgs?	☑	10.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 0'

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW M= 10%, D= little	102.5	7:31am
10-20	MSW M= 15%, D= little	101.8	7:45am
20-30	MSW M= 15%, D= little	106.6	8:13am
30-40	MSW M= 15%, D= little	111.3	8:42am
40-50	MSW M= 20%, D= some	119.2	9:11am
50-60	MSW M= 25%, D= some	135.7	9:45am
60-70	MSW, muck M= 35%, D= severe	116.9	10:38am
70-80	MSW, muck M= 40%, D= severe	117.3	11:19am
80-90	muck M= 45%, D= severe	109.8	11:54am
90-97	muck, liquids at 97' M= 45%, D= severe	107.1	1:02pm

*Key: M=Moisture Content, D=Decomposition



Notes: Slush plates installed during drilling. Encountered saturated materials that could not be excavated using a bucket auger. Set at well at 95' (84' plf. 15' BG and 11" solid AG).

CQA Tech Signature: Veronica R. Figueroa Date: 12/3/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-15R2 **Site:** J.E.D. SWMF

Project #: 083-82734.18
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/5/11 7:32am
Date/Time Complete Drilling: 12/5/11 11:26am
Northing: 1,356,893.27

Date/Time Began Well Install: 12/5/11 12:52pm
Date/Time Complete Well Install: 12/5/11 2:30pm
Easting: 624,602.48
Top of Well Casing Elevation: 265.99'
Ground Elevation: 258.3'

		Design	Actual
A	Total Depth:	146'	78'
B	Screen Length:	132.5'	62'
C	Solid Pipe Length:	13+9=22'	13+9=22'
	# of Centralizers:	0'	0'

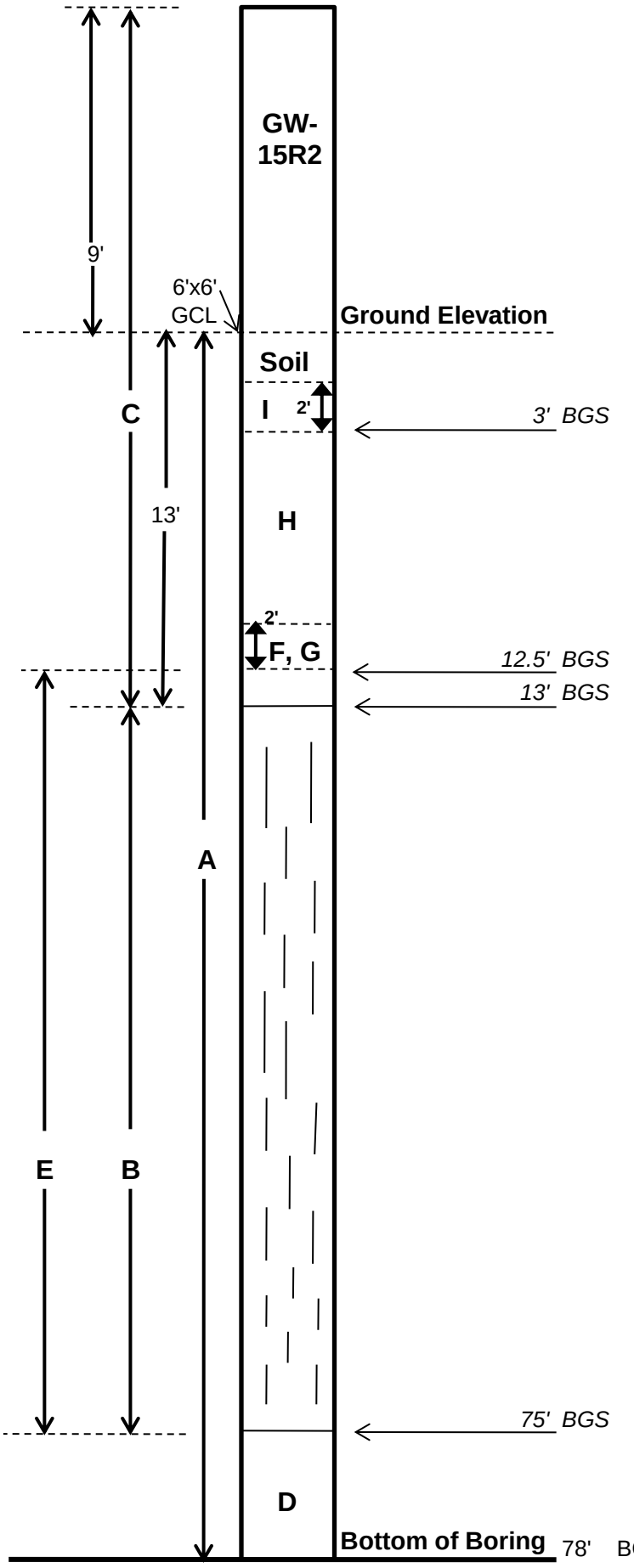
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	78' (ends at 75')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		75' (ends at 12.5')
F	GeoDisc?	☑	12.5'
G	1st Bentonite Seal?	☑	12.5' (ends at 10.5')
H	Soil Fill to 3' bgs?	☑	10.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' topsoil

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW, 2' topsoil M=10%, D= little	96.4	7:44am
10-20	MSW M= 10%, D= little	117.3	8:01am
20-30	MSW M= 15%, D= little	128.2	8:23am
30-40	MSW M= 15%, D= some	111.9	8:45am
40-50	MSW/soils, 47' hit water 9am M= 25%, D= moderate	108.4	9:12am
50-60	MSW, soil M= 25%, D= moderate	119.2	9:48am
60-70	MSW, soil M= 30%, D= moderate	131.5	10:29am
70-78	78' , muck M= 40%, D= severe	112.8	11:26am

*Key: M=Moisture Content, D=Decomposition



Notes: Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set well at 78' after drilling for 1hr with little advancement. Bucket could go 78' but we set the well at 75' above muck.

CQA Tech Signature: Veronica A. Figueroa electronic Date: 12/5/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-28 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/6/11 11:00am
Date/Time Complete Drilling: 12/6/11 3:06pm
Northing: 1,356,288.67

Date/Time Began Well Install: 12/6/11 3:10pm
Date/Time Complete Well Install: 12/6/11 4:30pm
Easting: 624,682.12
Top of Well Casing Elevation: 277.26
Ground Elevation: 267.5'

		Design	Actual
A	Total Depth:	150'	85'
B	Screen Length:	136.5'	70'
C	Solid Pipe Length:	13+10=23'	13+10=23'
	# of Centralizers:	0'	0'

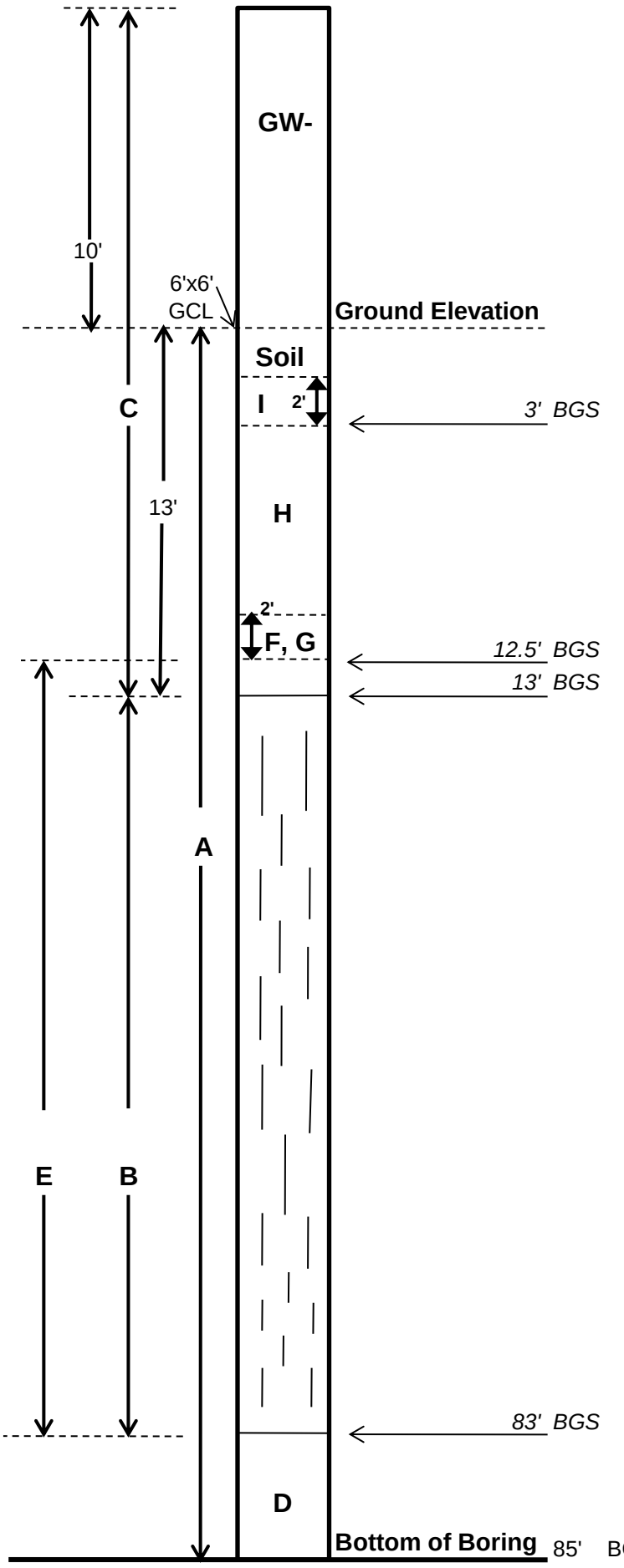
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	85' (ends at 83')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		83' (ends at 12.5')
F	GeoDisc?	☑	12.5'
G	1st Bentonite Seal?	☑	12.5' (ends at 10.5')
H	Soil Fill to 3' bgs?	☑	10.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' topsoil

Depth (bgs)	Description*	Temp (F)	Time
0-10	2' topsoil, MSW M= 10%, D= little	84'	11:14am
10-20	MSW M= 10%, D= little	113.7'	11:32am
20-30	MSW M= 15%, D= little	130.8'	11:54am
30-40	MSW, 50% M= 20%, D= little	128.2'	12:18pm
40-50	MSW, soil M= 20%, D=moderate	132.6'	1:04pm
50-60	MSW M= 20%, D= moderate	127.6'	1:36pm
60-70	MSW, liquids at 67' M= 45%, D= severe	129.4'	2:16pm
70-85	Wet muck M= 45%, D= severe	131.7'	2:53pm

*Key: M=Moisture Content, D=Decomposition



Notes: Encountered saturated materials that could not be excavated using a bucket auger. Set well at 83' (70' slotted, 13' solid BF and 10' solid AG).

CQA Tech Signature: Veronica A. Figueroa Date: 12/6/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-30R1 (abandoned borehole) **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling:	12/7/11 1:40pm		Date/Time Began Well Install:	--
Date/Time Complete Drilling:	12/7/11 3:15pm		Date/Time Complete Well Install:	--
Northing:	1,356,175.68		Easting:	624,446.28
			Top of Well Casing Elevation:	--
			Ground Elevation:	235.3'

		Design	Actual
A	Total Depth:	127'	--
B	Screen Length:	114'	--
C	Solid Pipe Length:	12.5+12=24.5'	--
	# of Centralizers:	0'	--

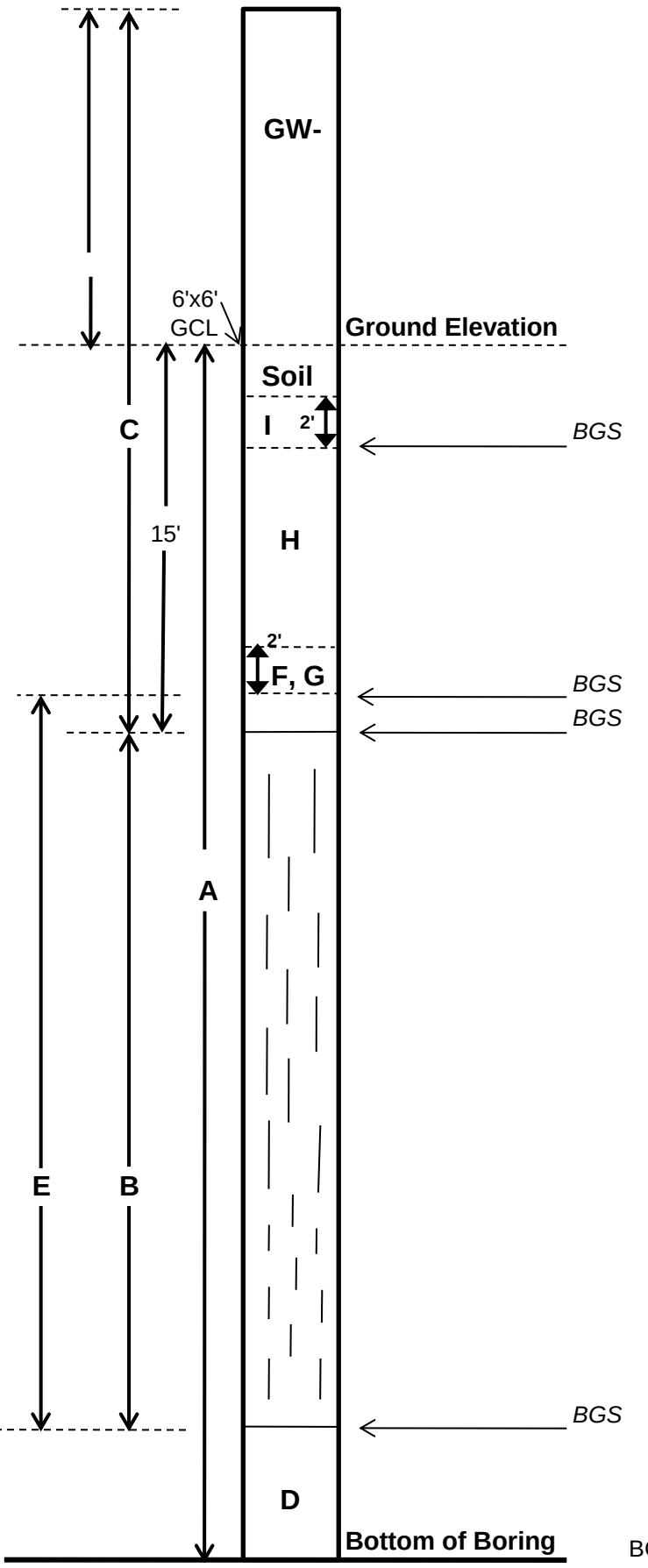
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	--
	◉ #57 Stone?	☑	
E	○ #89 Stone?		--
F	GeoDisc?	☑	--
G	1st Bentonite Seal?	☑	--
H	Soil Fill to 3' bgs?	☑	--
I	2nd Bentonite Seal?	☑	--

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 0'

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW M= 10%, D= little	111.3	1:51pm
10-20	MSW, 10% M= 15%, D= little	117.6	2:04pm
20-30	100% soil M= 20%, D= little	110.5	2:32pm
30-38	soils M= 20%, D= little	111.8	3:15pm

*Key: M=Moisture Content, D=Decomposition



Notes: 18' of soils from 20' depth to 38'. At this depth well began to cave in and bucket could only go to 35'. Bucket could be pushed to 40'. WSI approved abandoning the borehole and relocating to nearby location. Will relocated approximately 20' south of borehole. Borehole back filled with soil.

CQA Tech Signature: Veronica K. Figueroa Date: 12/7/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-14R1 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/7/11 8:00am
Date/Time Complete Drilling: 12/7/11 10:02am
Northing: 1,356,942.61

Date/Time Began Well Install: 12/7/2011 3:15pm
Date/Time Complete Well Install: 12/7/11 4:20pm
Easting: 624,442.85
Top of Well Casing Elevation: 246.28'
Ground Elevation: 240.3'

		Design	Actual
A	Total Depth:	128'	55'
B	Screen Length:	114'	40'
C	Solid Pipe Length:	13.5+7=20.5'	13+7=20'
	# of Centralizers:	0'	0'

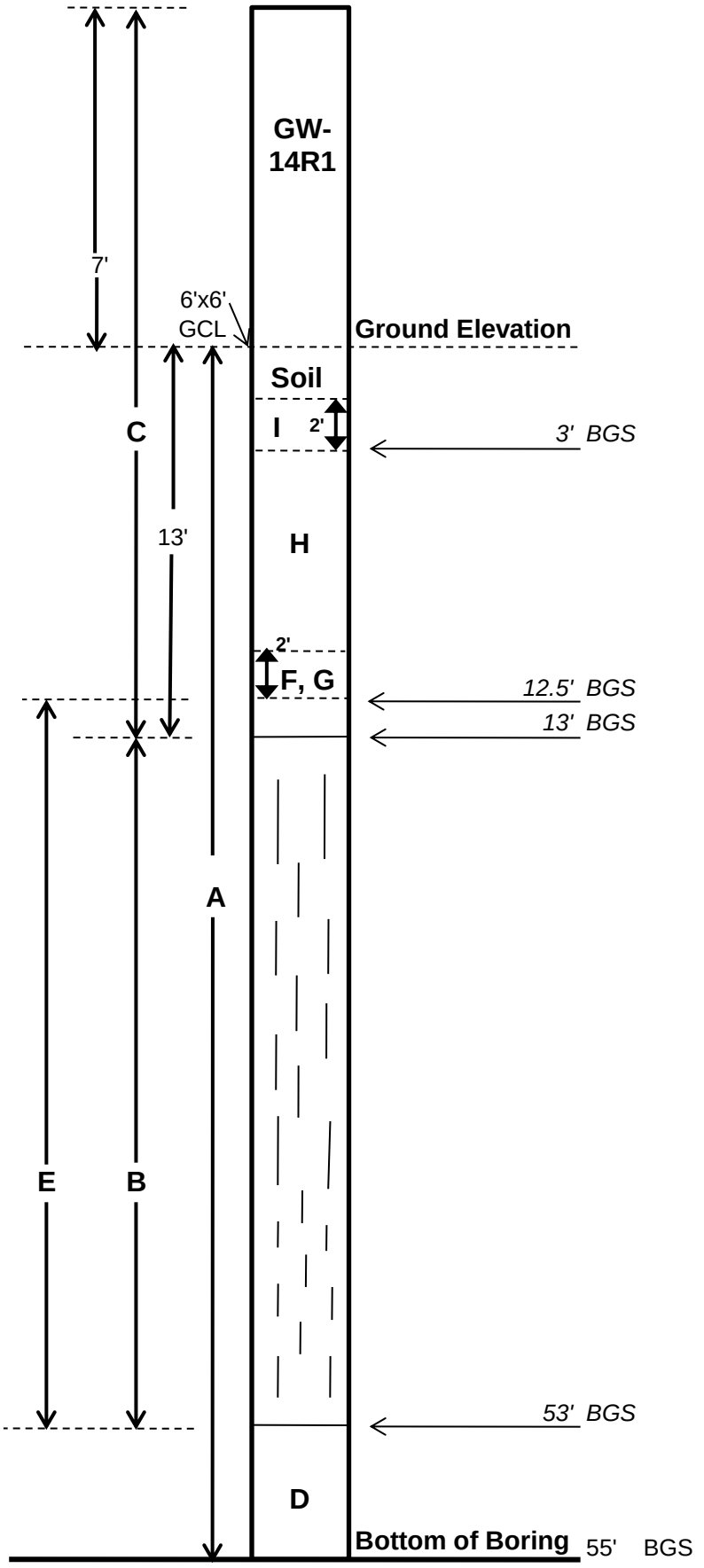
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	55' (ends at 53')
	◉ #57 Stone?	☑	
E	○ #89 Stone?		53' (ends at 12.5')
F	GeoDisc?	☑	12.5'
G	1st Bentonite Seal?	☑	12.5' (ends at 10.5')
H	Soil Fill to 3' bgs?	☑	10.5' (ends at 3')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' topsoil

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW, 505 soils, 2' topsoil M= 10%, D= little	103.8	8:14am
10-20	MSW M= 10%, D= little	106.5	8:31am
20-30	MSW soils 30% M= 15%, D= little	114.5	8:50am
30-40	MSW 30% soils M= 20%, D= little	118.2	9:09am
40-50	Wet at 50' M= 40%, D= severe	126.1	9:32am
50-55	Wet materials M= 40%, D= severe	117.8	10:02am

*Key: M=Moisture Content, D=Decomposition



Notes: Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set well at 55'. Set well at 53' above the muck with 40' perf, 13' BG, and 7' AG).

CQA Tech Signature: Veronica A. Figueroa Date: 12/7/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-14R1 (abandoned borehole) **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling:	12/6/11 8:02am		Date/Time Began Well Install:	--
Date/Time Complete Drilling:	12/6/11 10:38am		Date/Time Complete Well Install:	--
Northing:	1,356,978.77		Easting:	624,435.05
			Top of Well Casing Elevation:	--
			Ground Elevation:	236.4

		Design	Actual
A	Total Depth:	128'	--
B	Screen Length:	114'	--
C	Solid Pipe Length:	13.5+7=20.5'	--
	# of Centralizers:	0'	--

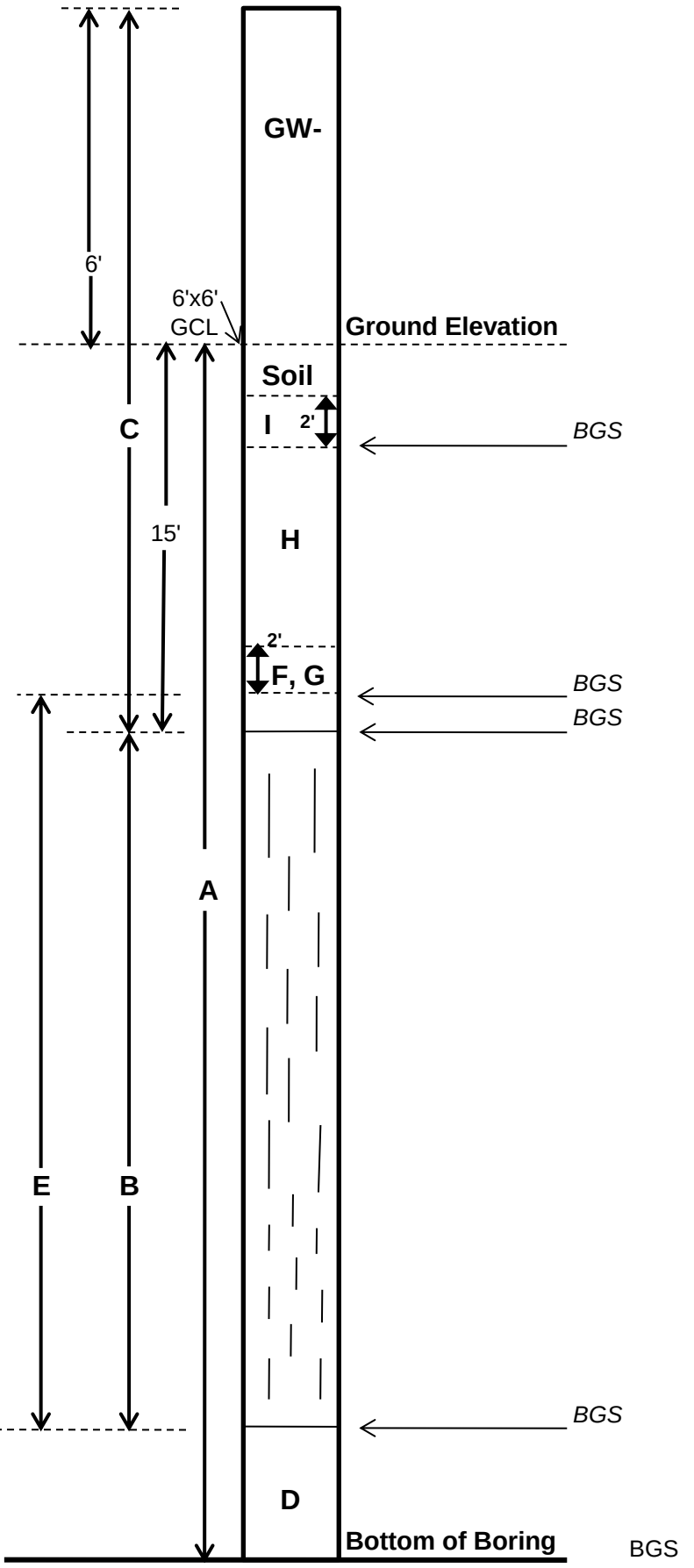
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	--
	◉ #57 Stone?	☑	
E	○ #89 Stone?		--
F	GeoDisc?	☑	--
G	1st Bentonite Seal?	☑	--
H	Soil Fill to 3' bgs?	☑	--
I	2nd Bentonite Seal?	☑	--

Depth to Top Liner: 15' (as provided by Geosyntec)

Depth to Waste: 2' topsoil

Depth (bgs)	Description*	Temp (F)	Time
0-10	Top soil 2', MSW 90% soils M= 10%, D= little	99	8:14am
10-20	Soils 30% MSW M= 10%, D= little	110.7	8:26am
20-30	Soils 20% MSW M= 15%, D= little	108.3	8:46am
30-40	soils 10% MSW M= 15%, D= little	122	9:26am
40-50	MSW soils, 49' hit water M= 15%, D= some	124	9:47am
50-54	muck M= 45%, D= severe	120.4	10:38am

*Key: M=Moisture Content, D=Decomposition



Notes: Encountered saturated materials that could not be excavated using a bucket auger at 54'. WSI approved abandoning the borehole and relocating to nearby location. Will relocate approximately 20' southeast. Borehole backfilled with soil.

CQA Tech Signature: Veronica K. Figueroa Date: 12/6/11

Landfill Gas Extraction Well Boring and Construction Log

Well ID: GW-30R1 **Site:** J.E.D. SWMF

Project #: 083-82734.19
Onsite Rep: Veronica Figueroa

Date/Time Began Drilling: 12/8/11 7:50am
Date/Time Complete Drilling: 12/8/11 11:50am
Northing: 1,356,169.45

Date/Time Began Well Install: 12/8/11 11:50am
Date/Time Complete Well Install: 12/8/11 2:00pm
Easting: 624,443.09
Top of Well Casing Elevation: 245.46
Ground Elevation: 238.26

		Design	Actual
A	Total Depth:	127'	60.5'
B	Screen Length:	114'	48'
C	Solid Pipe Length:	12.5+12=24.5'	12+12=24'
	# of Centralizers:	0'	0'

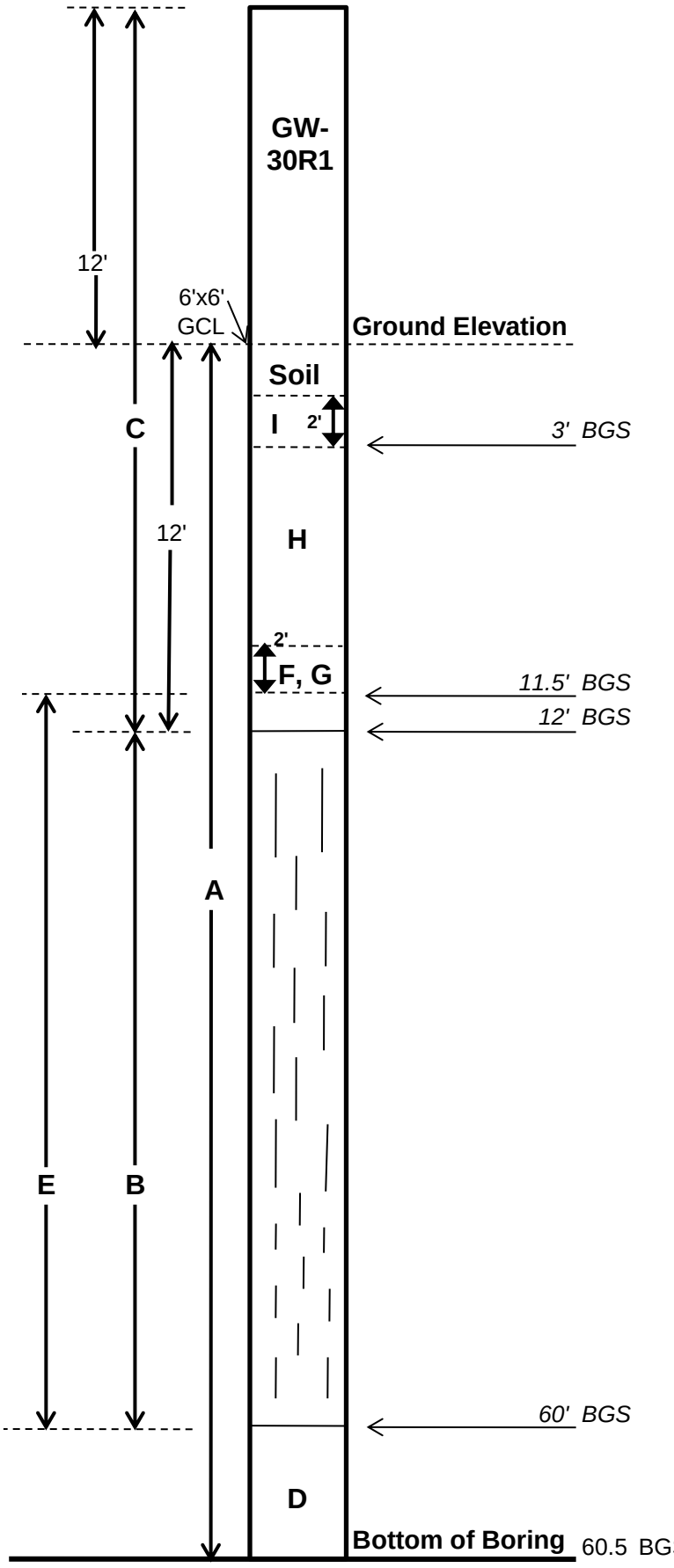
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	60.5' (ends at 60')
E	◉ #57 Stone? ○ #89 Stone?	☑	60' (ends at 11.5')
F	GeoDisc?	☑	11.5'
G	1st Bentonite Seal?	☑	11.5' (ends at 9.5')
H	Soil Fill to 3' bgs?	☑	9.5' (ends at 3.0')
I	2nd Bentonite Seal?	☑	3' (ends at 1')

Depth to Top Liner: 15' (as determined by Geosyntec)

Depth to Waste: 0'

Depth (bgs)	Description*	Temp (F)	Time
0-10	MSW M= 15%, D= little	95'	8:08am
10-20	MSW moist, soils 50% M= 15%, D= little	109'	8:20am
20-30	Soils (moist) 60% M= 20%, D= some	108'	8:36am
30-40	MSW soils 20% M= 20%	108'	8:55am
40-50	MSW soils 80% M= 35%, D= mud	107'	9:19am
50-60	wet muck M= 45%, D= severe	110.1'	11:50am

*Key: M=Moisture Content, D=Decomposition



Notes: At 53' had to change cable (~9:25am). Began to drill again at 11:28am. Encountered saturated materials that could not be excavated using a bucket auger.

CQA Tech Signature: Veronica R. Figueroa Date: 12/8/11

APPENDIX G
PHOTOGRAPHIC DOCUMENTATION OF CONSTRUCTION ACTIVITIES

PHOTOGRAPHS

Photograph 1: Project equipment - Deere 200 C LC track hoe

Photograph 2: Project equipment - Deere 120 C track hoe.

Photograph 3: Project equipment – Deere 550J dozer.

Photograph 4: Project equipment – Komatsu dump truck.

Photograph 5: Project equipment – Soilmec SR 30.

Photograph 6: Project equipment – Green cylinder fusion machine.

Photograph 7: Gravel backfill for extraction wells. Lab analysis: gravel finer than No. 4 sieve is 0.2%, gravel finer than No. 200 sieve is 0.1%, carbonate content is 0.1%.

Photograph 8: 8” SCH 80 slotted PVC pipe.

Photograph 9: 8” SCH 80 solid PVC pipe.

Photograph 10: 8” SCH 80 PVC slot width.

Photograph 11: 8” SCH 80 PVC 45° apart, staggered rows.

Photograph 12: 8” SCH 80 PVC slot length.

Photograph 13: 8” SCH 80 PVC cap.

Photograph 14: 8” SCH 80 PVC cap with lag bolts.

Photograph 15: 6” HDPE SDR 17 pipe.

Photograph 16: 12” HDPE SDR 17 pipe.

Photograph 17: 10” HDPE SDR 11 perforated pipe with end cap.

Photograph 18: 12” HDPE SDR 11 tee with flange adapters and backup rings.

Photograph 19: HDPE SDR 17 hard weld showing acceptable bead.

Photograph 20: Air testing 12” HDPE SDR 17 header in Cell 5 (passed).

Photograph 21: 12” HDPE SDR 17 blind flange for future expansion.

Photograph 22: Applying anti-rust spray on bolts.

Photograph 23: Survey slope construction laser set at 5% for trenching laterals and header (typical).

Photograph 24: Sanded trench for lateral (typical).

Photograph 25: Tie-in to existing lateral riser for lateral expansion (typical).

Photograph 26:12” header in Cell 5 with 12”x6” lateral riser.

Photograph 27: Lateral riser with 90° elbow and top-of-pipe survey riser (typical).

Photograph 28: Lateral riser with tee and top-of-pipe survey riser (typical).

Photograph 29: Backfilled trench. Caution tape applied and survey posts every 50 ’and at points of interest (typical).

Photograph 30: Backfilled trench with survey posts every 50 ’and at points of interest. Well head assembly installed with access bound (typical).

Photograph 31: Applying PVC primer and cement when joining well casing joints (typ).

Photograph 32: Lag bolting joints to provided additional support (typical).

Photograph 33: Backfilling extraction well with stone and measuring stone depth (typ).

Photograph 34: Applying geotextile donut at extraction well (typical).

Photograph 35: Bentonite used for plugs at extraction wells.

Photograph 36: Hydrating bentonite plug at extraction well (typical).

Photograph 37: Adding sandy soil backfill in between bentonite plugs (typical).

Photograph 38: GCL sheet at extraction well (typical).

Photograph 39: Encountered saturated materials that could not be excavated using a bucket auger (typ).

Photograph 40: Lag bolting cap to abandoned well casing (typ).

Photograph 41: Extending existing lateral towards redrill well (typ).

Photograph 42: Abandoned a portion of lateral GW-53 to GW-54 and replaced compromised pipe.

Photograph 43: For horizontal gas collectors (HGC), survey slope construction laser set at 3% for trenching solid pipe portion and 5% for perforated pipe portion (typical).

Photograph 44: HGC tie-in to 8” side-slope riser with electrofusion coupling and 8”x10 reducer.

Photograph 45: Placing backfill around HGC tie-in to 8” side-slope riser (typical).

Photograph 46: Backfill HGC trench with 1-ft thick coarse stone (typical).

Photograph 47: 10” HDPE SDR 11 pipe above top of coarse stone. 10” First 100’ of pipe to be solid 10” HDPE and remaining pipe to be perforated 10” HDPE. (typ).

Photograph 48: Tire chips used for HGC backfill (typical).

Photograph 49: Backfill trench approximately 1 ½ ft above top of 10-inch HDPE SDR 11 pipe with tire chips. Place 8 oz geotextile above tire chip backfill.

Photograph 1: Project equipment - Deere 200 C LC track hoe.

Photograph 2: Project equipment - Deere 120 C track hoe.

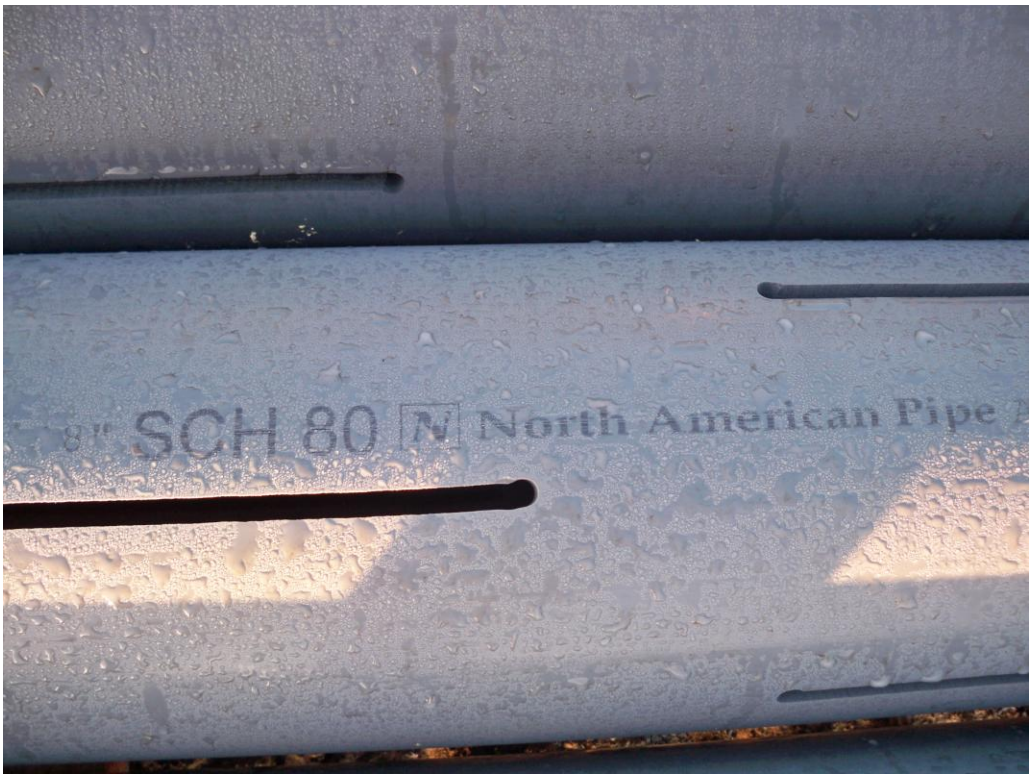
Photograph 3: Project equipment – Deere 550J dozer.

Photograph 4: Project equipment – Komatsu dump truck.

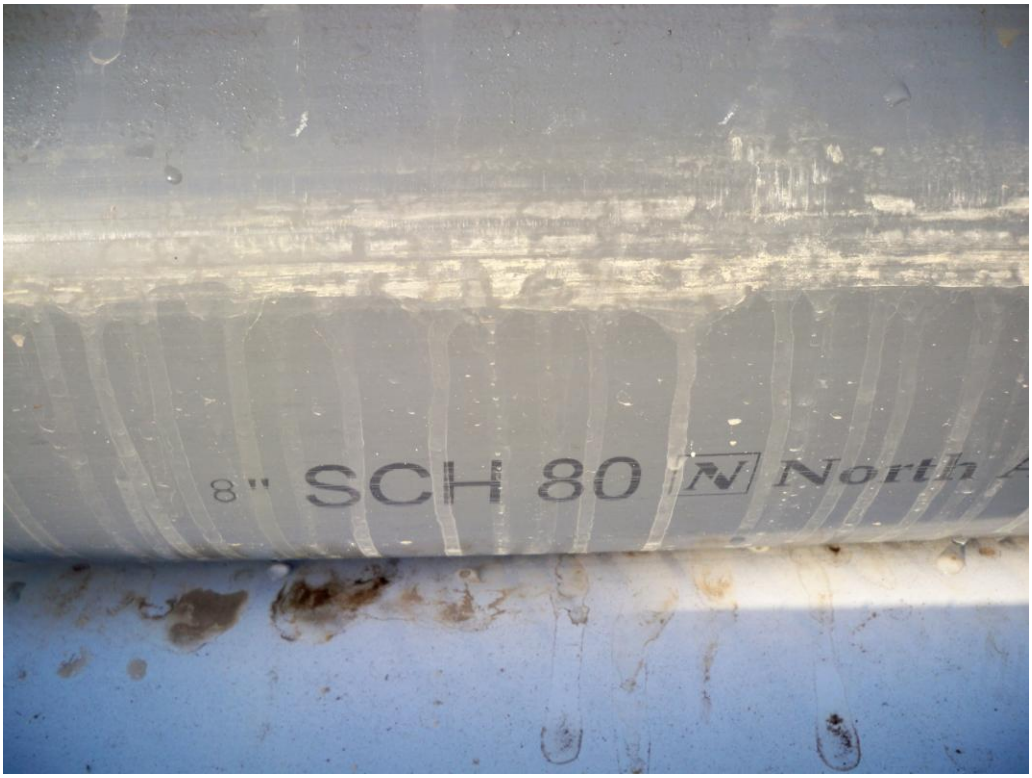
Photograph 5: Project equipment – Soilmec SR 30.

Photograph 6: Project equipment – Green cylinder fusion machine.

Photograph 7: Gravel backfill for extraction wells. Lab analysis: gravel finer than No. 4 sieve is 0.2%, gravel finer than No. 200 sieve is 0.1%, carbonate content is 0.1%.



Photograph 8: 8” SCH 80 slotted PVC pipe.



Photograph 9: 8” SCH 80 solid PVC pipe.

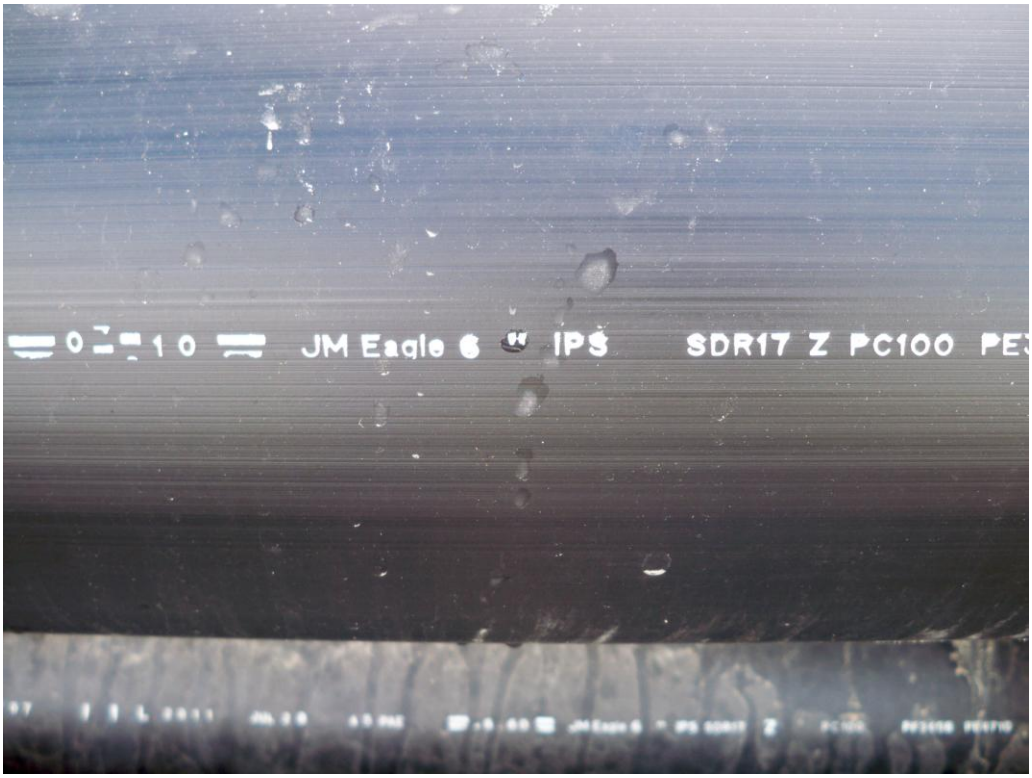
Photograph 10: 8” SCH 80 PVC slot width.

Photograph 11: 8” SCH 80 PVC 45° apart, staggered rows.

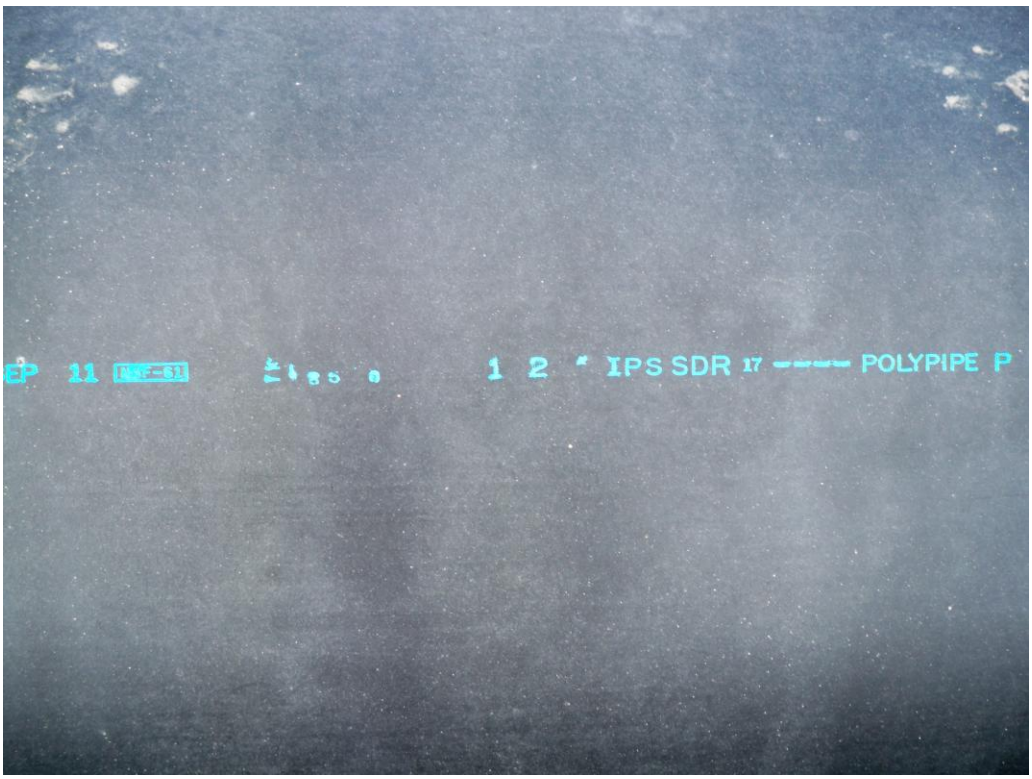
Photograph 12: 8” SCH 80 PVC slot length.

Photograph 13: 8” SCH 80 PVC cap.


Photograph 14: 8” SCH 80 PVC cap with lag bolts.



Photograph 15: 6” HDPE SDR 17 pipe.



Photograph 16: 12” HDPE SDR 17 pipe.

Photograph 17: 10” HDPE SDR 11 perforated pipe with end cap.

Photograph 18: 12” HDPE SDR 11 tee with flange adapters and backup rings.

Photograph 19: HDPE SDR 17 hard weld showing acceptable bead.

Photograph 20: Air testing 12” HDPE SDR 17 header in Cell 5 (passed).

Photograph 21: 12” HDPE SDR 17 blind flange for future expansion.

Photograph 22: Applying anti-rust spray on bolts.

Photograph 23: Survey slope construction laser set at 5% for trenching laterals and header (typical).

Photograph 24: Sanded trench for lateral (typical).

Photograph 25: Tie-in to existing lateral riser for lateral expansion (typical).

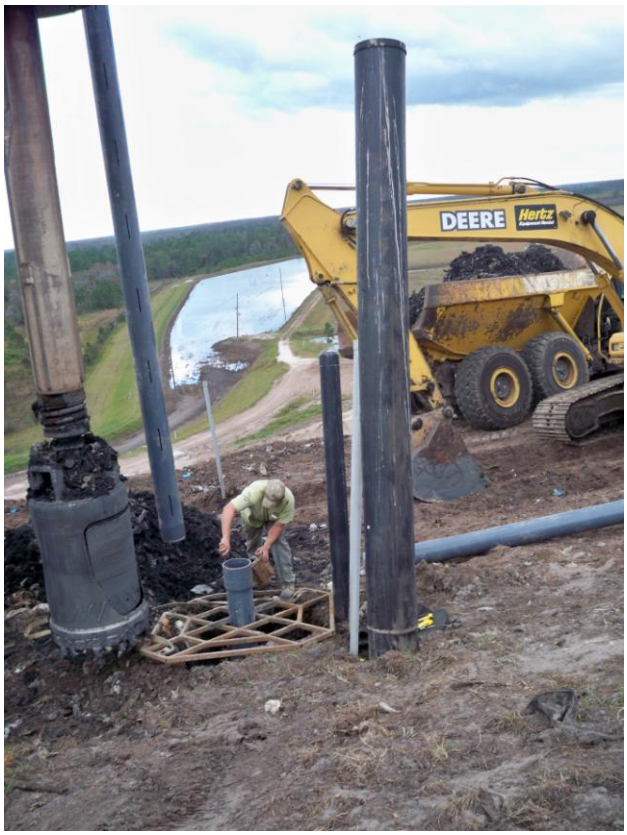
Photograph 26:12” header in Cell 5 with 12”x6” lateral riser.

Photograph 27: Lateral riser with 90° elbow and top-of-pipe survey riser (typical).

Photograph 28: Lateral riser with tee and top-of-pipe survey riser (typical).

Photograph 29: Backfilled trench. Caution tape applied and survey posts every 50 ’and at points of interest (typical).

Photograph 30: Backfilled trench with survey posts every 50 ’and at points of interest. Well head assembly installed with access bound (typical).



Photograph 31: Applying PVC primer and cement when joining well casing joints (typ).

Photograph 32: Lag bolting joints to provided additional support (typical).

Photograph 33: Backfilling extraction well with stone and measuring stone depth (typ).

Photograph 34: Applying geotextile donut at extraction well (typical).

Photograph 35: Bentonite used for plugs at extraction wells.


Photograph 36: Hydrating bentonite plug at extraction well (typical).

Photograph 37: Adding sandy soil backfill in between bentonite plugs (typical).

Photograph 38: GCL sheet at extraction well (typical).

Photograph 39: Encountered saturated materials that could not be excavated using a bucket auger (typ).

Photograph 40: Lag bolting cap to abandoned well casing (typ).

Photograph 41: Extending existing lateral towards redrill well (typ).

Photograph 42: Abandoned a portion of lateral GW-53 to GW-54 and replaced compromised pipe.

Photograph 43: For horizontal gas collectors (HGC), survey slope construction laser set at 3% for trenching solid pipe portion and 5% for perforated pipe portion (typical).

Photograph 44: HGC tie-in to 8” side-slope riser with electrofusion coupling and 8”x10 reducer.

Photograph 45: Placing backfill around HGC tie-in to 8” side-slope riser (typical).

Photograph 46: Backfill HGC trench with 1-ft thick coarse stone (typical).

Photograph 47: 10” HDPE SDR 11 pipe above top of coarse stone. 10” First 100’ of pipe to be solid 10” HDPE and remaining pipe to be perforated 10” HDPE. (typ).

Photograph 48: Tire chips used for HGC backfill (typical).

Photograph 49: Backfill trench approximately 1 ½ ft above top of 10-inch HDPE SDR 11 pipe with tire chips. Place 8 oz geotextile above tire chip backfill

APPENDIX H
AGGREGATE BACKFILL LABORATORY TEST RESULTS

WSI/NOV 2011 LFG CQA SVCS/FL
SUMMARY OF SOIL DATA

Sample Identification	Sample Type	Sample Depth	Soil Classi-fication	Natural Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Gs	Unit Weight		Carbonate Content %	Additional Tests Conducted (See Notes)
					L.L.	P.L.	P.I.	L.I.	% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %		Moisture %	Dry (lb/cuft)		
Bulk-1	Bulk	-	GP	-	-	-	-	-	0.2	0.1	-	-	-	-	-	-	0.1	-

ABBREVIATIONS:
LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES:
T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH

CARBONATE CONTENT
ASTM D 3042 - MODIFIED

PROJECT TITLE	**WSI/NOV 2011 LFG CQA SVCS/FL**
PROJECT NUMBER	**083-82734-19**
SAMPLE ID	**Bulk-1**

Residue +Tare weight (g)	584.71	590.86	586.41
Tare Weight (g)	83.10	84.40	84.41
Residue weight (g)	501.61	506.46	502.00

After Acid Application and Wash

Residue + Tare weight (g)	584.38	590.51	586.05
Residue weight (g)	501.28	506.11	501.64
Carbonate Content (%)	0.1	0.1	0.1

Average Carbonate Content (%) **0.1**

REMARKS Used pH 4 acid.

SAMPLE DESCRIPTION Gray, COARSE GRAVEL, trace fines.

USCS GP

MODIFIED: Only the Plus No.200 Size material used in the test.

TECH	**TJ/BLB**
DATE	**11/30/11**
CHECK	
REVIEW	
APPROVE	

APPENDIX I
CONSTRUCTION QUALITY ASSURANCE
ENGINEER FIELD MONITORING REPORTS

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19 PROJECT TITLE: 2011 - Cells 3,4,5, & 6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 11/14/11 S (M) T W T F S

THE FOLLOWING WAS NOTED:

- Mob. to site at 6:45 am
- Onsite at 8:30 am
- Met with Keith & Kenny & reviewed scope of work
- Surveyed & marked out wells to be drilled
  - GW-37 & GW-87 will not be drilled during this expansion due to waste grades
  - Will need to survey GW-28 & GW-31 later during construction due to actively place waste in these areas
  - GW-22 1356490.09; 624682.32 Ele = 261.2' Stick up = 11' AG
  - GW-70 1355649.05; 625101.81 Ele = 177.9' Stick up = 9' AG
  - GW-92 1355466.09; 624090.25 Ele = 134.9' Stick up = 5' AG
  - GW-68 1355802.74; 624903.58 Ele = 234.8' stick up = 13' AG
  - GW-65 1356002.74; 624903.94 Ele = 234.6' stick up = 13' AG
  - GW-61 1356202.71; 624904.53 Ele = 236.0' stick up = 12' AG
  - GW-58 1356402.74; 624903.48 Ele = 237.3' stick up = 11' AG
  - GW-64 1356017.14; 625103.23 Ele = 175.3' stick up = 11' AG
  - GW-89 1355507.26; 624253.46 Ele = 173.0' stick up = 15' AG
- Raise well GW-51 20' (T&M for Shaw)
- Valve stems to be at least 8'. Shaw ordered 10' stick ups per WSI request.
- Pressure loss b/w GW-53 & GW-54. Will need to repair (T&M for Shaw)
- Valve nest to go after GW-92 tie-in.
- Per Keith, no 10' stub outs for futur tie-ins will be constructed
- Lunch with Mike K, Mike Parker, & Kenny
- Meeting in afternoon with Mike K.
- Left site at 4pm.

SUBMITTED BY GOLDER ASSOCIATES

Veronica Thomas
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011 - Cells 3, 4, 5, & 6 GCCS Expansion
OWNER: WSF
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE: 11/15/11
S M (T) W T F S

THE FOLLOWING WAS NOTED:

- Onsite at 7:30 am
- Material Inventory
  1 track hoe 120C
  1 track hoe 200C
  1 Bull Dozer 550J
  1 Dump truck
  1 Green 618 Welder Machine
  80 6" HDPE strings (40' long)
  11 12" HDPE strings (40' long)
  5 12" tees
  3 12" butterfly valves
  6" & 12" flange adapters w/ backup rings, bolts, nuts, & washers
  No material for wells/setting wells. Should come in by Friday
- Fused 6" & 12" pipe (duct taped ends)
- Began to extend GW-51 20' but realized there was no vacuum at lateral riser. Spoke with Keith & we are to install a new lateral from GW-54 to GW-51 & from GW-53 to GW-54.
- Worked on well schedule.
- Discussed construction schedule week of Thanksgiving
- Left site at 5pm.

SUBMITTED BY GOLDER ASSOCIATES

Veronica Gomez
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19 PROJECT TITLE: 2011 - Cells 3,4,5,&6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 11/16/11 S M T (W) T F S

THE FOLLOWING WAS NOTED:

- On site at 7:05am
- Reviewed construction drawings with Ken & Kenny
- Fused 6" pipe
- Fused 12" tees to flange adaptors (with backup rings)
- Fuel tank dropped off
- Prepared (fused) all pipe & associated assembly for high-pt header valves (still need some 12" gaskets - will come in tomorrow)
  butterfly valves installed
- Material inventory received today
  12" x 6" reducers
  6" flange adapters
- Josh onsite at 3pm. Reviewed HASP, drawings, scope of work
- Left site at 5:30pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Thigpen
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-8273419.1
PROJECT TITLE: JED WASTE MANAGEMENT FACILITY GCCS
OWNER: WSI
LOCATION: OSCEOLA COUNTY, FL
CONTRACTOR: GOLDER ASSOCIATES / SHAW

DATE 11/17/2011
S M T W (T) F S

THE FOLLOWING WAS NOTED:

0645 ARRIVE ONSITE. REVIEW HASP
0910 BEGIN EXCAVATION @ SW CORNER OF CELL 5
EXPOSE EXISTING LATERAL PIPE WHERE SHAW WILL CONNECT HEADER INTO.
CONFIRM 5% GRADE USING ~~SHE~~ TRIPOD + GRADE SCOPE W/ STAFF
1100 SHAW BREAKS FOR LUNCH
1230 SHAW RETURNS
1400 BEGIN EXCAVATION OF TRENCH FROM HEADER TO GW-89.
1700 DEPART SITE FOR DAY.

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

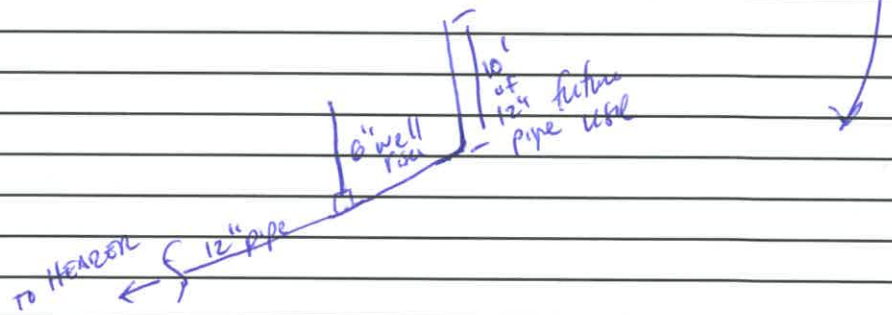
PROJECT NUMBER: 083-8273419.1 PROJECT TITLE: JEA WASTE MANAGEMENT FACILITY GCCS
OWNER: WSI
LOCATION: Osceola County, FL CONTRACTOR: GOLDER ASSOCIATES, SHAW

DATE 11/18/2011 S M T W T F S

THE FOLLOWING WAS NOTED:

0700 ARRIVE ONSITE. REVIEW HASP
0745 SHAW DRILLERS ARRIVE. RIG WILL ARRIVE LATER. SUPPLY TRUCK & HELPERS ARRIVE
STAGE SUPPLIES ON TOP OF LANDFILL
0930 #4 GRANITE BEGINS TO ARRIVE. IT IS STACKED ON TOP OF LANDFILL
1000 LATERAL PIPE WELDED TO HEADER T.
SPOKE W/ DON GRIGG ABOUT #4 GRANITE SAMPLE FOR LAB
1100 SHAW BREAKS FOR LUNCH
1230 SHAW RETURNS. FINISHES WELDS ON HEADER ALL PIPING CONNECTED TO HEADER, EXCEPT CONNECTION INTO EXISTING PIPE

1406 PRESSURE TEST HEADER AND PIPING CONNECTION. 10PSI
1506 PRESSURE TEST COMPLETE. 10PSI
1700 SHAW COMPLETES LATERAL PIPING CONFIG @ GW-89.
1710 DEPART SITE FOR DAY



SUBMITTED BY GOLDER ASSOCIATES

MONITOR

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734 19.1
PROJECT TITLE: JED WASTE MANAGEMENT FACILITY & GCCS
OWNER: WSI
LOCATION: Osceola County FL
CONTRACTOR: GOLDER ASSOCIATES SHAW

DATE 11/19/2011
S M T W T F S

THE FOLLOWING WAS NOTED:

0700 - ARRIVE ONSITE. REVIEW HASP
0832 - BEGIN PRESSURE TEST ON PIPING FOR GW-89. 10.5 psi
0932 - PRESSURE TEST COMPLETE. 10.5 psi
1015 SHAW BEGINS BACKFILLING. SURVEY PIPES PLACED EVERY 50' + AT BENDS 'T's, VALVES, + RISERS
SHAW PLACES CAUTION TAPE ON TOP OF INTERMEDIATE SOIL ABOVE PIPE.
1015. DRILL RIG ARRIVES ONSITE.
1100 SHAW OFFSITE FOR LUNCH
1200 SHAW RETURNS
1500 SHAW COMPLETES BACKFILLING
1530 GOLDER + SHAW OFFSITE.

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-8293419.1
PROJECT TITLE: JEA WASTE MANAGEMENT FACILITY
OWNER: WSI
LOCATION: OSCEOLA COUNTY, FL
CONTRACTOR: GOLDER ASSOCIATES, SHAW

DATE 11/21/2011

S (M) T W T F S

THE FOLLOWING WAS NOTED:

0700 ARRIVE ONSITE. REVIEW HASP
0745 DRILLERS SET UP @ GW-92 TO 33' BGS W/10' STICKUP.
THE STICKUP WAS CHANGED FROM 5' TO 10' BY KEITH (WSI)
REFER TO WELL LOGS FOR SPECIFICS
0925 COMPLETE DRILLING @ GW-92
0930 SET WELL @ GW-92
0935 BEGIN DRILLING @ GW-89 TO 69' BGS
1130 COMPLETE WELL INSTALL @ GW-92
1310 COMPLETE DRILLING @ GW-89
1320 SET WELL @ GW-92
1401 BEGIN PRESSURE TEST ON PIPING FOR GW-70. 13 PSI
1507 COMPLETE TEST. 12.6 PSI.
1600 COMPLETE WELL @ GW-89
1645 DEPART SITE FOR DAY

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011 - Cells 3, 4, 5, & 6 GCCS Expansion
OWNER: WSE
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE 11/18/11

S (M) T W T F S

THE FOLLOWING WAS NOTED:

- On site by 9:30am; Shaw to be on site around 10am
- Reviewed well logs & dailies from 11/17 - 11/21 & went/drove around site to see what construction had been completed.
- Began to drill GW-70 at 10:45. Drilled to 52' and at this depth we continued to remove moist soils for over an hour but did not advance in depth. Based on the large amount of recovered soils, it appears that a portion of the borehole was caving in on itself. Soil was moist but not wet. Got approval from WSE to set well at 52'. By the time we set the well, the borehole had filled in 6 feet & we could only set the well at 46' (35' perf; 11' solid B6 & 8' solid A6). Completed well setting per details. We believe to have filled in a good portion of the augered in borehole because we used much more rock than typical. 6 bags bentonite = 1'.
- Spoke with Mike K. about revising solid length BC for wells in area that will soon be capped.
- Left site at 5pm

New Equipment - Soil Mec - SR30
Trackhoe - 200C LC

SUBMITTED BY GOLDER ASSOCIATES

Veronica Stevens
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011- Cells 3,4,5 & 6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill
CONTRACTOR:

DATE 11/29/11
S M T W T F S

THE FOLLOWING WAS NOTED:

- Onsite at 7:15 am
- Began drilling GW-68 at 7:40 am
- Pipe crew excavated around GW-54 to find 6" lateral that needs to be repaired. Could not find lateral. Keith surveyed another location downslope & they will start to excavate that location tomorrow
- At GW-68 we hit water at 55' at which we drilled for 1 hr and only went 4'. Called Mike K. to ask if they should continue to drill & he told us to drill for ½ hr more hour. Shaw installed disks on the inside of the bucket to assist with poking up trash/liquids in borehole. This was succesful & we were able to drill through the 'water pocket. At 87' well borehole began to cave in on itself as we continued to pull soils out but did not advance in depth. WSI gave approval to set well (87'). Well set per details & specs at 72' slotted. 15' solid BG & 8' solid AG.
- Drillers left around 2pm & did not return.
- Surveyed proposed redrills with Keith as well as lateral to GW-54.
  GW-14R 1356978.77 624435.05 elev=236.4 7' stick up
  GW-15R1 1356893.96 624602.22 elev=258.3 9' stick up
  GW-30R 1356175.68 624446.28 elev=235.3' 12' stick up
  GW-36R 1355960.42 624444.36 elev=236.4 10' stick up
- Revised well schedule to reflect proposed redrills.
- Left site at 4:30 pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Stigner
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011 - Cells 3,4,5 & 6 GCCS Expansio
OWNER: WSF
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE 11/30/11
S M T (W) T F S

THE FOLLOWING WAS NOTED:

- On site at 7:05am
- Began drilling GW-65 at 7:45am. Encountered saturated materials that could not be excavated using a bucket auger. Mike K. gave approval to set well at 100' after drilling over 1hr. Set well above muck at 100' with 85' slotted, 15' solid BG & 13' solid AG. Completed well setting per details.
- Pipe crew excavated portion of 6" lateral from SB to SY for repair. Found 6" line with no vacuum. Excavated more of the 6" lateral to find the pinch but had no luck. Will tie into existing vacuum source at lateral riser GW-53 tomorrow. Hard welded a cap to abandoned lateral.
- Left site at 4:45pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Figueroa
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19 PROJECT TITLE: 2011-Cells 3,4,5&6 GCS Expansion
OWNER: WSI
LOCATION: JEO Landfill CONTRACTOR: Shaw

DATE 12/1/11 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7:10 am
- Began drilling GW-61. Johnny left sick at 10:30am. Travis will continue to drill GW-61. Disks on bottom of bucket installed. Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set well at 83' after 1 hr of drilling with no progress. Muck at 83' to ~80' & therefore set well at 80' to advoid muck. Set well at 80' with 78' slotted, 12' solid BG & 12's slid AG. Well set per details & specs.
- Excavated around GW-53 lateral riser & cut 4"18" of the boot to get grade for lateral tie-in. Used an electrofusion coupling to tie in to existing lateral 1/2 between GW-53 & GW-54. Vacuum at GW-51 was 40". At boot inserted silicone seal & clamp to reseal boot GW-53. Backfilled per specs with clean soil & warning tape. Grade set at +5%. Survey sticks every 50' & at old abandoned lateral which was hard welded with a cap. Total replaced line = 71'.
- Raised GW-54 lateral riser & replaced hosing.
- Raised both GW-51 well casing & lateral riser.
- Spoke to Matt & Keith & saturated soils & how they are inhibiting us from reaching desired drill depths. I will prepare a table that shows the locations where we encounter saturated soils.
- Regraded slideslope between GW-53 & GW-54 & filled in a portion of the hole @ GW-51 with dirt. Shaw will fill in the rest of the hole with waste from drilling
- Left site at 4:15pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Fitzgerald
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011 - Cells 3, 4, 5, & 6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE: 12/2/11
S M T W T (F) S

THE FOLLOWING WAS NOTED:

-On site at 6:55am
-Began drilling GW-58 at 7:10am. Installed slush plates during drilling. Encountered saturated materials that could not be excavated using a bucket auger. Mike K. gave approval to set well at 73' after drilling for 1hr with little advancement. Bucket could go 76' but we set the well at 73', above the muck. Well set per details & specs with 60' slotted, 13' solid B6 & 11' solid A6.
-Pipe crew excavated around GW-57 lateral riser & cut ~12" of the boot to get grade for the lateral tie-in. Used electrofusion coupling to tie-in to the existing GW-57 lateral riser. At cut boot, inserted silicone seal & clamp to reseal boot at GW-57. Trench received bedding, 6" pipe, clean soil backfill, warning tape & survey risers (every 50'). Lateral risen to GW-58 with 90° elbow. Total lateral = 215'.
-Began drilling GW-64 at 12:30pm. Installed slush plates during drilling. Encountered saturated materials that could not be excavated using a bucket auger. Mike K. gave approval to set well at 55' after drilling for 1hr with little advancement. Bucket could go 58' but we set the well at 55' above the muck. Well set per details & specs with 40' slotted, 15' solid B6 & 11' solid A6
-Pipe crew excavated around GW-60R lateral riser & tie-in to supply vacuum to GW-61. Trench received bedding, 6" pipe, clean soil backfill, warning tape & survey risers (every 50'). Lateral risen to GW-61 with 90° elbow. 185' of 6" lateral installed (plus 12' & 5' risers)
-Left site at 5pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Thomas
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011 - Cells 3,4,5,&6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE 12/3/11

S M T W T F (S)

THE FOLLOWING WAS NOTED:

-On site at 6:50 am
-Began drilling GW-22 at 7:15am. Installed slush plates during drilling. Encountered saturated material that could not be excavated using a bucket auger. Left message with Mike R. Keith L. agave approval to set well at 97' after drilling for 1hr with little advancement. Bucket would go 97' feet but we set at 95' to advoid muck. Lots of liquids, liquids at 80'. Well set per details & specs with 84' slotted, 13' solid BG & 11' solid AG.
-Pipe crew excavated around GW-63 & found 10' stub out & lateral risr GW-63. Tie-in to stub out & extended lateral to GW-64 & GW-65. Trench recieved bedding 6" pipe, clean soil backfill, warning tape & survey risers (every 50'). Approx. 365' of 6" lateral installed.
-Left site at 3:20 pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Stegmann
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 93-82734.19 PROJECT TITLE: 2011 – Cells 3,4,5 & 6 GCCS Expansio
OWNER: WSI
LOCATION: JEDI Landfill CONTRACTOR: Shaw

DATE 12/5/11 S (M) T W T F S

THE FOLLOWING WAS NOTED:

-On site at 7:00am
-Began drilling GW-15R2 at 7:32am. Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set well at 78' after drilling 1hr with little advancement. Bucket could go 78' but we set at 75' to avoid muck. Well set per details & specs with 62' slotted, 13' solid B6 & 9' solid #6.
-Pipe crew excavated around GW-67 & found 10' stub out of lateral riser GW-67. Tied-in to stub ont & extended lateral to GW-68. Trench received bedding, 6" pipe, clean soil backfill, warning tape, & survey risers (every 50'). Approx 220' of 6" lateral installed.
-Worked on "sister well" well schedule as requested by Keith. GW-4R, GW-18, GW-40R, GW-21, GW-54, GW-45, GW-50, GW-57, GW-27.
-Pipe crew excavated around GW-21 lateral riser to tie-in to vacuum source for GW-22. Trenched approx 40'.
-left site for day at 5pm. Surveyed GW-28 with Keith. N=1356288.22 E=62483.01 Elev=267.5 Stick up 8' A6

SUBMITTED BY GOLDER ASSOCIATES

Veronica Delgado
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-8273419 PROJECT TITLE: 2011 - Cells 3,4,5, & 6 GCS Expansion
OWNER: WSF
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 12/6/11 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7:05 am
- Benched GW-14R1 for approx. 1hr. Began to drill at GW-14R1 at approx. 8am. Encountered saturated materials that could not be excavated using a bucket auger. Bucket could go 54', but design depth was 128'. Elevation of saturated materials at 182'. WSF gave approval to abandoned borehole & relocate. Will relocate approx 30' SE of existing GW-14 & approx 5' upslope of original borehole for GW-14R.
- Completed trench to GW-22 from GW-21 to supply vacuum to GW-22 with approx 270' of 6" HDPE. Trench received bedding, 6" pipe, clean soil backfill, warning tape & survey risers (every 50'). Tied in to GW-21 lateral riser with a 6" tee.
- Began drilling GW-28 at 11am. Survey stick was ran over by operations. Encountered saturated materials that could not be excavated using a bucket auger at 85'. WSF gave approval to set well. Well set at 83' (bucket could go 85') to account muck with 70' slotted, 13' solid B6 & 10' solid AB.
- Abandoned GW-15R1 approx 3' B6 with cap, pvc glue & screw.
- Extended GW-15R1 lateral to GW-15R2
- Trenched from GW-27 towards GW-28 approx 50'.
- Left site at 5:15pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Edgmond
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-827341.9
PROJECT TITLE: 2011 - Cells 3, 4, 5 & 6 GCCS Expansion
OWNER: WSI
LOCATION: JEDI Landfill
CONTRACTOR: Shaw

DATE: 12/7/11
S M T (W) T F S

THE FOLLOWING WAS NOTED:

- On site at 7am
- Drillers built bench at the new location for GW-14R which took approx. 1hr. Began drilling GW-14R1 (new location approx. 30' SE of existing GW-14 & 5' upslope of original GW-14R location which was abandoned). Encountered saturated materials that could not be excavated using a bucket auger. WSI gave approval to set well at 55'. We set the well at 53' to cover the muck with 40' perf/slotted, 13' solid B6, & 7' solid A6. Wellset per details & specs.
- Pipe crew completed trench from GW-27 to GW-28 (approx 270' long 6" lateral) which supplied vacuum to GW-28. Trench received bedding, 6" pipe, clean soil backfill, warning tape & survey risers (every 50').
- Drill crew began to build bench for GW-30R1 around 12:45pm which took approx 1hr to complete. Drilled approx 38' when borehole began to cave in on itself. Borehole depth dropped to 35' even though driller could "push" his bucket auger to 40'. Soils were extracted started at depth 20', so we pulled 18' of soils out. WSI gave approval to abandoned borehole & redrill at a nearby location.
- Pipe crew mounded dirt around GW-15R2 & put wellhead on & regraded sideslopes
- Left site at 4:30pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Thompson
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83827434.19 PROJECT TITLE: 2011-Cells 3,4,5 & 6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 12/8/11 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7am
- Drillers prepared bench for new located GW-30R1. Relocated borehole approx. 30' S(SE) of existing GW-30 & approx. 5' upslope. Encountered saturated materials that could not be excavated using a bucket auger at 60.5'. Set well per details & specs @ 60' with 48' slotted, 12' solid BG & 12' solid AG.
- Pipe crew mounded dirt around wells & installed wellhead bracket on existing wells GW-21, GW-27 & GW-51. Installed wellheads from abandoned GW-15R & GW-14 to GW-15R2 & GW-14R1.
- Abandoned GW-14 approx 3' BG with cap, PVC glue, & screws. Extended GW-14 lateral to GW-14R1.
- Abandoned GW-30 approx 3' BG with cap, PVC glue, & screws.
- Surveyed GW-31 with Kolt & we still need 12' of waste to be at grade. Shaw will not drill this well at this time & will not run a lateral from GW-30R1 to GW-31.
- Surveyed & evaluated GW-4R, GW-18, GW-40R, GW-54, GW-21, GW-45, GW-50, GW-51 & GW-27 to determine if a sister well should be drilled. Only possible sister well should be at GW-51 which would provide approx. 22' more of slotted area. WSI will not drill a sister well at GW-51 at this time
- Left site at ~~6~~ 4:30 pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Figueroa
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734/9 PROJECT TITLE: 2011- Cells 3,4,5, & 6 GCCS Expansion
OWNER: WST
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 12/9/11 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7:30am
- Pipe crew extended GW-30 lateral to GW-30R. Lateral line included a 3' stub out.
- Punch List
  1. Install wellheads at all new wells
  2. Mound soil at extraction wells, as needed
  3. Regrade sideslopes, as needed
  4. Clean up laydown areas
- Don on site for construction completion walk through.
- Review Cell 7 horizontal collector design & construction procedures with WST.
- Left site at 3:20 pm.

SUBMITTED BY GOLDER ASSOCIATES

Veronica Magnuson
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19 PROJECT TITLE: 2011- Cells 3,4,5,& 6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 12/14/11 S M T (W) T F S

THE FOLLOWING WAS NOTED:

- On site at 7:30am
- Surveyors on site at 10am
- With surveyors from 10am-1pm surveying GCCS expansion
- Pipe crew welding 10" solid & perf pipe HDPE SDR 11
- Inspected 1st/2nd/3rd processed tire chips that will be used as backfill material for horizontals (H/s)
- WSI approved the following backfill approach for H/s: Bottom = stone Top & around = fine chips processed by WSI; Above fine chips = geotextile
- Left site at 2:30pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Ingram
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83527349 PROJECT TITLE: 2011 - Cells 3,4,5, & 6 CUS Expansion
OWNER: WSI
LOCATION: JEDLandfill CONTRACTOR: Shaw

DATE 12/15/11 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7:15am
- Operations still filling trash in cell 7 where HGC-2 will be installed
- WSI surveyed pts on HGC-2
- Tire shredder down most of the day
- Trenched approx 150' of HGC-2. Trench received rock.
- Cut 10" riser at tie-in location to accomodate for grade & electrofused a 22° elbow at 8" pipe then hard welded a 8x10 reducer
- Installed 100' of solid HDPE 10" SDR 11 at tie-in location per design drawings
- Trench received 1' of stone, then 10" solid HDPE SDR 11 pipe, then 1' stone on top, & then trash. Trenched at 3% for 1120' solid & 150' perf.
- Left site at 4:30pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Stegmeier
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011-Cells 3,4,5,&6 GCCS Expansion
OWNER: WSI
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE 12/16/11
S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7am
- Surveyed top of pipe for in-place pipe 0 to 150'
- Trenched approx 300' of HC. Trench received 1' of stone, 10" perf HDPE SDR11 pipe, +1.5' of tire chips, geotextile, & trash
- Surveyed more top of pipe. Trenched at 5%.
- For each HC sump, depth approx 2' from top of protective soil, stone was added & then tire chips.
- Left site at 5pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Estremera
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011-Cells 3,4,5 & 6 GCCS Expansion
OWNER: WSI
LOCATION: SED Landfill
CONTRACTOR: Shaw

DATE: 12/17/11
S M T W T F S

THE FOLLOWING WAS NOTED:

-On site at 7am
-Continued trench HGC-9. Trenched approx 10' past design left Trench received 1' of stone, 10" perf. HDPE SDR 11 pipe, + 1.5' of tire chips geotextile, & backfill
- Each sump went approx 2' from top of protective soil, stone was added & then tire chips.
- Last 30' of perf. 10" pipe, received all stone to protect pipe from trucks
- Survey risers installed
-Left site at 1:15pm

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-827341.9 PROJECT TITLE: 2011 Cells 3, 4, 5, & 6 GCCS Expans
OWNER: WSF
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 12/19/11 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7am
- Punch 1.2
  1) Survey HC w/ Keith
  2) Backfill remaining trench
  3) Re-locate 10" pipe
  4) Clean up lay down area
  5) Remove survey pipes
  6) Install pump & fill air compressor (10am)
- Had to excavate puthurs 2 HGC-2 & sump to survey every 50' because Shaub did not place survey pipe on top of pipe
- Next HCG
  1) Install sometime in early 2012 (Jan)
  2) Site currently has enough pipe, rock, & geotextile
- Left site at 1:30pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Stegman
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-8273919 PROJECT TITLE: 2011-Cells 3,4,5,& 6 GCCS Expansion
OWNER: WSE
LOCATION: JEDI Landfill CONTRACTOR: Shaw

DATE 1/4/12 S M T W T F S

THE FOLLOWING WAS NOTED:

- Mob to site
- On site at 7:15am
- Renewed HASP
- Tailgate with Shaw on proposed work/scope
- Inspected tire chips - not acceptable. Tire chips must be processed 2 times
- Trench 300' with 1st 100' solid @ 3% & first 190' perf at 3%, All other at 5%.
- 1st sump approx at 300'.
- Cut 10" riser at tie-in location to accommodate for grade & electrofused a 22° elbow at 8" pipe then hand welded a 8x10 reducer
- For 1st 100', solid pipe received 1' of stone on the bottom, 10' solid SDR 11, & clean soil on top. At tie-in location, pipe received extra dirt to protect pipe
- Keep survey 1st 300' to sump
- For HC sump, depth approx 2' from top of protective soil, stone was added & then tire chips
- Left site at 5:20 pm

SUBMITTED BY GOLDER ASSOCIATES

Veronica Delgado
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 83-82734.19
PROJECT TITLE: 2011-Cells 3, 4, 5, & 6 GCL Expansion
OWNER: WSP
LOCATION: JED Landfill
CONTRACTOR: Shaw

DATE 11/5/12

S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7:15am
- Continued to trench HGC-4 Trench received 1' of stone, 10' perf. HDPE SDR 11 pipe, +/- 1.5' of tire chips, geotextile, & fresh. Trench @ 5%.
- For each HC sump, leach approx 2' from top, protective soil, stone was added & then tire chips.
- Met with Mike to discuss perimeter headers design
- Discussed header cleanout locations to the interceptor trap for cell 8 with Mike
- Left site at 5:15pm

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 83-82734/9 PROJECT TITLE: 2011-Cells 3, 4, 5, & 6 GCL Expansion
OWNER: WSF
LOCATION: JED Landfill CONTRACTOR: Shaw

DATE 1/6/12 S M T W T F S

THE FOLLOWING WAS NOTED:

- On site at 7:15 am
- Lots of fog
- Completed rest of HGC-4 trench. Trench received 1' of stone, 10' perf HDPE SDR 11 pipe, ~1.5' of tire chips geotextile, & trench. Trench at 50%.
- For each HC sump, depth approx. 2' from top of protective soil, stone was added & then tire chips
- Last 20' of perf received all stone to protect pipe from trucks
- Surveyed all remaining HGC-4.
- Looked at perimeter heading / datums
- Left site at 5:15 pm

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

Shaw EMCON/OWT, Inc.

AIR TEST REPORT

SIZE LINE: 12", 6"

APP. LENGTH OF LINE: 12" = 82 ft 6" = 8 ft

DATE OF TEST: 11/21/11

TIME OF TEST: 1407

LENGTH OF TEST: 60 mins

PRESSURE @ START: 13 psi

AIR LOSS: 0.2 psi (loss due to p. cloudy skies)

TEST RESULTS: PASSED ☑ FAILED ☐

TEST PERFORMED BY: Name Ken Hargrafft

Company SHAW

TEST WITNESSED BY: Name Josh Richards

Company Golder Associates

JOB #: 144366 JOB NAME: JED

Rev. 12/23/03

Shaw EMCON/OWT, Inc.

AIR TEST REPORT

SIZE LINE: 12", 6"

APP. LENGTH OF LINE: 12" 198.8 FT 6" 8FT, 4

DATE OF TEST: 11/19/11

TIME OF TEST: 8:32

LENGTH OF TEST: 1 HR

PRESSURE @ START: 10.5

AIR LOSS: Ø

TEST RESULTS: PASSED ☑ FAILED ☐

TEST PERFORMED BY: Name Ken Hafo FSK V

Company SHAW

TEST WITNESSED BY: Name Josh Richards

Company Golder Associates

JOB #: 144318 JOB NAME: JED

Rev. 12/23/03

Shaw EMCON/OWT, Inc.

AIR TEST REPORT

SIZE LINE: 12", 6"

APP. LENGTH OF LINE: 12" 198.8 FT 6" 8FT, 4

DATE OF TEST: 11/19/11

TIME OF TEST: 8:32

LENGTH OF TEST: 1 HR

PRESSURE @ START: 10.5

AIR LOSS: ∅

TEST RESULTS: PASSED ☑ FAILED ☐

TEST PERFORMED BY: Name Ken Hard FSK V

Company SHAW

TEST WITNESSED BY: Name Josh Richards

Company Golder Associates

JOB #: 144368 JOB NAME: JED

Rev. 12/23/03

Shaw EMCON/OWT, Inc.

AIR TEST REPORT

SIZE LINE: 12", 6" Riser

APP. LENGTH OF LINE: 12" 47 ft 6" = 24 ft

DATE OF TEST: 11/18/11

TIME OF TEST: 2:06

LENGTH OF TEST: 1 HR

PRESSURE @ START: 10

AIR LOSS: NONE

TEST RESULTS: PASSED ☑ FAILED ☐

TEST PERFORMED BY: Name Ken Horofsky

Company Shaw

TEST WITNESSED BY: Name Josh Richards

Company Golder Associates

JOB #: 144368 JOB NAME: JED

Rev. 12/23/03

APPENDIX J

CERTIFICATION OF CONSTRUCTION

COMPLETION OF A SOLID WASTE MANAGEMENT FACILITY

DEP Form # 62-701.900(2)
Form Title Certification of Construction Completion
Effective Date May 19, 1994

DEP Application No. _____
(Filled by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

Certification of Construction Completion of a Solid Waste Management Facility

DEP Construction Permit No: SC49-0199726-017 County: Osceola

Name of Project: 2011 Cells 3, 4, 5, 6 and 7 Gas Collection and Control System Expansion

Name of Owner: Omni Waste of Osceola County, LLC

Name of Engineer: Golder Associates Inc.

Type of Project: Gas Collection and Control System (GCCS) Expansion Construction

Cost: Estimate $ 450,000 Actual $ 450,000

Site Design: Quantity: 7,500 ton/day Site Acreage: Phase I: 54, Phase II: 35 Acres

Deviations from Plans and Application Approved by DEP: The construction was conducted in general accordance with the submitted Phase I and Phase II Construction Drawings and submitted Modification Permit application package associated with Permit No. SO40-0199726-015 with some Intermediate modifications as described in Section 2 of the Construction Record Documentation Report. These modifications didn't alter the performance or design intent of the system.

Address and Telephone No. of Site: 1501 Omni Way, St. Cloud, Florida 34773; (407) 891-3720

Name(s) of Site Supervisor: Mike Kaiser

Date Site inspection is requested: As soon as possible

This is to certify that, with the exception of any deviation noted above, the construction of the project has been completed in substantial accordance with the plans authorized by Construction

Permit No. SC49-0199726-017 :Dated: September 22, 2011

Date: 2/22/12

Signature of Professional Engineer

Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-6100

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600