

Their plan of  
action is in  
general accordance  
w/ our discussions  
at the 8/19 mtg.  
I have no  
objection to them  
proceeding.

8/27 J

# HARTMAN & ASSOCIATES, INC.

## OFFICERS:

Gerald C. Hartman, P.E., DEE  
Harold E. Schmidt, Jr., P.E., DEE  
James E. Christopher, P.E.  
Charles W. Drake, P.G.  
Mark A. Rynning, P.E., M.B.A.  
William D. Musser, P.E., P.H.  
Michael B. Bomar, P.E.  
Lawrence E. Jenkins, P.S.M.

## SENIOR ASSOCIATES:

Marco H. Rocca, C.M.C.  
Roderick K. Cashe, P.E.  
Douglas P. Dufresne, P.G.  
Jon D. Fox, P.E.  
Troy E. Layton, P.E., DEE

engineers, hydrogeologists, surveyors & management consultants  
A Tetra Tech Company

## ASSOCIATES:

James E. Golden, P.G.  
Andrew T. Woodcock, P.E., M.B.A.  
John P. Toomey, P.E.  
Jennifer L. Woodall, P.E.  
L. Todd Shaw, P.E.  
Rafael A. Terrero, P.E., DEE  
Jill M. Hudkins, P.E.  
Daniel M. Nelson, P.E.  
Valerie C. Davis, P.G.  
Charles M. Shultz, P.E.  
Sean M. Parks, AICP, QEP  
C. Michelle Gaylord  
Tara L. Hollis, C.P.A., M.B.A.  
W. Bruce Lafrenz, P.G.  
Alexis K. Stewart, P.E.  
Ada R. Terrero

August 21, 2003

HAI #99.0331.007

Phase 5

File 12.0

### Via Facsimile and UPS Overnight

Mr. Kim Ford, P.E.  
Florida Department of Environmental Protection  
Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

**Subject: Plan of Action for Cell Certification  
Enterprise Recycling & Disposal Facility  
Angelo's Aggregate Materials, Ltd.  
FDEP Permit Nos. 177982-001-SC, 177982-002-SO  
Pasco County, Florida**



Dear Mr. Ford:

On behalf of Angelo's Aggregate Materials, Ltd. (Angelo's), Hartman & Associates, Inc. (HAI) is submitting this Plan of Action to the Department to describe the intended certification activities at the above facility. This Plan of Action includes those items discussed during the meeting at your office on Tuesday, August 19, 2003.

### Additional CQA Testing in Cell 1

In order to revise the Confining Layer Contour Map and further illustrate the existence of the consistent confining layer at Cell 1, additional deeper borings are required to reach and sample the layer. The confining unit may be at the cell base, under the cell base, or a combination of both, as long as it is at least 36-inches thick and continuous with a maximum permeability of  $1 \times 10^{-6}$  cm/s. A minimum of three (3) three additional standard penetration test borings (SPT), three (3) solid-stem auger borings, and two (2) bucket auger borings are planned in Cell 1, with field work beginning on Friday, August 22, 2003. Our planned boring locations are shown on the attached map. All boring locations used to confirm the confining unit will be shown on the Confining Layer Contour Map. HAI's Geologist and Technician will be on-site to supervise the field work, log the borings, and determine appropriate intervals for additional permeability and sieve testing.

201 EAST PINE STREET • SUITE 1000 • ORLANDO, FL 32801-2723  
TELEPHONE (407) 839-3955 • FAX (407) 839-3790 • [www.consulthai.com](http://www.consulthai.com)

A TETRA TECH COMPANY (Offices Nationwide)

ORLANDO FORT MYERS FT. LAUDERDALE JACKSONVILLE DESTIN ATLANTA

Continuity of confinement will be demonstrated by identifying suitable confining units, testing those units to prove that the permeability is less than  $1 \times 10^{-6}$  cm/s, and mapping the confining layer across the cells to be certified. Existing samples and field soil will be examined to reclassify the observed sediments into functional hydrostratigraphic units. That is, sediments with similar hydrologic properties (permeability) will be mapped as a field unit. Permeability and grain size will be determined for the unit identified as forming the continuous confining unit. Sieve or grain size analyses are also planned to be conducted on other geologic units encountered. Permeability samples will be collected in accordance with ASTM D1587, Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils. Permeability testing will be completed in accordance with ASTM D5084-00e1, Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

Permeability testing is required for each different soil type used as part of the confining layer and each sample will be observed and subjected to sieve testing after completion of permeability testing. All other boring locations will require sieve testing in the confining material. A correlation between permeability, percent fines (percent passing No. 200 sieve) and percent gravel (percent retained on No. 10 sieve) will be determined from the test results. This correlation will be used to further classify the soils into categories and to confirm which materials are adequate for the confining unit. This information will be provided to the Department in the Cell Certification package.

The limestone encountered at the base of Cell 1 has been proven by our solid stem auger borings and test pits to be lenses of limestone fragments within a clay matrix, and not connected to the Floridan aquifer. Even though the solid stem auger borings indicate the presence of clay under the sandy and limestone fragment areas, additional sandy clay/clay with a maximum permeability of  $1 \times 10^{-6}$  cm/s will be compacted over these areas and tied-in to the surrounding clay near the cell base. Therefore, the over-excavation of these areas and replacement with clay is not necessarily being done to restore confinement to the site, rather to restore a more consistent confining layer at the base of the cell.

### **Temporary Pond Area**

In the areas of Cells 14, 15, and 16, borings during permitting, such as B-4, B-5, B-8, DCL01-8, DCL01-12, DCL01-13, and DCL01-14, encountered a sandy clay within approximately 10 to 30 feet of the surface, or between 80 feet NGVD to 38 feet NGVD. HAI field observations during the excavation of the temporary pond confirmed that all of the floor of Cell 15 and most of Cell 16 contain a sandy clay. Three permeability samples have been obtained from the temporary pond, two from Cell 15, and one from Cell 16. These test results may be considered for certification, depending on the depth of the continuous confining layer. Additional sampling in

the pond for continuing layer thickness, permeability, and sieve testing will be completed subsequent to the sampling in Cell 1.

The stormwater in the pond is currently being pumped to an on-site borrow pit to allow an all-terrain drill rig to access Cells 15 and 16 to perform this testing. In order to characterize the confining unit in the pond, a minimum of approximately 8 continuous 30-foot deep additional SPT borings are proposed for Cells 15 and 16, and 10 to 12 solid-stem auger borings. See attached drilling plan. The correlation methods for Cell 1 will also be applied to the temporary pond. Solid stem auger borings will be completed as necessary around the permeability test locations for description and mapping of the confining unit and for sieve testing to prove that the deeper confining unit is connected to the confining unit of the remainder of the cell. This information will be included in the Confining Layer Contour Map. All test results and field observations will be submitted to the Department with the Cell Certification package.

While the drill rig is at the site, a permeability test sample will be collected from the portion of the temporary pond still to be constructed (Cell 14). The sample will be collected from below the base grade of the temporary pond, or below 75 feet, NGVD. After construction of Cell 14 is completed, HAI will determine an appropriate number of additional quality assurance tests based on construction observation and the results of the testing in Cells 15 and 16.

### **Confining Layer Contour Map**

HAI's Geologists are developing revised confining layer (sandy clay to clayey sand) contour maps for Cells 1, 15, and 16, as requested by the FDEP. The maps are being prepared in addition to geologic cross-sections to illustrate the existence of a continuous confining unit. The location and thickness of the confining layer at the boring locations will be tabulated and included in the Cell Certification package. The map will illustrate a structural contour on the top of the confining unit with each boring location labeled with the thickness of the confining unit.

### **Confining Layer Tie-in**

Initial over-excavation of the limestone containing areas at the base of Cell 1 was completed on August 1, 2003, prior to the Department's site visit. Observation of these excavated areas by HAI's Geologist indicated that most of the locations are surrounded by sufficient confining material to perform the tie-ins. Any of the over-excavated limestone areas that are not completely surrounded by three feet of sandy clay or clay will be excavated further until there is competent material to construct the tie-ins. The areas identified on the Confining Layer Contour Map with less than three feet of  $1 \times 10^{-6}$  cm/s material will be excavated to a depth of three feet outward until tie-ins can be constructed into competent material.

Weather permitting, we expect the additional over-excavation work to begin during the next couple of weeks and expect approximately two days to complete. The Department will be notified at least 24 hours prior to the initiation of the over-excavation. The Confining Layer Contour Map will be used as a guide for the over-excavating; however, visual observation of the excavation will overrule the map, if necessary. Any discrepancies between field observation and the map will be noted. Prior to the initiation of the tie-in construction, the horizontal extent of the over-excavated areas will be resurveyed. As requested, new corner posts will be installed and surveyed to mark the area of Cell 1 to be certified and approved for disposal operations. A benchmark will also be installed and surveyed in Cell 1. This information will be provided to the Department on a map.

HAI will photograph and document all work performed at the site. The contractor plans to use an excavator to slope the sides of the excavations and any other locations in need of confining layer tie-ins to a 3H:1V slope all the way around. The designated clay material must be placed in 3, 12-inch lifts and will be compacted by approximately four passes with a 40,000 lb, D-6 Dozer. The dozer will compact the material in the bottom of the excavation and up the side slopes into the excavator bucket marks. After the second lift is compacted with the dozer, a 12-ton, 84-inch vibratory roller will be used to roll the material. After compaction of the final lift, the vibratory roller will roll the extents of the filled and compacted area. HAI's field technician will be on-site during this process and will be logging the daily activities, including the tie-in locations, quantity of soil material used for each lift, thickness of each compacted lift, results of nuclear density testing, verification of equipment used for compaction, and verification of bucket marks at the tie-in surfaces (no smooth surfaces).

In accordance with ASTM specification D3017-96, Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), a laboratory technician will use a nuclear density test/moisture content device on each 12-inch lift to ensure the proper density and moisture content are achieved. Each compacted lift must be 12-inches in thickness with the appropriate density/moisture content to be acceptable. Any lift not meeting these requirements will be reworked until the desired density is achieved.

This in-place field testing will eliminate the need for permeability testing of every 12-inch lift and waiting for each result prior to constructing the subsequent lifts. However, Shelby tube samples will be collected for laboratory confirmation testing by a drill rig at the center of each lift in the first tie-in area (the excavated area in the southeast portion of Cell 1). This location will be used as a "test area" to verify that the in-field testing is adequate. As discussed with the Department on August 5, 2003, construction of the other tie-in areas will not wait for the laboratory results, as they are expected to be favorable.

Mr. Kim Ford, P.E.  
August 21, 2003  
Page 5

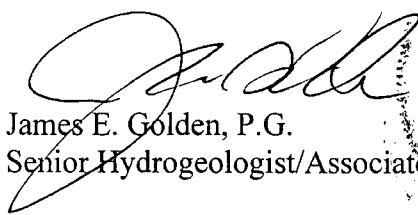
Certification Report

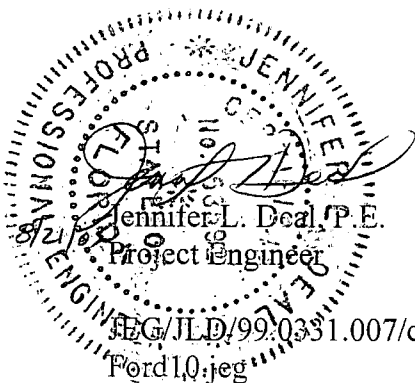
Cell 1 and temporary pond certification work will be documented with a submittal to the Department including the confining layer tie-in construction documentation, permeability tests results, clay confining layer contour map, cross-sections, table of permeabilities and sieve analyses, surveyed tie-in areas, fine grading of the cell floor, topographic survey of the final cell floor elevations, confirmation of Pond 1 and temporary pond completion, and the FDEP Certification of Construction Completion form for Cell 1 and operational features (scalehouse, roll-off containers, gate, fence, signs, perimeter road, and berms.).

We trust this submittal will satisfy the Department. Please call us if you have any questions.

Very truly yours,

**Hartman & Associates, Inc.**

  
James E. Golden, P.G.  
Senior Hydrogeologist/Associate



EEG/JLD/99.0331.007/corresp/  
Ford10.jeg

**Attachments**

cc: Dominic Iafrate, Angelo's  
Craig Bryan, Angelo's  
John Morris, P.G., FDEP  
Susan Pelz, P.E., FDEP  
Miguel A. Garcia, HAI  
Dale Claytor, HAI  
W. Bruce Lafrenz, P.G., HAI



**HARTMAN & ASSOCIATES, INC.**

engineers, hydrogeologists, surveyors &amp; management consultants

**201 EAST PINE STREET, SUITE 1000, ORLANDO, FLORIDA 32801****TELEPHONE (407) 839-3955****HYDROGEOLOGY FAX - (407) 839-2066****ADMIN./UTILITY ENGINEERING FAX - (407) 839-3790****CIVIL ENG./SURVEY/FINANCE FAX - (407) 481-8447****FACSIMILE TRANSMITTAL**

TO: Ms. Susan Pelz, P.E. FROM: Jennifer L. Deal, P.E.  
FDEP/Solid Waste Program Mgr.  
FAX: 813-744-6084 DATE: August 21, 2003  
RE: See attached. PROJECT: HAI #99.0331.007

We are sending you 7 pages, including this cover sheet. These pages are being transmitted as indicated below:

- ☐ As requested  
☒ For your use  
☐ For your comments  
☐ For your approval

**HARD COPY:**

- ☒ Will be sent via regular mail  
☐ Will be sent via UPS Ground  
☐ Will be sent via facsimile only  
☐ Will be sent via hand delivery

MESSAGE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**IF THERE ARE ANY PROBLEMS WITH THIS TRANSMISSION  
PLEASE CALL (407) 839-3955 x168**



---

# HARTMAN & ASSOCIATES, INC.

---

engineers, hydrogeologists, surveyors & management consultants  
A Tetra Tech Company

**OFFICERS:**

Gerald C. Hartman, P.E., DEE  
Harold E. Schmidt, Jr., P.E., DEE  
James E. Christopher, P.E.  
Charles W. Drake, P.G.  
Mark A. Rynning, P.E., M.B.A.  
William D. Musser, P.E., P.H.  
Michael B. Bomar, P.E.  
Lawrence E. Jenkins, P.S.M.

**SENIOR ASSOCIATES:**

Marco H. Rocca, C.M.C.  
Roderick K. Cashe, P.E.  
Douglas P. Dufresne, P.G.  
Jon D. Fox, P.E.  
Troy E. Layton, P.E., DEE

August 21, 2003

HAI #99.0331.007

Phase 5

File 12.0

**ASSOCIATES**

James E. Vanden, P.E.  
Andrew J. Woodcock, P.E., M.B.A.  
John P. Thomas, Jr.  
Jennifer L. Woodall, P.E.  
L. Todd Shaw, P.E.  
Rafael A. Teruya, P.E., DEE  
Bill M. Hudkins, P.E.  
Daniel M. Nelson, P.E.  
Vivian C. Lewis, P.E.  
Charles M. Shultz, P.E.  
Sean M. Parks, AEP, SDEP  
A. Michele Layton  
Barry L. Hollis, P.E., M.B.A.  
W. Bruce Latham, P.G.  
Alexis S. Stewart, P.E.  
Jada R. Teruya

**Via Facsimile and UPS Overnight**

Mr. Kim Ford, P.E.  
Florida Department of Environmental Protection  
Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

**Subject: Plan of Action for Cell Certification  
Enterprise Recycling & Disposal Facility  
Angelo's Aggregate Materials, Ltd.  
FDEP Permit Nos. 177982-001-SC, 177982-002-SO  
Pasco County, Florida**

Dear Mr. Ford:

On behalf of Angelo's Aggregate Materials, Ltd. (Angelo's), Hartman & Associates, Inc. (HAI) is submitting this Plan of Action to the Department to describe the intended certification activities at the above facility. This Plan of Action includes those items discussed during the meeting at your office on Tuesday, August 19, 2003.

**Additional CQA Testing in Cell 1**

In order to revise the Confining Layer Contour Map and further illustrate the existence of the consistent confining layer at Cell 1, additional deeper borings are required to reach and sample the layer. The confining unit may be at the cell base, under the cell base, or a combination of both, as long as it is at least 36-inches thick and continuous with a maximum permeability of  $1 \times 10^{-6}$  cm/s. A minimum of three (3) three additional standard penetration test borings (SPT), three (3) solid-stem auger borings, and two (2) bucket auger borings are planned in Cell 1, with field work beginning on Friday, August 22, 2003. Our planned boring locations are shown on the attached map. All boring locations used to confirm the confining unit will be shown on the Confining Layer Contour Map. HAI's Geologist and Technician will be on-site to supervise the field work, log the borings, and determine appropriate intervals for additional permeability and sieve testing.

Mr. Kim Ford, P.E.  
August 21, 2003  
Page 2

Continuity of confinement will be demonstrated by identifying suitable confining units, testing those units to prove that the permeability is less than  $1 \times 10^{-6}$  cm/s, and mapping the confining layer across the cells to be certified. Existing samples and field soil will be examined to reclassify the observed sediments into functional hydrostratigraphic units. That is, sediments with similar hydrologic properties (permeability) will be mapped as a field unit. Permeability and grain size will be determined for the unit identified as forming the continuous confining unit. Sieve or grain size analyses are also planned to be conducted on other geologic units encountered. Permeability samples will be collected in accordance with ASTM D1587, Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils. Permeability testing will be completed in accordance with ASTM D5084-00e1, Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

Permeability testing is required for each different soil type used as part of the confining layer and each sample will be observed and subjected to sieve testing after completion of permeability testing. All other boring locations will require sieve testing in the confining material. A correlation between permeability, percent fines (percent passing No. 200 sieve) and percent gravel (percent retained on No. 10 sieve) will be determined from the test results. This correlation will be used to further classify the soils into categories and to confirm which materials are adequate for the confining unit. This information will be provided to the Department in the Cell Certification package.

The limestone encountered at the base of Cell 1 has been proven by our solid stem auger borings and test pits to be lenses of limestone fragments within a clay matrix, and not connected to the Floridan aquifer. Even though the solid stem auger borings indicate the presence of clay under the sandy and limestone fragment areas, additional sandy clay/clay with a maximum permeability of  $1 \times 10^{-6}$  cm/s will be compacted over these areas and tied-in to the surrounding clay near the cell base. Therefore, the over-excavation of these areas and replacement with clay is not necessarily being done to restore confinement to the site, rather to restore a more consistent confining layer at the base of the cell.

### **Temporary Pond Area**

In the areas of Cells 14, 15, and 16, borings during permitting, such as B-4, B-5, B-8, DCL01-8, DCL01-12, DCL01-13, and DCL01-14, encountered a sandy clay within approximately 10 to 30 feet of the surface, or between 80 feet NGVD to 38 feet NGVD. HAI field observations during the excavation of the temporary pond confirmed that all of the floor of Cell 15 and most of Cell 16 contain a sandy clay. Three permeability samples have been obtained from the temporary pond, two from Cell 15, and one from Cell 16. These test results may be considered for certification, depending on the depth of the continuous confining layer. Additional sampling in

Mr. Kim Ford, P.E.  
August 21, 2003  
Page 3

the pond for continuing layer thickness, permeability, and sieve testing will be completed subsequent to the sampling in Cell 1.

The stormwater in the pond is currently being pumped to an on-site borrow pit to allow an all-terrain drill rig to access Cells 15 and 16 to perform this testing. In order to characterize the confining unit in the pond, a minimum of approximately 8 continuous 30-foot deep additional SPT borings are proposed for Cells 15 and 16, and 10 to 12 solid-stem auger borings. See attached drilling plan. The correlation methods for Cell 1 will also be applied to the temporary pond. Solid stem auger borings will be completed as necessary around the permeability test locations for description and mapping of the confining unit and for sieve testing to prove that the deeper confining unit is connected to the confining unit of the remainder of the cell. This information will be included in the Confining Layer Contour Map. All test results and field observations will be submitted to the Department with the Cell Certification package.

While the drill rig is at the site, a permeability test sample will be collected from the portion of the temporary pond still to be constructed (Cell 14). The sample will be collected from below the base grade of the temporary pond, or below 75 feet, NGVD. After construction of Cell 14 is completed, HAI will determine an appropriate number of additional quality assurance tests based on construction observation and the results of the testing in Cells 15 and 16.

### **Confining Layer Contour Map**

HAI's Geologists are developing revised confining layer (sandy clay to clayey sand) contour maps for Cells 1, 15, and 16, as requested by the FDEP. The maps are being prepared in addition to geologic cross-sections to illustrate the existence of a continuous confining unit. The location and thickness of the confining layer at the boring locations will be tabulated and included in the Cell Certification package. The map will illustrate a structural contour on the top of the confining unit with each boring location labeled with the thickness of the confining unit.

### **Confining Layer Tie-in**

Initial over-excavation of the limestone containing areas at the base of Cell 1 was completed on August 1, 2003, prior to the Department's site visit. Observation of these excavated areas by HAI's Geologist indicated that most of the locations are surrounded by sufficient confining material to perform the tie-ins. Any of the over-excavated limestone areas that are not completely surrounded by three feet of sandy clay or clay will be excavated further until there is competent material to construct the tie-ins. The areas identified on the Confining Layer Contour Map with less than three feet of  $1 \times 10^{-6}$  cm/s material will be excavated to a depth of three feet outward until tie-ins can be constructed into competent material.

Mr. Kim Ford, P.E.

August 21, 2003

Page 4

Weather permitting, we expect the additional over-excavation work to begin during the next couple of weeks and expect approximately two days to complete. The Department will be notified at least 24 hours prior to the initiation of the over-excavation. The Confining Layer Contour Map will be used as a guide for the over-excavating; however, visual observation of the excavation will overrule the map, if necessary. Any discrepancies between field observation and the map will be noted. Prior to the initiation of the tie-in construction, the horizontal extent of the over-excavated areas will be resurveyed. As requested, new corner posts will be installed and surveyed to mark the area of Cell 1 to be certified and approved for disposal operations. A benchmark will also be installed and surveyed in Cell 1. This information will be provided to the Department on a map.

HAI will photograph and document all work performed at the site. The contractor plans to use an excavator to slope the sides of the excavations and any other locations in need of confining layer tie-ins to a 3H:1V slope all the way around. The designated clay material must be placed in 3, 12-inch lifts and will be compacted by approximately four passes with a 40,000 lb, D-6 Dozer. The dozer will compact the material in the bottom of the excavation and up the side slopes into the excavator bucket marks. After the second lift is compacted with the dozer, a 12-ton, 84-inch vibratory roller will be used to roll the material. After compaction of the final lift, the vibratory roller will roll the extents of the filled and compacted area. HAI's field technician will be on-site during this process and will be logging the daily activities, including the tie-in locations, quantity of soil material used for each lift, thickness of each compacted lift, results of nuclear density testing, verification of equipment used for compaction, and verification of bucket marks at the tie-in surfaces (no smooth surfaces).

In accordance with ASTM specification D3017-96, Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), a laboratory technician will use a nuclear density test/moisture content device on each 12-inch lift to ensure the proper density and moisture content are achieved. Each compacted lift must be 12-inches in thickness with the appropriate density/moisture content to be acceptable. Any lift not meeting these requirements will be reworked until the desired density is achieved.

This in-place field testing will eliminate the need for permeability testing of every 12-inch lift and waiting for each result prior to constructing the subsequent lifts. However, shelby tube samples will be collected for laboratory confirmation testing by a drill rig at the center of each lift in the first tie-in area (the excavated area in the southeast portion of Cell 1). This location will be used as a "test area" to verify that the in-field testing is adequate. As discussed with the Department on August 5, 2003, construction of the other tie-in areas will not wait for the laboratory results, as they are expected to be favorable.

Mr. Kim Ford, P.E.  
August 21, 2003  
Page 5

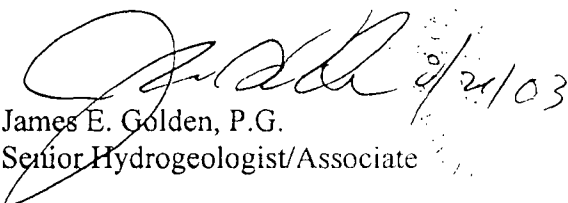
Certification Report

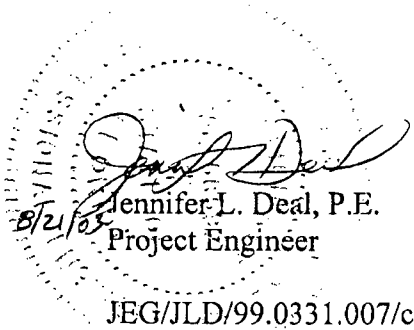
Cell 1 and temporary pond certification work will be documented with a submittal to the Department including the confining layer tie-in construction documentation, permeability tests results, clay confining layer contour map, cross-sections, table of permeabilities and sieve analyses, surveyed tie-in areas, fine grading of the cell floor, topographic survey of the final cell floor elevations, confirmation of Pond 1 and temporary pond completion, and the FDEP Certification of Construction Completion form for Cell 1 and operational features (scalehouse, roll-off containers, gate, fence, signs, perimeter road, and berms.).

We trust this submittal will satisfy the Department. Please call us if you have any questions.

Very truly yours,

**Hartman & Associates, Inc.**

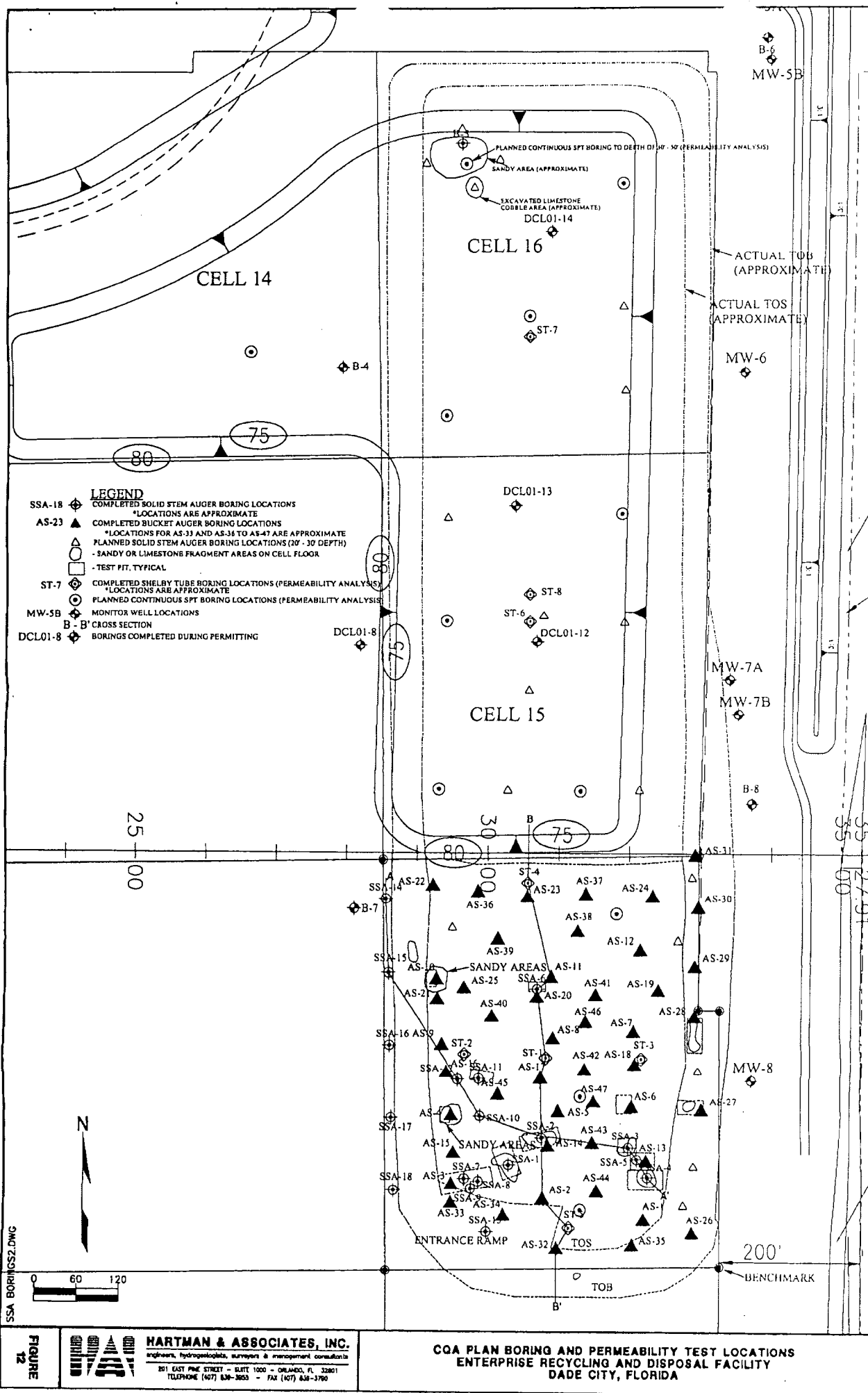
  
James E. Golden, P.G.  
Senior Hydrogeologist/Associate

  
Jennifer L. Deal, P.E.  
Project Engineer

JEG/JLD/99.0331.007/corresp/  
Ford10.jeg

**Attachments**

cc: Dominic Iafrate, Angelo's  
Craig Bryan, Angelo's  
John Morris, P.G., FDEP  
Susan Pelz, P.E., FDEP  
Miguel A. Garcia, HAI  
Dale Claytor, HAI  
W. Bruce Lafrenz, P.G., HAI



**HARTMAN & ASSOCIATES, INC.**

engineers, hydrogeologists, surveyors &amp; management consultants

**201 EAST PINE STREET, SUITE 1000, ORLANDO, FLORIDA 32801****TELEPHONE (407) 839-3955****HYDROGEOLOGY FAX - (407) 839-2066****ADMIN./UTILITY ENGINEERING FAX - (407) 839-3790****CIVIL ENG./SURVEY/FINANCE FAX - (407) 481-8447****FACSIMILE TRANSMITTAL**

TO: Mr. Kim Ford, P.E. FROM: James E. Golden, P.G.  
FDEP/Southwest District  
FAX: 813-744-6084 DATE: August 21, 2003  
RE: See attached. PROJECT: HAI #99.0331.007

We are sending you 7 pages, including this cover sheet. These pages are being transmitted as indicated below:

- ☐ As requested  
☒ For your use  
☐ For your comments  
☐ For your approval

**HARD COPY:**

- ☐ Will be sent via regular mail  
☒ Will be sent via overnight mail  
☐ Will be sent via UPS ground  
☐ Will be sent via hand delivery

MESSAGE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**IF THERE ARE ANY PROBLEMS WITH THIS TRANSMISSION  
PLEASE CALL (407) 839-3955 x168**

---

## HARTMAN & ASSOCIATES, INC.

---

engineers, hydrogeologists, surveyors & management consultants  
A Tetra Tech Company

**OFFICERS:**

Gerald C. Hartman, P.E., DEE  
Harold E. Schmidt, Jr., P.E., DEE  
James E. Christopher, P.E.  
Charles W. Drake, P.G.  
Mark A. Rynning, P.E., M.B.A.  
William D. Musser, P.E., P.H.  
Michael B. Bomar, P.E.  
Lawrence E. Jenkins, P.S.M.

**SENIOR ASSOCIATES:**

Marco H. Rocca, C.M.C.  
Roderick K. Cashe, P.E.  
Douglas P. Dufresne, P.G.  
Jon D. Fox, P.E.  
Troy E. Layton, P.E., DEE

August 21, 2003

HAI #99.0331.007

Phase 5

File 12.0

**ASSOCIATES:**

James E. Gordon, P.G.  
Andrew T. Woodcock, P.E., M.B.A.  
John P. Rooney, P.E.  
Jennifer L. Woodard, P.E.  
E. Rich Shaw, P.E.  
Robert A. Hefner, P.E., P.H.  
Jim M. Hodgkins, P.E.  
Daniel M. Nelson, P.E.  
Vernice A. Davis, P.E.  
Charles M. Stratt, P.E.  
Scott M. Parks, M.P., P.H.  
C. Michelle Givens  
Brett J. Dadds, C.M.C., M.B.A.  
W. Bruce Latham, P.E.  
Alexis K. Stewart, P.E.  
Andrew T. Woodcock

**Via Facsimile and UPS Overnight**

Mr. Kim Ford, P.E.  
Florida Department of Environmental Protection  
Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

**Subject: Plan of Action for Cell Certification  
Enterprise Recycling & Disposal Facility  
Angelo's Aggregate Materials, Ltd.  
FDEP Permit Nos. 177982-001-SC, 177982-002-SO  
Pasco County, Florida**

Dear Mr. Ford:

On behalf of Angelo's Aggregate Materials, Ltd. (Angelo's), Hartman & Associates, Inc. (HAI) is submitting this Plan of Action to the Department to describe the intended certification activities at the above facility. This Plan of Action includes those items discussed during the meeting at your office on Tuesday, August 19, 2003.

**Additional CQA Testing in Cell 1**

In order to revise the Confining Layer Contour Map and further illustrate the existence of the consistent confining layer at Cell 1, additional deeper borings are required to reach and sample the layer. The confining unit may be at the cell base, under the cell base, or a combination of both, as long as it is at least 36-inches thick and continuous with a maximum permeability of  $1 \times 10^{-6}$  cm/s. A minimum of three (3) three additional standard penetration test borings (SPT), three (3) solid-stem auger borings, and two (2) bucket auger borings are planned in Cell 1, with field work beginning on Friday, August 22, 2003. Our planned boring locations are shown on the attached map. All boring locations used to confirm the confining unit will be shown on the Confining Layer Contour Map. HAI's Geologist and Technician will be on-site to supervise the field work, log the borings, and determine appropriate intervals for additional permeability and sieve testing.



Mr. Kim Ford, P.E.  
August 21, 2003  
Page 2

Continuity of confinement will be demonstrated by identifying suitable confining units, testing those units to prove that the permeability is less than  $1 \times 10^{-6}$  cm/s, and mapping the confining layer across the cells to be certified. Existing samples and field soil will be examined to reclassify the observed sediments into functional hydrostratigraphic units. That is, sediments with similar hydrologic properties (permeability) will be mapped as a field unit. Permeability and grain size will be determined for the unit identified as forming the continuous confining unit. Sieve or grain size analyses are also planned to be conducted on other geologic units encountered. Permeability samples will be collected in accordance with ASTM D1587, Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils. Permeability testing will be completed in accordance with ASTM D5084-00e1, Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

Permeability testing is required for each different soil type used as part of the confining layer and each sample will be observed and subjected to sieve testing after completion of permeability testing. All other boring locations will require sieve testing in the confining material. A correlation between permeability, percent fines (percent passing No. 200 sieve) and percent gravel (percent retained on No. 10 sieve) will be determined from the test results. This correlation will be used to further classify the soils into categories and to confirm which materials are adequate for the confining unit. This information will be provided to the Department in the Cell Certification package.

The limestone encountered at the base of Cell 1 has been proven by our solid stem auger borings and test pits to be lenses of limestone fragments within a clay matrix, and not connected to the Floridan aquifer. Even though the solid stem auger borings indicate the presence of clay under the sandy and limestone fragment areas, additional sandy clay/clay with a maximum permeability of  $1 \times 10^{-6}$  cm/s will be compacted over these areas and tied-in to the surrounding clay near the cell base. Therefore, the over-excavation of these areas and replacement with clay is not necessarily being done to restore confinement to the site, rather to restore a more consistent confining layer at the base of the cell.

### **Temporary Pond Area**

In the areas of Cells 14, 15, and 16, borings during permitting, such as B-4, B-5, B-8, DCL01-8, DCL01-12, DCL01-13, and DCL01-14, encountered a sandy clay within approximately 10 to 30 feet of the surface, or between 80 feet NGVD to 38 feet NGVD. HAI field observations during the excavation of the temporary pond confirmed that all of the floor of Cell 15 and most of Cell 16 contain a sandy clay. Three permeability samples have been obtained from the temporary pond, two from Cell 15, and one from Cell 16. These test results may be considered for certification, depending on the depth of the continuous confining layer. Additional sampling in

Mr. Kim Ford, P.E.  
August 21, 2003  
Page 3

the pond for continuing layer thickness, permeability, and sieve testing will be completed subsequent to the sampling in Cell 1.

The stormwater in the pond is currently being pumped to an on-site borrow pit to allow an all-terrain drill rig to access Cells 15 and 16 to perform this testing. In order to characterize the confining unit in the pond, a minimum of approximately 8 continuous 30-foot deep additional SPT borings are proposed for Cells 15 and 16, and 10 to 12 solid-stem auger borings. See attached drilling plan. The correlation methods for Cell 1 will also be applied to the temporary pond. Solid stem auger borings will be completed as necessary around the permeability test locations for description and mapping of the confining unit and for sieve testing to prove that the deeper confining unit is connected to the confining unit of the remainder of the cell. This information will be included in the Confining Layer Contour Map. All test results and field observations will be submitted to the Department with the Cell Certification package.

While the drill rig is at the site, a permeability test sample will be collected from the portion of the temporary pond still to be constructed (Cell 14). The sample will be collected from below the base grade of the temporary pond, or below 75 feet, NGVD. After construction of Cell 14 is completed, HAI will determine an appropriate number of additional quality assurance tests based on construction observation and the results of the testing in Cells 15 and 16.

### **Confining Layer Contour Map**

HAI's Geologists are developing revised confining layer (sandy clay to clayey sand) contour maps for Cells 1, 15, and 16, as requested by the FDEP. The maps are being prepared in addition to geologic cross-sections to illustrate the existence of a continuous confining unit. The location and thickness of the confining layer at the boring locations will be tabulated and included in the Cell Certification package. The map will illustrate a structural contour on the top of the confining unit with each boring location labeled with the thickness of the confining unit.

### **Confining Layer Tie-in**

Initial over-excavation of the limestone containing areas at the base of Cell 1 was completed on August 1, 2003, prior to the Department's site visit. Observation of these excavated areas by HAI's Geologist indicated that most of the locations are surrounded by sufficient confining material to perform the tie-ins. Any of the over-excavated limestone areas that are not completely surrounded by three feet of sandy clay or clay will be excavated further until there is competent material to construct the tie-ins. The areas identified on the Confining Layer Contour Map with less than three feet of  $1 \times 10^{-6}$  cm/s material will be excavated to a depth of three feet outward until tie-ins can be constructed into competent material.

Mr. Kim Ford, P.E.

August 21, 2003

Page 4

Weather permitting, we expect the additional over-excavation work to begin during the next couple of weeks and expect approximately two days to complete. The Department will be notified at least 24 hours prior to the initiation of the over-excavation. The Confining Layer Contour Map will be used as a guide for the over-excavating; however, visual observation of the excavation will overrule the map, if necessary. Any discrepancies between field observation and the map will be noted. Prior to the initiation of the tie-in construction, the horizontal extent of the over-excavated areas will be resurveyed. As requested, new corner posts will be installed and surveyed to mark the area of Cell 1 to be certified and approved for disposal operations. A benchmark will also be installed and surveyed in Cell 1. This information will be provided to the Department on a map.

HAI will photograph and document all work performed at the site. The contractor plans to use an excavator to slope the sides of the excavations and any other locations in need of confining layer tie-ins to a 3H:1V slope all the way around. The designated clay material must be placed in 3, 12-inch lifts and will be compacted by approximately four passes with a 40,000 lb, D-6 Dozer. The dozer will compact the material in the bottom of the excavation and up the side slopes into the excavator bucket marks. After the second lift is compacted with the dozer, a 12-ton, 84-inch vibratory roller will be used to roll the material. After compaction of the final lift, the vibratory roller will roll the extents of the filled and compacted area. HAI's field technician will be on-site during this process and will be logging the daily activities, including the tie-in locations, quantity of soil material used for each lift, thickness of each compacted lift, results of nuclear density testing, verification of equipment used for compaction, and verification of bucket marks at the tie-in surfaces (no smooth surfaces).

In accordance with ASTM specification D3017-96, Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), a laboratory technician will use a nuclear density test/moisture content device on each 12-inch lift to ensure the proper density and moisture content are achieved. Each compacted lift must be 12-inches in thickness with the appropriate density/moisture content to be acceptable. Any lift not meeting these requirements will be reworked until the desired density is achieved.

This in-place field testing will eliminate the need for permeability testing of every 12-inch lift and waiting for each result prior to constructing the subsequent lifts. However, shelly tube samples will be collected for laboratory confirmation testing by a drill rig at the center of each lift in the first tie-in area (the excavated area in the southeast portion of Cell 1). This location will be used as a "test area" to verify that the in-field testing is adequate. As discussed with the Department on August 5, 2003, construction of the other tie-in areas will not wait for the laboratory results, as they are expected to be favorable.

Mr. Kim Ford, P.E.  
August 21, 2003  
Page 5

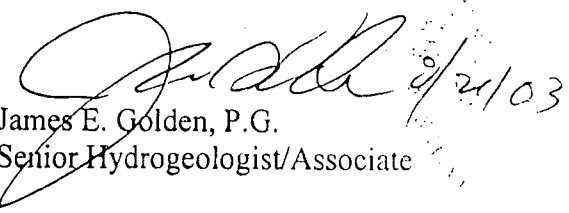
Certification Report

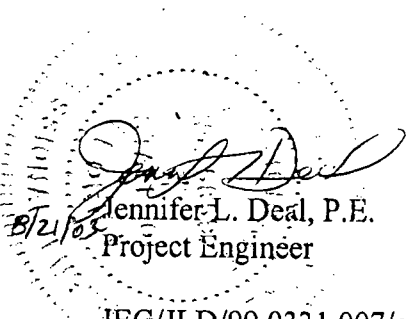
Cell 1 and temporary pond certification work will be documented with a submittal to the Department including the confining layer tie-in construction documentation, permeability tests results, clay confining layer contour map, cross-sections, table of permeabilities and sieve analyses, surveyed tie-in areas, fine grading of the cell floor, topographic survey of the final cell floor elevations, confirmation of Pond 1 and temporary pond completion, and the FDEP Certification of Construction Completion form for Cell 1 and operational features (scalehouse, roll-off containers, gate, fence, signs, perimeter road, and berms.).

We trust this submittal will satisfy the Department. Please call us if you have any questions.

Very truly yours,

Hartman & Associates, Inc.

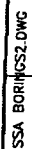
  
James E. Golden, P.G.  
Senior Hydrogeologist/Associate

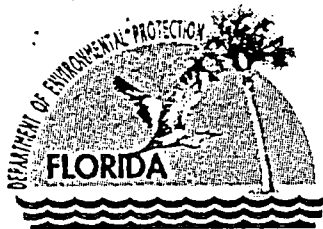
  
Jennifer L. Deal, P.E.  
Project Engineer

JEG/JLD/99.0331.007/corresp/  
Ford10.jeg

Attachments

cc: Dominic Iafrate, Angelo's  
Craig Bryan, Angelo's  
John Morris, P.G., FDEP  
Susan Pelz, P.E., FDEP  
Miguel A. Garcia, HAI  
Dale Claytor, HAI  
W. Bruce Lafrenz, P.G., HAI





# Department of Environmental Protection

Jeb Bush  
Governor

Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

David B. Struhs  
Secretary

DATE: AUGUST 19, 2003  
TIME: 0900  
SUBJECT: ENTERPRISE WASTE TREATMENT LANDFILL

## ATTENDEES

<u>Name</u>	<u>Affiliation</u>	<u>Telephone</u>
Jim Golden	Hartman & Assoc.	407-839-3955
Dominic Ferrate	Angelo's Aggregate	727-581-1544
Craig Bayan	Angelo's Aggregate	727-581-1544
Jennifer Deal	Hartman & Assoc	407-839-3955
Bruce LaFrenz	HARTMAN & ASSOCIATES, INC.	407-839-3955 x150
Miguel Garcia	HARTMAN & ASSOCIATES	407-839-3955 x174
Kim Ford	DEP	813 7446100 x382
John Morris	DEP	↓ x336
Susan Pelz	FORD	x386

MEETING

**ANGELO'S AGGREGATE MATERIALS, LTD.  
ENTERPRISE RECYCLING & DISPOSAL FACILITY  
PROPOSED MEETING AGENDA  
August 19, 2003**

1. Intent of draft Plan of Action, dated August 11, 2003
2. Permitted design of the landfill – in permit application

**CQA Plan**

3. Confining Layer Contour Map
4. DEP's opinion regarding existing hydrogeologic conditions
5. "all the variability"
6. More cross-sections
7. In-situ tests of clay with limestone fragments, per EPA Method

JG

goal is to finalize Plan of Action

August 11, 2003 draft was to bring us back together,  
start better dialogue (we were diverging) ...

COA Plan don't want to totally focus on the base

want to look below as well ... they are now developing  
new clay contour maps ... want to understand what  
final testing needs to be ... know it will take  
some time ... want some feedback

SP

go down agenda ... <sup>need to agree on</sup> bigger picture before we can agree  
on details

JG

refocus on where confining layer is ...

<sup>cell 16 North to South</sup>  
38 ft - 68 ft - 70 ft - 68 ft BY (73 ft)

BY confining layer is shallower than expected  
more recent has been shallower because of clay

found in cell 1 ... always expected deeper borings  
for certification ... realize they need deeper borings ...  
expected some sand at bottom of some cells

ICF

PAGE 377

Test & observation of cell floor doesn't reference deeper  
clay ~~layer~~ layer

JG

general statement: if we didn't find clay @

surface ... only shallow perm was in stormwater pond for  
stormwater perm ... design based on continuous clay  
at depth (not necessarily @ base) ...

unexpected conditions  $\Rightarrow$  4 borings in permitting w/ L.R



56 LR (50 ft el) <sup>LR</sup> <sup>NE corner</sup> cell 16, B-8 (75.5 ft) <sup>east of</sup> cell 15, B16 (63 ft) <sup>east center cell 1</sup>,  
LR was not unexpected in low portions of site DCL01-12  
(cell 15 center el 8.5=80)

BL There's a lot of geologic variability.

MG DCL01-12 is good example of going through cobbled area  
B below is clay

56 Not certifying clay layer in bottom of cell, but  
certifying clay below

DI proposed to <sup>overexcavating LR</sup> ~~excavate~~ 3 ft ~~to~~ placing clay  
will excavate until 3 ft laterally ~~to~~ 3 ft deep  
key laterally w/ existing  
~~laterally~~ laterally remove all LR at cell bottom el.  
& put back in 3 ft  
....

KE we're less concerned about base grade if design is  
deeper layer

56 Confining layer map - are preparing top of clay map  
w/ cell 1 in still may need some on eastern  
slope

MG deeper

56 shallow on north side, need more eastern slope  
& south

BL isopach on clay (thickness), & top of clay  
~~isopach~~  
....

- BL top of clay - only use points where clay is  
JRM solid stem auger -  
MG intent to go through LR ...  
JG intent for geological description only not split-spoon

- 11-1  
KF 1 map or 2 maps? All borings? shallow & deep?  
JG 2 maps, topography of top of clay (plan view contours)  
2<sup>nd</sup> map shows thickness of layer, every boring  
may not show total thickness  
\* how to do clay contouring - only deep borings? use shallow  
borings?

- SP can can is ~~not~~ not enough deep borings interior  
to tie to deep permitting borings

....  
"All the variability"

- JG have done 10 Shelby tubes; A lot have seen clay w/no LR  
fragments in ST-6 gravel = ~~100%~~ <sup>25%</sup> retained on #4 sieve  
....

- JG where do they need more persons? (they will look @ data  
& decide) want to keep

temporary pond

- JG want to certify cell 15 & 16 now  
they understand that they will recertify them again  
before use as disposal

1CF uncomfortable that can't see soils at bottom of 15 & 16

cell 1, 15, 16 & will be submitted All at same time

Cell 15 & 16 -

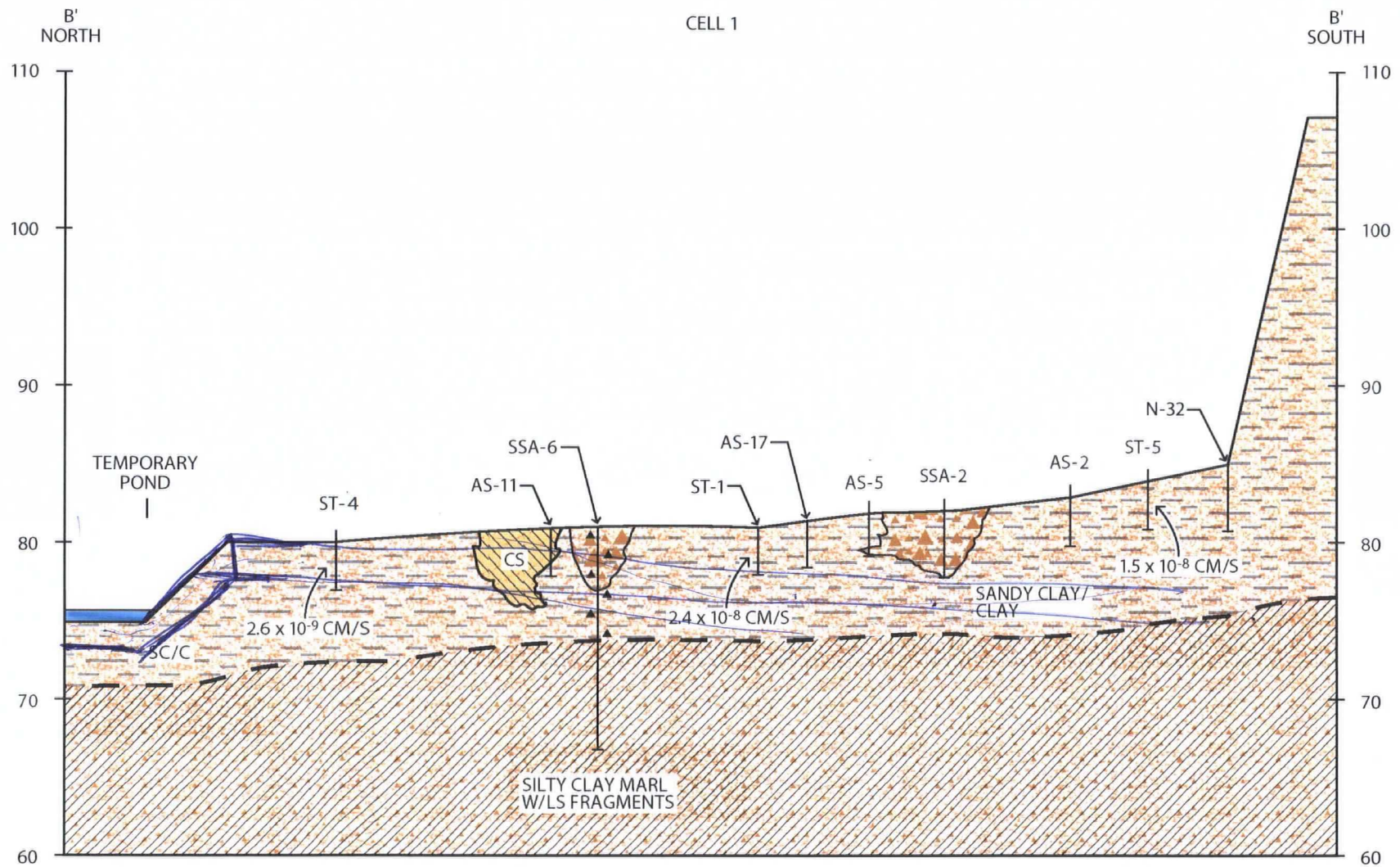
- 11 additional borings, deep enough to show  $3 \text{ ft} \times 10^{-6}$
- worst case locations for peans
- sieves on All borings
- # of peans depends on variability

will survey locations of patches in cell 1  
Hartman will be observing

Cell 1 sandy area will do ~~deep~~ borings to try & fix in small area will excavate &

Cell 15 & 16 -

- do All borings upto where "you're secure"  
& back off from "bad" areas for this certification
- do testing to decide what repairs need to be done



HORIZONTAL SCALE 1" = 100'  
VERTICAL SCALE 1" = 10'

FIGURE  
11



**HARTMAN & ASSOCIATES, INC.**  
engineers, hydrogeologists, surveyors, & management consultants  
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

CELL No. 1 - CROSS-SECTION B-B' - CERTIFICATION  
ENTERPRISE RECYCLING AND DISPOSAL FACILITY  
DADE CITY, FLORIDA

8/19/03

# ENTRPRISE CMT MEETING

1/2

JG to GET A plan FOR CERTIFICATION  
plan of action sent in AT Lm, REQUEST  
(IS REQUIRED BY PERMIT)  
REFOCUS ON INTENT OF PERMIT - 3' OF  
GOAL IS WATER FENCE plan TESTS TO BE INCLUDED

Susan SUGGESTED FOLLOWING AGENDA

- 1) 2) JG clay found Below BASE  
shown DURING PERMITTING "10-8"  
KE MENTIONED PG 3-17 CQA  
INDICATES TESTS AT BASE FOR  $10^{-6}$  cm/sec  
KE ASKED IF ANY PERMEABILITIES TAKEN  
AT BASE ELEV. 7 JG SAID YES  
JG SAID SOME BORINGS (FOR PERMITTING)  
SHOWED LIMESTONE FRAGMENTS  
SP SAID BORINGS ARE DEEPER THAN CELL BASE  
MG MENTIONED ONE LOCATION WHERE  
CLAY BELOW LIMESTONE  
JG SAID CLAY BELOW THE "SHELL BEDS"

3/4/8) Confirm Layer Contour map DISCUSS

SP-2 maps or one,

ALL BORINGS OR SOME BORINGS?

Jim - how samples RETRIEVED?

M/G - Solid Stem - AUGER

KE REQUESTED ONE MAP WITH

TOP OF CLAY CONTOUR LINES

WITH TABLE KEPT NOTED FOR EACH BORING

M/G SHOWED CORES

ST-6 W/18% GRAVEL - Limestone - > #4 SIEVE

(STEEL TUBE) ST-4 60% > #200 SIEVE

SP - NOT ADJUDICATING, INTENT IS 3' THICK  
AND CONTINUITY IS IMPORTANT

b) CROSS SECTIONS

NEW CROSS SECTION INADJUDICATE

SP SAID CHOOSE SHALLOW OR DEEP

AND MUST KNOW PERMEABILITIES

AGREED WE WOULD A

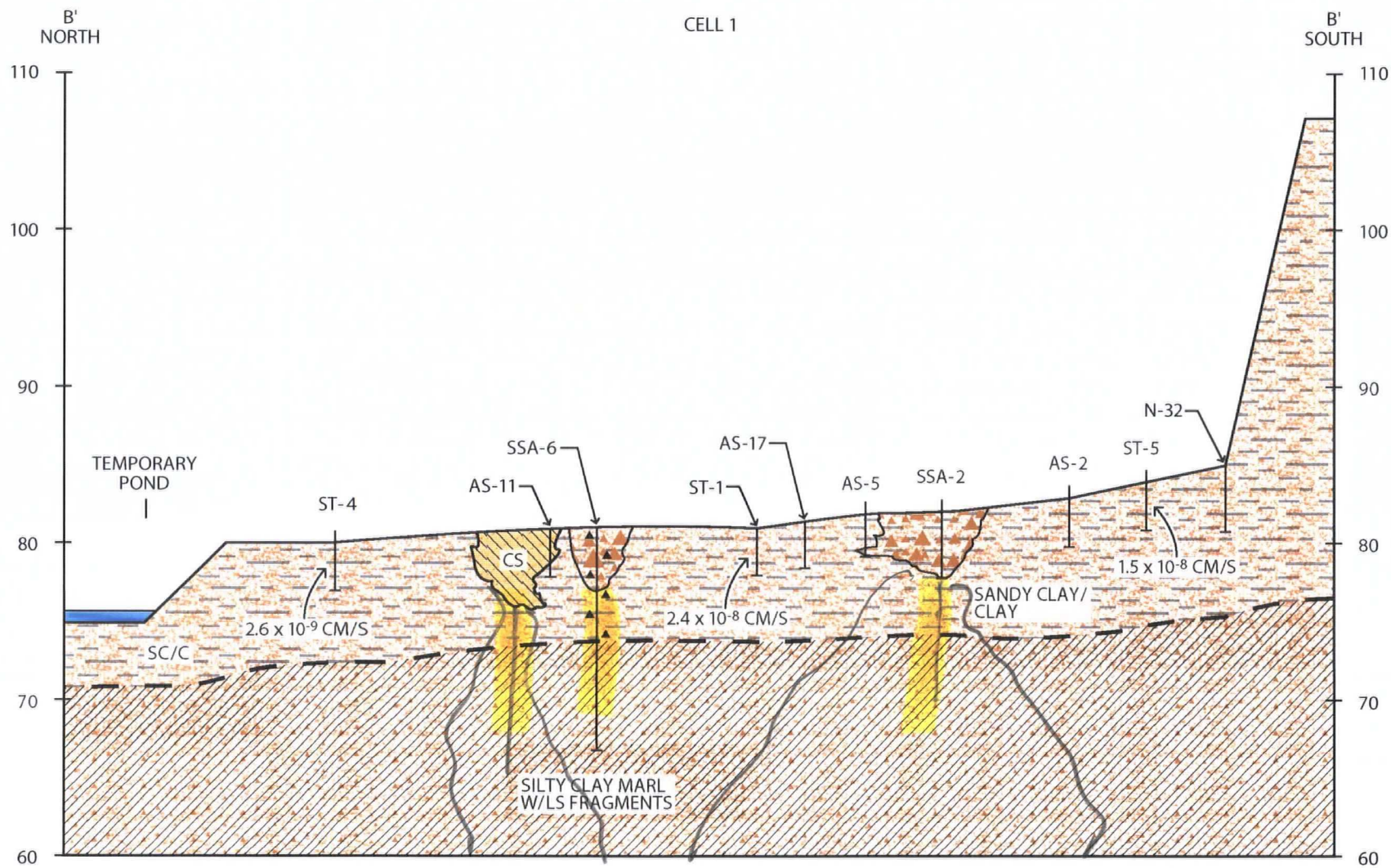
TOP OF CLAY CONTOUR MAP W/CLAY THICKNESS

AND TABLE WITH PERM. VALUES

FOR EACH LOCATION

SP/ ASKED FOR NEW PLAN OF ACTION





HORIZONTAL SCALE 1" = 100'  
VERTICAL SCALE 1" = 10'

FIGURE  
11



**HARTMAN & ASSOCIATES, INC.**  
engineers, hydrogeologists, surveyors, & management consultants  
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

CELL No. 1 - CROSS-SECTION B-B' - CERTIFICATION  
ENTERPRISE RECYCLING AND DISPOSAL FACILITY  
DADE CITY, FLORIDA

8/19/03

# ENTERPRISE CLASS III LANDFILL

DOMINIC IAFRATE  
BRUCE LA FRENZ  
JIM GOLDEN  
JENNIFER DETZ  
MICHAEL GARCIA  
CATHY BROWN  
STP  
KBF  
JRM

HANDMAN

## DRAFT PLAN OF ACTION (8/11/03)

- J.G. - DEVELOPING NEW CLAY CONTOUR MAP TO REPLACE MAP PREVIOUSLY PROVIDED
- J.G. - WANTED TO GET COMMENTS FROM KBF ON PLAN OF ACTION TO FOCUS ON GETTING AN APPROVAL FOR CELL 1

## BIG PICTURES

- J.G. - CLAY AT BASE OF CELL VS. CLAY AT DEPTH BELOW BOTTOM OF CELL
  - REFERRED TO X-SECTIONS PROVIDED AS PART OF HYDROGEOLOGIC INVESTIGATION THAT IDENTIFIED SOME MOSS WHERE CLAY OCCURRED BELOW BASE OF CELL
- KBF - QUESTION ABOUT 3-17 OF ENG. REPORT REGARDING INTENT OF ENCOUNTERING CONFINING UNIT AT BASE OF CELL OR DEEPER?
- STP - REGARDLESS OF WHERE THE INFO. PROVIDES CELL BOTTOM IN SOME PLACES ABOVE THE CONFINING UNIT - THAT IS THE DESIGN

- J.G. B-6 <sup>FLATS</sup> LS @ 50 FT ELEV ; ROCK AT 30 FT ELEV
- B-3 ↓ @ 75 FT & @ 65 FT ELEV ; ROCK @ 45 FT ELEV
- B-4 ↓ @ 63 FT ELEV ; ROCK @ 5 FT ELEV
- DCU-12 ↓ @ 80-85 FT ELEV ; DID NOT ENCOUNTER TOP OF FLUIDS TRANSFER

B. LA FRENZ LOTS OF VARIABILITY IN LITHOLOGY ~~WATER~~ LATERALLY

M. GARCIA DCU-12 GOOD EXAMPLE OF FINDING CLAY BELOW FLATS.

- J.G. - PLAN TO UTILIZE EXISTING CLAY AT BASE OF CELL 1 (ABOUT HALF OF CELL IS GOOD CLAY)
  - PLAN TO TAKE OUT SAND (LS FLATS AT BASE ; EXCAVATE LATERALLY TO FIND GOOD CLAY ; EXCAVATE 3 FT BELOW DESIGN ELEVATION & REPLACE WITH CLAY "PATCH"
- KBF - WHERE ARE THEY DEMONSTRATING CONFINING UNIT ; IF MAKING THE CLAIM THAT DEEPER CLAY IS PRESENT, THEN WORKING OVER THE BASE IS "OVERKILL"
  - THE PERMIT DID NOT REQUIRE "OVERKILL"



### ENTERPRISE CLASS III

SJP - NOT A GOOD IDEA TO ~~MAKING~~ PLACE WASTE OVER LIMESTONE; REGARDLESS OF WHERE THE CONFINING UNIT IS (AT BASE OF CELL OR AT DEPTH) WE WILL NOT ALLOW WASTE DIRECTLY OVER EXPOSED LS

JG - FEEL HAVE ADEQUATE DATA (EXISTING) TO PREPARE NEW

M. GARCIA - EXPLAINED HOW SAMPLES WERE DESCRIBED VIA SOLID STOM AUGERS

- CONSIDERED SS AUGERS INTO DEPTH OF INVESTIGATION & PULLED BACK THE AUGER FLIGHTS TO PREPARE LITHOLOGIC DESCRIPTIONS

KBF - ONE OR TWO MAPS TO DETERMINE EXTENT OF CLAY?

JG - ONE MAP TO ~~SHOW~~ SHOW TOP OF CLAY UNIT (PLAN VIEW - CONTOUR ELEV.)  
- SECOND MAP TO SHOW CLAY THICKNESS (NEED TO SHOW 3 FT CLAY THICKNESS)

B. LAFORTE - METHODS OF PLOTTING OUT ISOPACH MAP DISCUSSED

SJP - HOW TO DO CLAY CONTOURING MAP?

KBF - LOOKING FOR ONE MAP - SHOWING TOP OF CLAY ELEVATION & THICKNESS AT EACH LOCATION

SJP - LET'S GO BACK TO CLAY MAP LATER; WANT TO GO OVER CURRENT DISPOSAL IN CELL 1 & WHERE THEY ARE AT

### VARIABILITY

JG - HISTORICAL BORINGS SHOWED VARIABILITY

- 10 SAMPLES W/ VERTICAL PERMEABILITY DATA
- MANY OF THE PEEL SAMPLES WERE CLAY W/O LS FRAGS

WORST CASE IN ST-6 @ 25% gravel

@ ST-6 - SIEVE SHOWED 18% GRAVEL SIZE - PERM @  $3.6 \times 10^{-8}$  cm/sec

@ ST-4 - SIEVE SHOWED INSIGNIFICANT GRAVEL - PERM @  $2.4 \times 10^{-9}$  cm/sec

B. LAFORTE - WHAT ABOUT EQUIVALENCE OF MOISTENING 3 FT OF  $10^{-6}$  cm/sec MATERIAL

SJP - NOT LOOKING AT "MIXING" 3 FT OF  $10^{-6}$  cm/sec & 2 FT  $10^{-8}$  cm/sec & 1 FT OF  $10^{-8}$  cm/sec MATERIAL; THAT WAS NOT THE DESIGN THAT WAS PERMITTED

JRM NOTES  
Pg 3/5  
8/11/03

SJP - IF TRYING TO DEMONSTRATE 3 FT OF CCM OCCUR AT DEPTH THEN NEED ADDITIONAL INVESTIGATION TO SHOW CONTINUOUS 3 FT LAYER; WE DON'T CARE WHERE THE CCM OCCURS - BUT NEEDS TO BE CONTINUOUS BETWEEN CELLS

JG - FEEL CCM IS COMPETENT AS GET DEEPER FEELS LS OCCURRING AT CELL 1 BASE  
- HAVE PREPARED ADD'L X-SECTIONS FOR TODAY & HAVE ADD'L X-SECTIONS BEING PREPARED

JG - IN SITU CCM TEST METHOD - "IN-FIELD PERMEAMETER"

SJP - WOULD RATHER STICK W/ UNDISTURBED PERM TESTING

### BIG PICTURE

SJP - HAVE TO DECIDE IF ARE PLANNING TO USE SPALLS CCM OR NOT

- IF GOING TO USE DEEPER CCM DEPOSITS, THEN NEED TO DEMONSTRATE

W/ PERM TEST THAT MEETS 3 FT @  $10^{-6}$  CM/SEC

- NEED TO DEVELOP CRITERIA TO INDICATE HOW MUCH LS CAN BE IN A PERM TEST THAT WILL "PASS"

- NEED LITHOLOGIC DESCRIPTIONS OF MATERIALS BEING ENCOUNTERED

J LIFANZ - TABULATE DESCRIPTIONS/STRAITS/PERMS FOR EACH OF THE "SOIL TYPES" ENCOUNTERED TO HELP CHARACTERIZE THE NATURE OF THE CONFINING UNIT ("FIELD UNITS")

SJP - ALTERNATIVES: - ① PLAY AT SURFACE

② CCM AT DEPTH

③ PLACE 3 FT CCM

- SOUNDS LIKE MAKING MATCHING # L.F. #2

SJP - WHERE DO WE GO FROM HERE? HOW TO BRING IN FOR A LANDING

- LOOKING TO MODIFY DRAFT PLAN OF ACTION & SUBMIT "THE PLAN" TO

PROVIDE 1 COMPREHENSIVE PLAN; NEXT SUBMITTAL AFTER THAT IS THE CERTIFICATION

JG - CELL #15 - TOW. STORAGE POND - NOT INTENDED TO CERTIFY UP FRONT IN PERMIT

SJP - NEED TO INCLUDE CELL #15 (AND #16) IN CERTIFICATION UP FRONT TO ADDRESS STORMWATER/LEACHATE DISPOSAL WHILE OPERATING IN CELL #1

JCM NOTES  
Pg 49/5  
2/14/03

### ENTERPRISE CLASS III

JG - SOME PERMS IN CELL 15 ; DO NOT HAVE 3 FT BOUNGES TO DEMONSTRATE 3 FT CONFINING UNIT ; CURRENTLY PUMPING OUT OF CELL #15 TO OLD BORROW PIT

STP - POTENTIAL FOR MORE INFILTRATION IN CELL #15 DUE TO (INCREASED) HEAD

JG - DON'T WANT TO INSTALL DIRM BETWEEN CELLS 15/16 ; NOT PRACTICAL TO SEPARATE ; PLANNING TO CONDUCT ADD'L TESTING IN CELL 16

KBF - ISSUES w/ CELL 16 HAS QUESTIONABLE AREA AT NORTH END ; NOT CONVINCED THAT MINIMUM OF 3 LOCATIONS IN CELL #16

DOMINIC - CERTIFY CELL 16 EXCEPT FOR "PROBLEM AREA" AT NW CORNER ; DIKE IT OFF & CERTIFY IT LATER

KBF - NOT COMFORTABLE NOT SEEING THE BOTTOM OF CELL #15 DUE TO THE MUD IN THE POND NOW ; IDEA WAS TO SEPARATE CELLS #15 & 16 TO MINIMIZE AMOUNT OF ADD'L INVESTIGATION TO GET IT CERTIFIED

DOMINIC - DON'T WANT TO LOSE CAPACITY FOR STORMWATER BY EXCLUDING CELL #16

STP - SAME PERFORMANCE CRITERIA WOULD APPLY TO CELLS #15/16

KBF - NEED SUFFICIENT DETAIL TO DEMONSTRATE CONTINUITY OF CONFINING UNIT ACROSS 1, 15 & 16

J.D. - AGREED TO PLAN OF INVESTIGATION FOR CELL #15 DURING SITE VISIT

PAUL BRYAN - NEED TO HAVE STARTING POINT FOR CELL #15 DATA COLLECTION

J.D. - BASED ON FIELD OBSERVATIONS & PROPOSED TESTS & IF TESTS, NEED TO SEE BASE?

STP - CERTIFY 1, 15 & 16? ALL TOGETHER?

JG - PUT ALL TOGETHER ON ONE FIGURE

STP - 3 PERMS FOR CELL 15 IS NOT ENOUGH - BASED ON

KBF - PERMS IN CELL 15/16 NEED TO BE IN TARGET CONFINING UNIT LAYER

- IF FIND LS FRAGS NEED TO HAVE PERM TESTS

- WILL OVEREXCAVATE LS EXPOSURES IN CELL 1 & SURVEY

JG - LIKELY TO USE NORTH HALF OF CELL 1 w/ IN PLACE COAL AS CONFINING UNIT

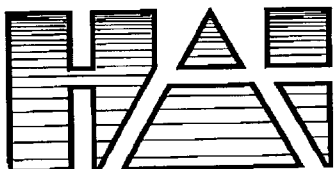
JRM NOTES  
pg 5/5  
8/18/03

### ENTERPRISE CLASS III

JG - SANDY AREA ON WEST SIDE OF CELL 1; NOT AS WORRIED ABOUT  
SAND DRUMMING AT THE BASE GARDIE; WILL TRY TO DO PGM  
TESTING BELOW SANDY AREA & NOT OVER-EXCAVATE

DOMINIC - TRY TO DO CERTIFICATION FOR ALL OF CELLS # 15/16 AT ONETIME,  
SEE WHAT THE RESULTS TURN OUT & BURN OFF THE NW CORNER  
IF NEEDED AND CERTIFY IT LATER

- PLAN OF ACTION TO SHOW PROPOSED TESTING LOCATIONS (BORING, PGMs, SIEVES)
- NEW COA PLAN?
- ONE FINAL PLAN
- TEST RESULTS WILL BE SUBMITTED AS PART OF CERTIFICATION

**HARTMAN & ASSOCIATES, INC.**

engineers, hydrogeologists, surveyors &amp; management consultants

201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3955 - FAX (407) 481-8447**FAX**

Job Number: 99.0331.007, Task 4, File 12.0

Date: 08/18/03

No. of pages incl. cover page: 2

To: Ms. Susan Pelz, P.E.

FDEP - Southwest District

Phone: (813) 744-6100 ext. 386

Fax: (813) 744-6125

cc:

Re: Enterprise Landfill

From: Jennifer L. Deal, P.E.

Hartman &amp; Associates, Inc.

Phone: (407) 839-3955 ext. 187

Fax: (407) 839-2066

REMARKS: ☐ Urgent ☒ For your review ☐ As Requested ☐ Please comment

Susan,

On behalf of Angelo's Aggregate Materials, Hartman & Associates, Inc. would like to offer a proposed agenda for our meeting tomorrow, Tuesday, August 19, 2003 regarding the Enterprise Recycling & Disposal Facility. Please call me if you would like to discuss this. We look forward to meeting with you.

Jennifer

The information contained in this facsimile transmission may be legally privileged and is intended for the use of the individual(s) or entity(ies) named above. If you are not the intended recipient, you are hereby notified that any use dissemination, distribution or copying of this facsimile or its information is strictly prohibited. If you have received this facsimile in error, please immediately notify the sender by telephone or facsimile using the above referenced number to arrange for the return of the original documents.

**ANGELO'S AGGREGATE MATERIALS, LTD.  
ENTERPRISE RECYCLING & DISPOSAL FACILITY  
PROPOSED MEETING AGENDA  
August 19, 2003**

1. Intent of draft Plan of Action, dated August 11, 2003
2. Permitted design of the landfill – in permit application

**CQA Plan**

3. Confining Layer Contour Map
4. DEP's opinion regarding existing hydrogeologic conditions
5. "all the variability"
6. More cross-sections
7. In-situ tests of clay with limestone fragments, per EPA Method

## \*\* Transmit Conf. Report \*\*

P.1

Aug 13 2003 13:28

Telephone Number	Mode	Start	Time	Pages	Result	Note
814078392066	NORMAL	13,13:27	0'30"	2	# O K	

FLORIDA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION

3804 Coconut Palm Drive  
Tampa, FL 33619-8318

**FAX**

Date:

8/13/03

Number of pages including cover sheet:

2

To:

Jennifer DEAR

Harrison

Phone:

407 839 3455

Fax phone:

407 839 2066

CC:

From:

Jim FORD

Phone:

(813) 744-6100

x 382

Fax phone:

(813) 744-6125

REMARKS:

☐ Urgent☒ For your review☐ Reply ASAP☐ Please comment

Conversation Records as you requested.

FLORIDA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION

3804 Coconut Palm Drive  
Tampa, FL 33619-8318

**FAX**

Date:

8/13/03

Number of pages including cover sheet:

2

To:

Jennifer Deal

Harrison

Phone:

407 839 3955

Fax phone:

407 839 2066

CC:

From:

Ken Ford

Phone:

(813) 744-6100

x 382

Fax phone:

(813) 744-6125

REMARKS:

☐

Urgent

☒

For your review

☐

Reply ASAP

☐

Please comment

Consideration Record as you requested.



**Ford, Kim**

---

**From:** Ford, Kim  
**Sent:** Wednesday, August 13, 2003 1:25 PM  
**To:** Ford, Kim; Pelz, Susan; Morris, John R.  
**Subject:** RE: conversation with Craig Bryan about Enterprise CIII

Susan,  
 As we discussed for clarification -  
 #5. "to prevent discharge from making its way under a Cell 1 liner" means that if Cell 15 has the continuous clay then the Cell 1 liner would have to be keyed into the Cell 15 continuous clay layer, however, if Cell 15 cannot be demonstrated to have the required clay layer then Cell 15 would have to be lined too.  
 #7 as you requested, I will call Craig Bryan with a date and time for all of us to meet including Jennifer D, Jim G., Craig B., John M., Susan P., and Kim F.  
 Kim

-----Original Message-----

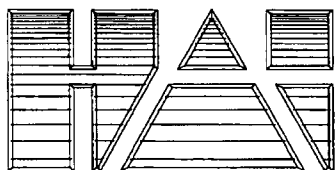
**From:** Ford, Kim  
**Sent:** Tuesday, August 12, 2003 6:11 PM  
**To:** Pelz, Susan; Morris, John R.  
**Subject:** conversation with Craig Bryan about Enterprise CIII

On August 12, 2003 at 5pm we (Susan Pelz, John Morris, Kim Ford) spoke with Craig Bryan about the following:

1. The August 11, 2003 letter (DRAFT) is confusing and appears to suggest that the DEP does not need any more information because we knew of the presence of the deeper confining unit as part of permitting.
2. We explained that the permitted design showed clay with no limestone and the new cross-section shows clay with limestone.
3. The letter says that the over-excavation and repairs are not intended to be the confining layer, however, the top of clay contour map is drawn for the Cell base and is not drawn for the deeper clay confining unit, and the CQA has been for the Cell base and has not been for the deeper confining unit. So, the top of clay contour map should be drawn for the deeper confining clay based on representative test borings through the limestone and into the clay (at least 3 feet into the clay) and with permeability test results from the same clay layer.
4. We said DEP's earlier decision for exemption from a liner was based on the earlier information without all the variability, and if the certification comes in without confirming the presence of 3 feet at 1x10-6cm/sec continuous everywhere then the certification would not be approved.
5. We explained there could be other options such as lining the bottom. We discussed some design concepts and a way to prevent discharge to the west from Cell 1 and to prevent discharge from making its way under a Cell 1 liner so lining Cell 15 may be required too.
6. We said that with all the new borings there should be more cross-sections showing the continuous clay with the permeability of the clay.
7. We said we could not meet this week but could next week.

Kim

*Key Discussion*

**HARTMAN & ASSOCIATES, INC.**

engineers, hydrogeologists, surveyors &amp; management consultants

201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3955 - FAX (407) 481-8447**FAX**

Job Number: HAI #99.0331.007

Date: August 11, 2003No. of pages incl. cover page: 15To: Kim Ford, P.E.  
FDEP/Southwest District

Phone: \_\_\_\_\_

Fax: 813-744-6125

cc: \_\_\_\_\_

From: James E. Golden, P.G.

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please comment

Please review and schedule a meeting to discuss with me and Craig at your earliest convenience, i.e., Tuesday or Wednesday of this week.

Progress report to follow.

Thanks,

Jim golden

# DRAFT

August 11, 2003

HAI #99.0331.007

Phase 4

File 12.0

**Via UPS Overnight**

Mr. Kim Ford, P.E.  
Florida Department of Environmental Protection  
Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

**Subject: Plan of Action for Cell Certification  
Enterprise Recycling & Disposal Facility  
Angelo's Aggregate Materials, Ltd.  
FDEP Permit Nos. 177982-001-SC, 177982-002-SO  
Pasco County, Florida**

Dear Mr. Ford:

On behalf of Angelo's Aggregate Materials, Ltd. (Angelo's), Hartman & Associates, Inc. (HAI) is submitting this Plan of Action to the Department to describe the intended certification activities at the above facility.

**Confining Layer Contour Map**

HAI's Geologists have developed a confining layer (sandy clay to clayey sand) contour map at the cell floor of Cell 1, as requested by the FDEP. This map has been prepared in addition to the geologic cross-sections submitted to the FDEP that indicate a continuous confining unit under the base of the site, see Appendix A. The location and thickness of the confining layer at this depth (80 to 82 feet, NGVD) was determined from information provided by 47 hand auger boring logs, 18 solid stem auger boring logs, 12 test pits, and 4 permeability test sample locations. The over-excavated limestone containing areas are indicated on this map, Figure 9, attached.

We remind the Department that the extensive hydrogeological investigation for the site upon which the permit is based identified a clayey sand to sandy clay confining layer across the site

Mr. Kim Ford, P.E.  
August 11, 2003  
Page 2

# DRAFT

that was not always at the base elevation of the landfill. From borings in and adjacent to Cells 15, 16, and 1, it was anticipated that these clays may not be encountered during excavation of the cells, but if not at the cell base, clay would be found within 5 to 15 feet below the cell, see Figures 5 and 6 in Appendix A. The Department's focus on the need for clay at the base of Cell 1 is contrary to the known hydrogeologic characteristics of the site and the permit.

The limestone encountered at the base of Cell 1 has been proven by our solid stem auger borings and test pits to be lenses of limestone fragments within a clay matrix, and not connected to the Floridan aquifer limestone that is known to be at least 25 feet below the cell base, at approximately 56 feet, NGVD. A representative cross-section through these borings across the cell is attached in Appendix A. This cross-section shows that there is a consistent confining layer underneath Cell 1, even without over-excavating the surficial sand and limestone fragment areas. Even though the solid stem auger borings indicate the presence of clay under the sandy and limestone fragment areas, additional sandy clay/clay with a maximum permeability of  $1\text{E-}6$  cm/s will be compacted over these areas and tied-in to the surrounding clay near the cell base. Therefore, the over-excavation of these areas and replacement with clay is not being done to restore confinement to the site, rather to restore a more consistent confining layer at the base of the cell as a requirement of FDEP's Cell 1 certification.

### Confining Layer Tie-in

Initial over-excavation of the limestone containing areas was completed on August 1, 2003, prior to the Department's site visit. Observation of these excavated areas by HAI's Geologist indicated that most of the locations are surrounded by sufficient sandy clays to perform the tie-ins. Any of the over-excavated limestone containing areas that are not completely surrounded by three feet of sandy clay or clay will be excavated further until there is competent material to construct the tie-ins. The areas identified on the Cell 1 Confining Layer Contour Map with less than three feet of  $1\text{E-}6$  cm/s material will be excavated to a depth of three feet below grade outward until tie-ins can be constructed into competent material.

Weather permitting, we expect the additional over-excavation work to begin on August 13, 2003, and expect approximately two days to complete. The Confining Layer Contour Map will be used as a guide for the over-excavating, however, visual observation of the excavation will overrule the map, if necessary. Any discrepancies between field observation and the map will be noted. The excavated areas will be "sealed" with approximately 6 to 12 inches of clay material to prevent stormwater infiltration prior to the Department's subsequent site visit over the next one to two days. Prior to the initiation of the tie-in construction, the horizontal extent of the over-excavated areas will be resurveyed. As requested, new corner posts will be installed and surveyed to mark the area of Cell 1 to be certified and approved for disposal operations. A

Mr. Kim Ford, P.E.  
August 11, 2003  
Page 3

**DRAFT**

benchmark will also be installed and surveyed in Cell 1. This information will be provided to the Department on a map.

Upon receipt of the Department's written approval of this Plan of Action, construction of the confining layer tie-ins will begin, expected to commence on August 18, 2003, if clay source material tests have been completed and approved. We recommend that an FDEP inspector be assigned to the site to observe the tie-in work. HAI will photograph and document all work performed at the site. The contractor plans to use an excavator to slope the sides of the excavations and any other locations in need of confining layer tie-ins to a 3H:1V slope all the way around. The designated clay material must be placed in 3, 12-inch lifts and will be compacted by approximately four passes with a 40,000 lb, D-6 Dozer. The dozer will compact the material in the bottom of the excavation and up the side slopes into the excavator bucket marks. After the second lift is compacted with the dozer, a 12-ton, 84-inch vibratory roller will be used to roll the material. After compaction of the final lift, the vibratory roller will roll the extents of the filled and compacted area. HAI's field technician will be on-site during this process and will be logging the daily activities, including the tie-in locations, quantity of soil material used for each lift, thickness of each compacted lift, results of nuclear density testing, verification of equipment used for compaction, and verification of bucket marks at the tie-in surfaces (no smooth surfaces).

In accordance with ASTM specification D3017-96, Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), a laboratory technician will use a nuclear density test/moisture content device on each 12-inch lift to ensure the proper density is achieved. Each compacted lift must be 12-inches in thickness with the appropriate density/moisture content to be acceptable. Any lift not meeting these requirements will be reworked until the desired density is achieved.

This in-place field testing will eliminate the need for permeability testing of every 12-inch lift and waiting for each result prior to constructing the subsequent lifts. However, shelly tube samples will be collected for laboratory confirmation testing by a drill rig at the center of each lift in the first tie-in area (the excavated area in the southeast portion of Cell 1). This location will be used as a "test area" to verify that the in-field testing is adequate. Construction of the other tie-in areas will not wait for the laboratory results, as they are expected to be favorable.

Additional testing for soil liners (leachate compatibility), in accordance with FAC Rule 62-701.400(3)(f), is not proposed at this time based on the Department's issuance of a liner exemption and the thorough field testing described above. Also, a soil liner is not being constructed at this site. The tie-ins are being constructed to ensure a continuous confining unit near the base of Cell 1.

Mr. Kim Ford, P.E.  
August 11, 2003  
Page 4

# DRAFT

Cell 1 certification work will be complete upon submittal to the Department of the confining layer tie-in construction documentation, including permeability tests results, surveyed tie-in areas, topographic survey of the final cell floor elevations, confirmation of Pond 1 and temporary pond completion, and the FDEP Certification of Construction Completion form for Cell 1 and operational features (scalehouse, roll-off containers, gate, fence, signs, perimeter road, and berms.).

## Temporary Pond Area

Historical auger borings throughout Cells 15 and 16, such as B-5, DCL01-8, DCL01-12, DCL01-13, and DCL01-14, encountered a sandy clay within 10 to 25 feet of the surface, or between 80 feet NGVD to 53 feet NGVD. HAI field observations during the excavation of the temporary pond confirmed that all of the floor of Cell 15 and most of Cell 16 contain a sandy clay. Three permeability samples have been obtained from the temporary pond, two from Cell 15, and one from Cell 16. The results of these tests should be received mid-week by HAI and will be submitted with the next progress report.

The Department has requested additional quality assurance testing in the temporary pond. Though the permit does not require this certification at this time, additional quality assurance testing is being performed in Cells 15 and 16, based on the Department's requested test locations, to avoid any additional further delay in the certification approval of Cell 1. Figure 8 of Progress Report #5, attached, shows the approximate locations of these proposed tests to be completed. The pond is currently being pumped out to allow an all-terrain drill rig to access Cells 15 and 16 to perform this testing. As discussed on August 1 and 7, 2003 with the Department, six auger borings are proposed for Cell 15, one at approximately 100-feet off the corner of the toe of slope, with two additional evenly spaced between the borings near the southern corners. Nine auger borings are proposed for Cell 16, one at approximately 100-feet off the corner of the toe of slope, four in the sandy area, and one in the area where Goodwin Brothers found the limestone cobble. One additional permeability test will be obtained from the sandy area in Cell 16. The sample will be collected from the deeper confining unit rather than the sandy material at the surface. Four solid stem auger borings will be completed around the permeability test location to prove that the deeper confining unit is connected to the confining unit of the remainder of the cell.

While the drill rig is at the site, a permeability test sample will be collected from the portion of the temporary pond still to be constructed (Cell 14). The sample will be collected from below the base grade of the temporary pond, or below 75 feet, NGVD. After construction of Cell 14 is completed, HAI will determine an appropriate number of additional quality assurance tests based on construction observation and the results of the testing in Cells 15 and 16.

Mr. Kim Ford, P.E.  
August 11, 2003  
Page 5

**DRAFT**

We respectfully request a prompt review of this submittal due to the extremely high cost of equipment rental and construction fees encountered during construction down times.

We trust this submittal will satisfy the Department. We are prepared to meet with you at your offices to resolve any outstanding issues. Please call us if you have any questions.

Very truly yours,

**Hartman & Associates, Inc.**

Jennifer L. Deal, P.E.  
Project Engineer

James E. Golden, P.G.  
Senior Hydrogeologist/Associate

N/hydro/jld/larkin/ford plan.doc

cc: Dominic Iafrate, Angelo's  
Craig Bryan, Angelo's  
John Morris, P.G., FDEP  
Susan Pelz, P.E., FDEP  
Miguel A. Garcia, HAI  
Dale Claytor, HAI

## APPENDIX A



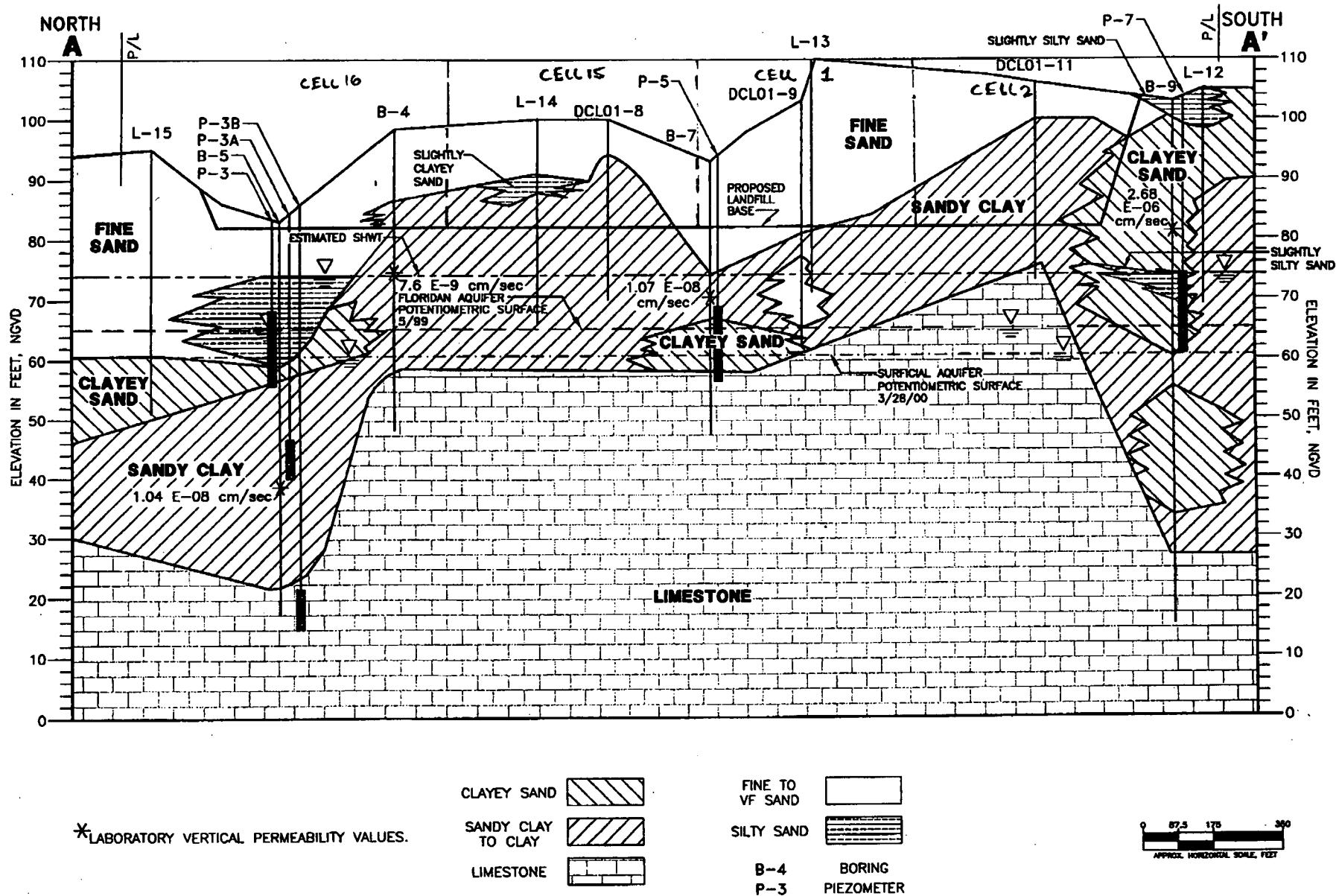


## FIGURE 4



201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 658-3855 - FAX (407) 658-3780

**PIEZOMETER AND BORING LOCATION MAP  
PROPOSED ENTERPRISE RECYCLING AND DISPOSAL FACILITY  
DADE CITY, FLORIDA**



\*LABORATORY VERTICAL PERMEABILITY VALUES.

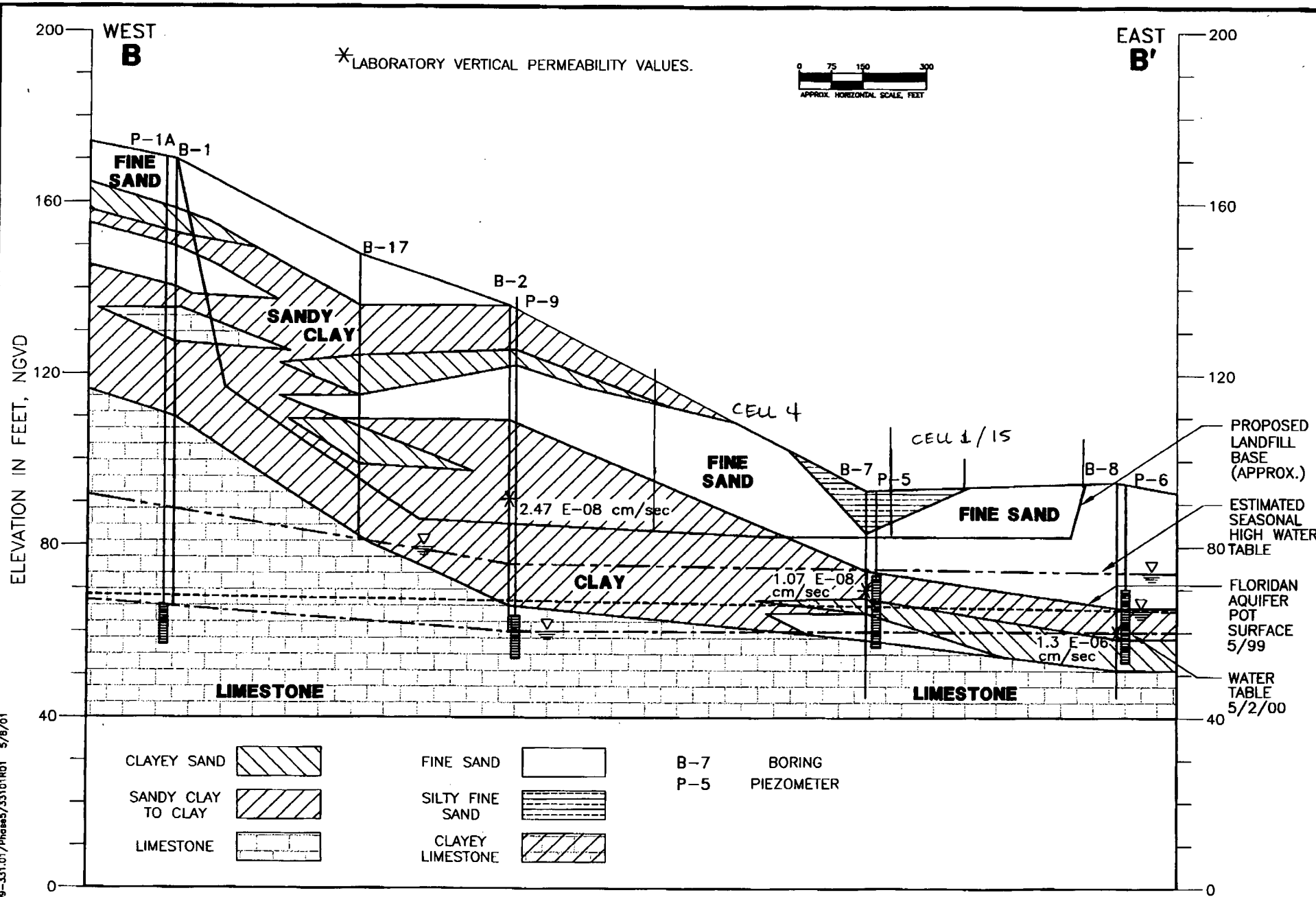
FIGURE 5



**HARTMAN & ASSOCIATES, INC.**  
engineers, hydrogeologists, surveyors & management consultants  
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

**GEOLOGIC CROSS SECTION A - A'**  
**PROPOSED ENTERPRISE RECYCLING AND DISPOSAL FACILITY**  
**DADE CITY, FLORIDA**

99-331.01/PHASE5/33101121/5/8/01



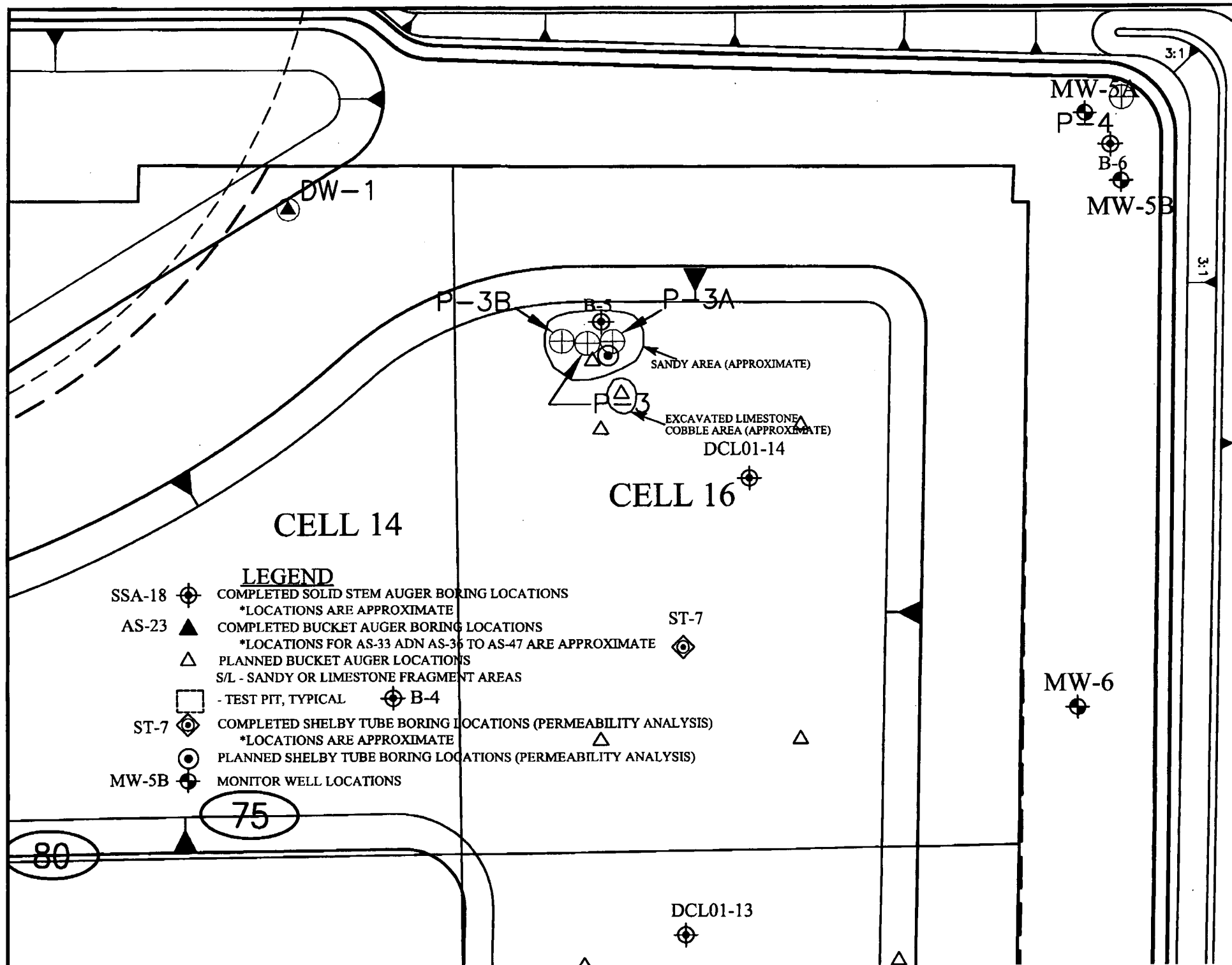
99-331.01/Phase5/33101.R01 5/8/01

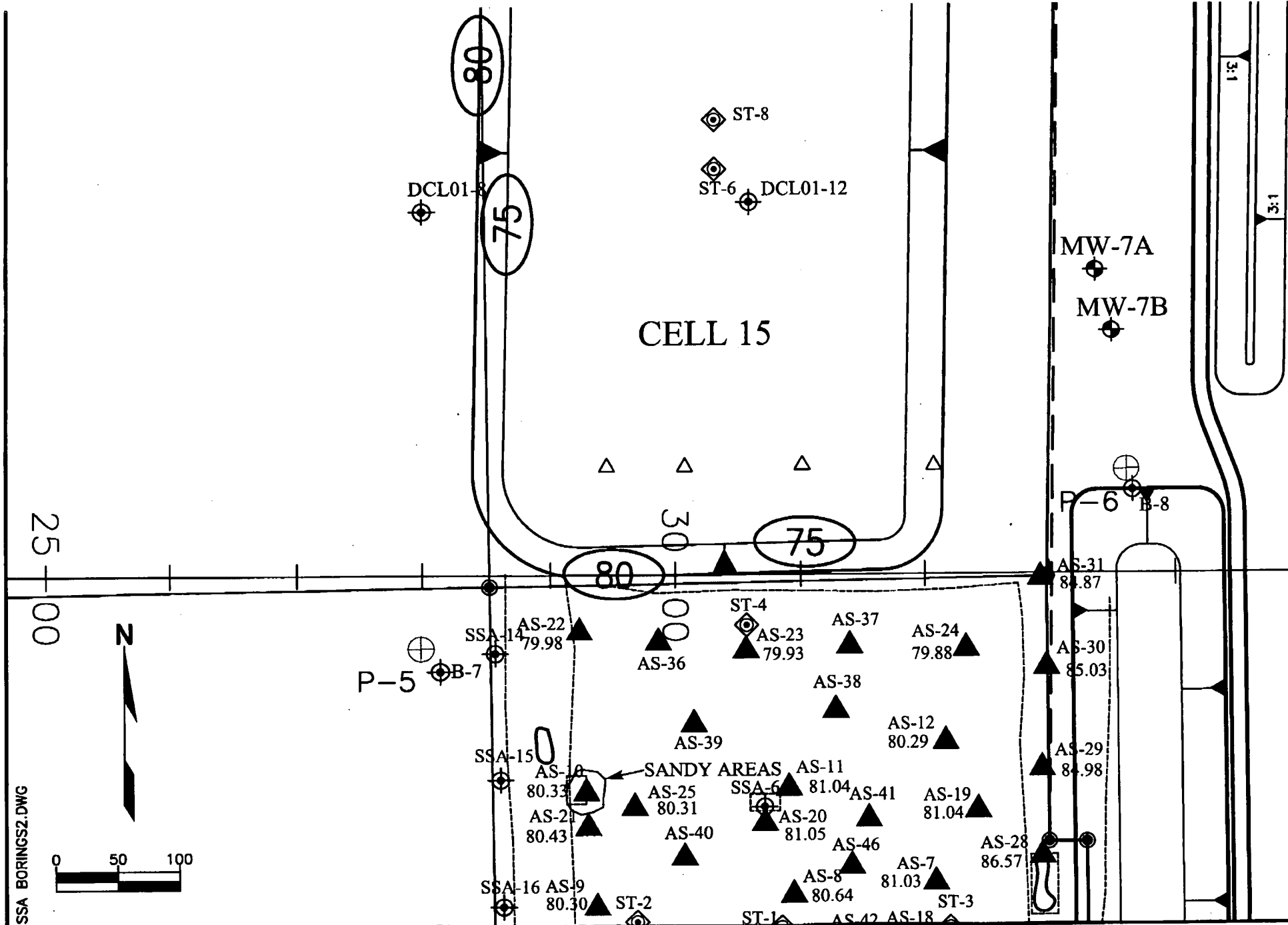
FIGURE 6



**HARTMAN & ASSOCIATES, INC.**  
engineers, hydrogeologists, surveyors & management consultants  
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

**GEOLOGIC CROSS SECTION B - B'**  
**PROPOSED ENTERPRISE RECYCLING AND DISPOSAL FACILITY**  
**DADE CITY, FLORIDA**





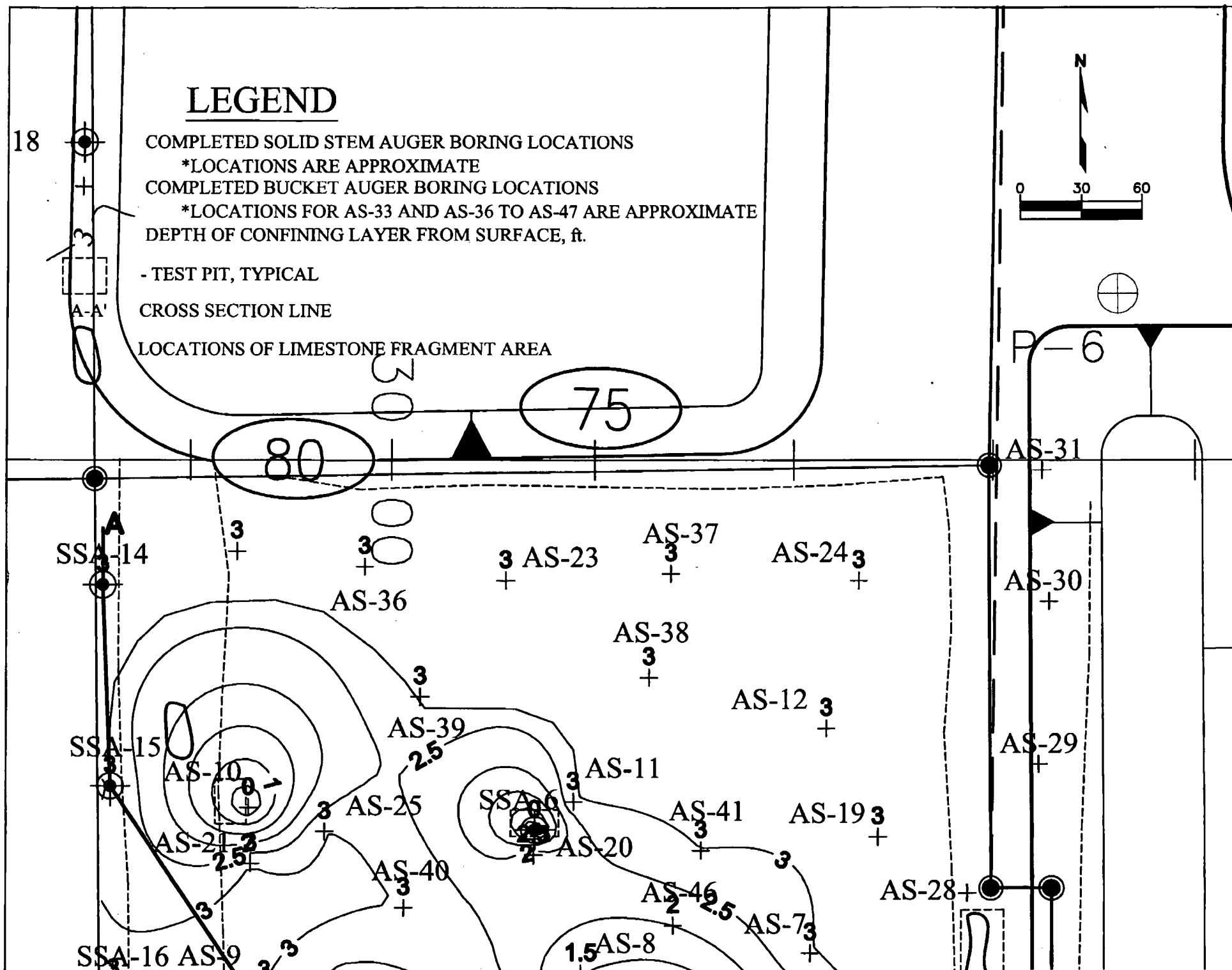
SSA BORINGS2.DWG

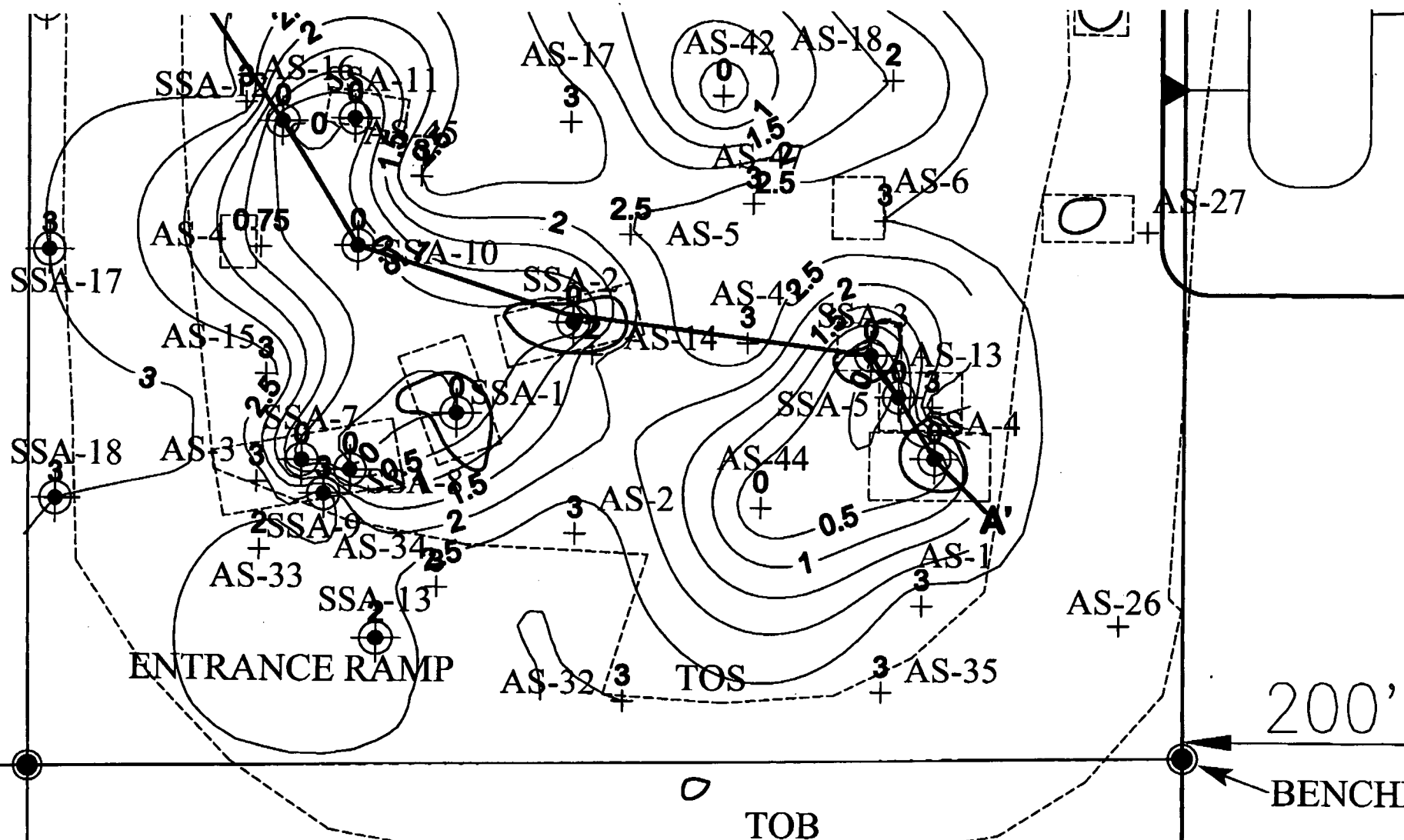
**FIGURE 8**



**HARTMAN & ASSOCIATES, INC.**  
 engineers, hydrogeologists, surveyors & management consultants  
 201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
 TELEPHONE (407) 839-3855 - FAX (407) 839-3790

**CELL 15 & 16 CQA PLAN BORING AND TEST LOCATIONS**  
**ENTERPRISE RECYCLING DISPOSAL FACILITY**  
**DADE CITY, FLORIDA**





NOTES: THE SURFER CONTOURING PROGRAM USED FOR THIS DRAWING GRADES CONTOURS EVENLY FROM ONE DATA POINT TO THE NEXT AND IS A SCIENTIFIC APPROXIMATION OF THE DEPTH OF CLAYEY MATERIALS ACROSS THE CELL FLOOR. ACTUAL FIELD CONDITIONS MAY VARY AND WILL BE VERIFIED DURING OVER EXCAVATION ACTIVITIES. AS-26 TO AS-31 BORINGS WERE NOT INCLUDED IN THE CONTOUR MODEL SINCE ELEVATIONS WERE ABOVE CELL FLOOR AND BORINGS ONLY ENCOUNTERED SMALL AMOUNTS OF CLAYEY MATERIALS TO A DEPTH OF 3 FT.

N:\CAD\DWG\1999\99-331.01\Modals\CELL 1 SSA BORINGS.DWG

Plotted: Aug 11, 2003 - 4:47pm by MGARCIA

FIGURE 9



**HARTMAN & ASSOCIATES, INC.**

engineers, hydrogeologists, surveyors & management consultants

201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 838-3835 - FAX (407) 838-3790

**CELL 1 CONFINING LAYER CONTOUR MAP  
ENTERPRISE RECYCLING DISPOSAL FACILITY  
DADE CITY, FLORIDA**



201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801  
TELEPHONE (407) 839-3953 - FAX (407) 839-3790

**CELL No. 1 - CROSS-SECTION A-A' - CERTIFICATION  
ENTERPRISE RECYCLING AND DISPOSAL FACILITY  
DADE CITY, FLORIDA**