ADDENDUM NUMBER 1

for

ADVANCED TREATMENT PROJECT
MEMORIAL PARKWAY TREATMENT PLANT
NORTHERN KENTUCKY WATER DISTRICT

FROM: CH2M HILL

TO: Plan Holders of Record

The following changes, additions, and deletions are hereby made a part of the project Bidding Documents as fully and completely, as if the same were set forth therein. Acknowledge receipt and acceptance of this Addendum in the space provided on the BID FORM .

SPECIFICATIONS

Item No. AD1-1: Invitation to Bid (Section 00 11 13)

Revise the Bid Opening Time in the first paragraph to 2:00 p.m., local time, on the 16th day of December, 2009. The location remains the same.

Pre-bid meeting minutes, agenda and attendees list are attached to this Addendum. Additionally, a lead and asbestos report for the Old Chemical Building was requested and is attached.

Item No. AD1-2: Metal Fabrications (Section 05 50 00)

Revise Article 2.16 GAC TANK LADDER SAFETY SYSTEM as follows:

- Paragraph 2.16.A – General, add the following new subparagraph:

  3. All safety devices must be able to withstand without failure, a drop test consisting of a 500-pound weight dropping 18 inches.

- Paragraph 2.16.B – Components and Accessories, Items 1 and 2 and replace them with the following:

  1. Portable Hoist System:
     a. Welded aluminum hoist system with 450 pound minimum rated working load and variable offset mast.
     b. Adjustable, portable base assembly.
     c. Quantity of two portable hoist systems required.
     d. DBI Sala UCL Advanced series hoist model number 8518040, or equal.

2. Hoist System Mast Sleeves
   a. Welded stainless steel sleeve, flush mount design with anchors for new concrete construction.
   b. Compatible with portable hoist system mast.
   c. Quantity of sixteen required (two at each GAC contactor tank).
   d. DBI Sala flush mount sleeve model 8510311, or equal.
   e. Stainless steel cap required for each sleeve to be in place when sleeve not in use.
3. Winch
   a. Winch assembly with one speed and permanent mounted crank handle.
   b. Stainless steel cable, 3/16" diameter, 150 feet of cable.
   c. Quantity of two winches required.
   d. DBI Sala UCL Advanced Digital 200 Series model 8518014, or equal.
4. Self Retracting Lifeline (SRL)
   a. Sealed stainless steel and cast aluminum housing with self adjusting disc brake.
   b. 3/16" galvanized steel wire rope, length 85 feet.
   c. Self locking swivel snap hook.
   d. Retrieval winch.
   e. Quantity of two required.
   f. DBI Sala SSRL model 3403502, or equal.

- Paragraph 2.16.C – Manufacturers and Products, delete Items 1 and 2. Replace them with the following new acceptable manufacturers:

  1. DBI Sala.
  2. Miller Equipment.
  3. Or approved equal

Item No. AD1-3: Polymer Based EIFS (Section 07 24 13)

Delete this entire section.

Item No. AD1-4: Vapor Retarders (Section 07 26 00)

Delete this entire section.

Item No. AD1-5: Standing Seam Roof Panels (Section 07 41 31)

Delete this entire section.

Item No. AD1-6: Pad-Mount Metal-Enclosed Switchgear (Section 26 13 16.01)

Delete this entire section.

Item No. AD1-7: Switchboards (Section 26 14 13)

Revise Article 2.06 PROTECTIVE DEVICES as follows:

Paragraph 2.06.B.1 – Delete reference to Tie Breaker. There aren't any tie breakers on this project.

Item No. AD1-8: Low-Voltage Adjustable Frequency Drive System (Section 26 29 23)

Revise Article 1.03 SYSTEM DESCRIPTION as follows:

- Paragraph 1.03.A.2 – Replace "1.15 times full load current" with "110% of full load current".

- Delete Paragraph 1.03.B.6 and replace with the following:

  6. Provide Incoming Line Circuit Breaker: Provide positive means of disconnecting incoming power, and overcurrent protection for the drive system.

- Delete Paragraph 1.03.B.7 and replace with the following:

  7. Provide Incoming Line Reactor (3% Minimum): Provide input line reactor to minimize harmonic distortion on the incoming power feeder.

- Revise Article 1.05 QUALITY ASSURANCE as follows: Add the following paragraphs:

  B. Manufacturer will provide a two-year warranty on all equipment under this specification. Response time to requests for assistance during the warranty period shall be 24 hours or less.

  C. The AFD manufacturer shall maintain factory trained and authorized service facilities within 100 miles of the project and must demonstrate a record of service for at least the previous five years.

- Revise Article 1.06 EXTRA MATERIALS as follows: Delete paragraph A.1-7 and replace with the following:

  A. Furnish the following spare parts:
     1. One (1) operator interface keypad.
     2. For each size cooling fan, provide one (1) spare.
     3. Fore each type of printed circuit board, provide one (1) spare.

- Revise Article 2.01 MANUFACTURERS as follows: Delete Paragraph 2.01 A and replace with the following:

  A. Components and accessories specified in this section shall be Allen-Bradley Powerflex 700 Series or equal.

- Revise Article 2.04 COMPONENTS as follows:

  Paragraph 2.04 C – Delete "series choke" and replace with "DC bus choke".

  Paragraph 2.04 F.6 – Delete paragraphs e, f and g.

- Revise Article 3.02 FIELD QUALITY CONTROL as follows:

  Paragraph 3.02.A.3 – Delete the last sentence.

- Revise Article 3.02 FIELD QUALITY CONTROL as follows:

  Paragraph 3.02.B.6.a – delete "at location identified as PCC1 in Simplified Plant One-Line Diagram" and replace with "at the 15 kV transfer switch".

- Revise Article 3.02 FIELD QUALITY CONTROL as follows:

  Paragraph 3.02.B.6.c – delete "PCC3" and replace with "MDP-AT".

  Paragraph 3.02.B.7.a – delete "at location identified as PCC2 in Simplified Plant One-Line Diagram" and replace with "at the 15 kV transfer switch".

  Paragraph 3.02.B.7.b – delete "PCC3 in Simplified Plant One-Line Diagram" and replace with "MDP-AT".

- Revise Article 3.03 MANUFACTURERS' SERVICES as follows: Paragraph 3.03.A – add the following paragraph:

  3. One person-day for training by a factory trained service technician.

Item No. AD1-9: Diesel Engine Generator Set (Section 26 32 13.13)

- Revise Article 1.02 SUBMITTALS as follows: Delete Paragraph 1.02.A.12.f and replace with the following:

  f. Interconnection wiring diagram for automatic transfer switch.

- Revise Article 2.10 CONTROL SYSTEM as follows: Delete Paragraph 2.10.E.1 and replace with the following:

  1. Furnish relay outputs for the following:
     a. Power Failure.
     b. Generator Run.
     c. Generator Fail.
     d. Low Fuel.

- Paragraph 2.10.E - add the following paragraph:

  4. Provide an annunciator panel for remote mounting to provide audible and visual warning of a fault or alarm condition in the generator set.

- Revise Article 2.11 OUTDOOR WEATHER-PROTECTIVE ENCLOSURE as follows: Paragraph 2.11.A.16.a - delete "120/240V ac" and replace with "208Y/120VAC".

Item No. AD1-10: Automatic Transfer Switches (Section 26 36 23)

Delete this entire section and replace with the attached.

Item No. AD1-11: Lighting (Section 26 50 00)

- Revise Article 2.04 LIGHTING CONTROL as follows:

  Delete Paragraphs A, B and C.

- Revise Article 3.04 LIGHTING CONTROL as follows:

  Delete Paragraph A.

Item No. AD1-12: Access Control System (Section 28 13 53)

- Revise Article 1.01 WORK INCLUDED as follows: Add the following paragraphs:

  D. The access control system shall include at a minimum the following:

  1. All access control components specified herein and called for on the Drawings.
  2. All electronic door hardware to make the system fully operational. Coordinate style, type and color with what is required in Specification Section 08 71 00 - Door Hardware.
  3. All cabling specified herein and shown on the Drawings (Conduit for cabling to be provided as specified in Division 26).

- Add the following paragraph:

  E. The new system must be fully compatible with the existing DSX Access Control System supplied by:

  Aegis Protective Services
  3033 Robertson Ave
  Cincinnati, Ohio 45209
  Contact: George Wergers, 513/948-0066, ext 108

Item No. AD1-13: Access Control System (Section 28 13 53)

Revise Article 2.01 ACCESS CONTROL as follows: Delete Paragraph 2.01.J.2 and replace with the following:

1. 8 – Open collector outputs 100ma.

Item No. AD1-14: Welded Steel Pipe and Fittings (Section 33 05 01.01)

Delete entire section. Welded steel pipe is only being considered for use as process piping which is included in Section 40 27 00.

Item No. AD1-15: Process Piping- General (Section 40 27 00)

As a clarification, the process piping within the Advanced Treatment Building may be either DI or steel as indicated in the schedule. The design was performed around DI and any additional labor, materials, equipment or costs associated with converting to steel shall be included in the bid if the contractor chooses to install steel.

Item No. AD1-16: Instrumentation and Control for Process Systems (Section 40 90 00)

- Revise Article 2.10 PANEL FABRICATION as follows: Paragraph 2.10.F.8.b – delete "GFCI GFCI" and replace with "GFCI".

- Revise Article 2.12 SOURCE QUALITY CONTROL as follows: Paragraph 2.12.C.1 – add the following to this paragraph:

  Owner reserves the right to witness the FDT. If the facility is located more than 150 miles from the site, Contractor shall pay Owner's travel expenses for no more than two people.

Item No. AD1-17: Instrumentation and Control Components (Section 40 91 00)

- Revise Article 2.04 I&C COMPONENTS as follows:

  Paragraph 2.04.A.3.b – delete "Side mount on transmitter" and replace with "Bottom mount on transmitter".

- Delete Paragraph 2.04 D.8 and replace with the following:

  8. Accessories:
     a. 19-Tube bundle flow strengthener to reduce upstream piping requirements.

- Paragraph 2.04.D – add the following paragraph:

  9. Manufacturers and Products:

a. Rosemount Model 3051SFA Annubar Flowmeter complete with Rosemount 3051S pressure transmitter and Rosemount 485 Annubar Primary element.
b. Veris Varabar Annubar or Accelabar with Endress Hauser pressure transmitter.
c. Or approved equal.

- Paragraph 2.04.L.8 – add the following paragraph:

  d. Endress Hauser.

- Paragraph 2.04.P.8.a – add the following paragraph:

  4) Endress Hauser.

- Paragraph 2.04 P.8.b – add the following paragraph:

  3) Endress Hauser.

- Delete Paragraph 2.04.Q.3.c.1) and replace with the following:

  1) Two communication ports, RS-232 and RS-485.

Item No. AD1-18: Monorail Hoists (Section 41 22 23.19)

Delete the Hoist/Monorail Data Sheet at the end of the section and replace it with the attached new data sheet:

Item No. AD1-19: Granular Activated Carbon Filter Media (Section 43 31 13.13)

Revise Article 1.01(A)(1.) to reflect three (3) of the six contactors receiving carbon installation as part of this contract. As a clarification, only the three contactors that will have granular activated carbon media shall have sand layer installed.

Item No. AD1-20: Vertical Turbine Pumps (Section 44 42 56.03)

- Delete the Data Sheets at the end of the section and replace with the attached information.

- Revise Article 2.04 VIBRATION AND TEMPERATURE TRANSDUCERS AND MONITORING SYSTEM as follows: Paragraph 2.04.A – add the following paragraph:

  4. Monitoring system to be ITT Pro Smart or equal.

Item No. AD1-21: Contactor Underdrain System (Section 44 43 34)

As a clarification, all six contactors receive underdrains and piping. The troughs shown in each contactor are fiberglass and specified as follows:

A. Washwater troughs shall be designed and constructed in accordance with AWWA F 101 and the Contract Documents.
B. Dimensions shall be as shown on the Contract Drawings
C. Contractor shall submit the manufacturer's design calculations for review in accordance with the Contract Documents. Calculations shall include, in addition to the calculations required by AWWA F101, critical buckling load calculations for the trough cross braces and spreaders.
D. Contractor shall submit complete scaled and dimensional construction drawings indicating dimensions, material specifications, and proposed layout within the contactor boxes.
E. Contractor shall submit structural calculations for load bearing, deflection, and as required by AWWA F101.
F. Contractor shall submit detailed installation requirements including required block-outs and anchorage.
G. Troughs shall be designed for a maximum backwash rate of 18 gpm per square foot at a minimum freeboard of tow (2) inches.
H. Troughs shall be either Type I or Type II fabrications and shall be compatible with the Filter Media specified in Section 44 43 30 and GAC Media as specified in Section 43 31 13.13.
I. Provide certifications of compliance with NSF 61
J. All hardware and mounting appurtenances shall be Type 316 stainless steel.
K. Troughs shall be designed for air scour backwash in accordance with AWWA F 101
L. An integrally molded water stop shall be provided on the trough wherever the trough is grouted into and/or passes through a concrete wall.
M. Provide details of the blind or closed end connection to the wall including provisions allowing for thermal expansion along the length of the trough and provisions for allowing elevation adjustments.
N. Troughs shall be installed in accordance with the manufacturer's printed instructions as approved.
O. Provide a minimum of one (1) day of manufacturer's services to assist and train the contractor's personnel and one (1) day to inspect and certify the proper installation of the backwash troughs.

PLANS

Item No. AD1-22: General Structural Notes (Sheet MP-G-007)

As a clarification, the contractor will be responsible for the stability of **all** excavations. Shoring will be required anywhere the potential of undermining of the existing facilities (structures, utilities, etc) exists. The shoring plan must be prepared by a registered KY PE.

Item No. AD1-23: Special Inspections Plan (Sheet MP-G-009)

As a clarification, the term controlled fill refers to any compacted fill such as granular or compacted crushed stone.

Item No. AD1-24: General Site Plan (Sheet MP-C-101)

Two additional areas have been made available to the Contractor for staging and laydown. The first area is between the Solids Handling Building and Raw Water Pump Station. The Contractor may use the area inside the fence and below the levee but access for NKWD operations must be maintained in the paved driveway area. The second location is the grassy area between the access driveway, south reservoir and old water plant foundation near the Waterworks Road entrance gate.

Item No. AD1-25: Site Piping and Utilities Plan (Sheet MP-C-104)

As a clarification, all active utility lines are to be maintained in service through the project. Any temporary services required for this should be included in the Bid.

Item No. AD1-26: Existing Basins and Old Chemical Building Sections (Sheet MP-X-002)

Revise the Note on Section B as follows: Remove in North half ... ends of remaining pipe (See Note D).

Item No. AD1-27: Overall One-Line Diagram (Sheet MP-E-001)

The transfer switchgear as shown shall be re-configured to match what is currently being specified in Specification Section 26 36 23. This includes:

1. Two (2) draw-out vacuum circuit breakers with microprocessor control for automatic transfer of load from normal to standby.
2. Integrated distribution sections with three (3) 600 amp frame, manually operated, vacuum breakers with overcurrent protection.

Item No. AD1-28: One-Line Diagram (Sheet MP-E-002)

Delete the tag note on the UGP line that serves the 1000 KVA PMT.

Item No. AD1-29: Electrical Site Plan (Sheet MP-E-102)

Section T-T between the generator and transformer should be Section G-G.

Item No. AD1-30: Duct Bank Schedule and Sections (Sheet MP-E-103)

Duct Bank Schedule, Conduit 17 – Delete "2-#14" and replace with "1-4/C, twisted, shielded cable".

Item No. AD1-31: UV Upper Floor Lighting Plan (Sheet MP-EL-142)

Add the following general note:

Stem mount light fixtures in the Electrical Room at approximately 12'-0" above finished floor to top of fixture such that fixtures are below ductwork.

Item No. AD1-32: Exist Backwash Pump Station (Sheet MP-EP-401)

Keyed note 17 – Delete "2-#14" and replace with "1-4/C, twisted, shielded cable".

Item No. AD1-33: Electrical Details (Sheet MP-E-502)

Valve Controller Mounting Detail Typical for 6 Contactors – Delete the following note: "Space for Future Valve Controller".

Item No. AD1-34: Network Diagram – Modified (Sheet MP-I-001)

Delete Cat6 cable from LCP-BW Ethernet switch to pump vibration panels.

Item No. AD1-35: GAC Pump Station P&ID (Sheet MP-I-002)

Delete Ethernet data link from LCP-1101 to LCP-AT.

END ADDENDUM 1

NORTHERN KENTUCKY WATER DISTRICT

Memorial Parkway Treatment Plant Advanced Treatment

AGENDA

Prebid Meeting

November 23, 2009

10:00 NKWD Central Facility

1:00 Memorial Parkway Treatment Plant

2055 Memorial Parkway, Fort Thomas, KY

1. Introductions/Attendance – sign in **NKWD**

2. Contact Persons **NKWD**

A. Engineer
Nick Winnike
CH2M HILL
300 E Business Way
Suite 400
Cincinnati, OH 45241
(513) 337- 9351
(513) 489-0807
nicholas.winnike@ch2m.com

B. Northern Kentucky Water District
Amy Kramer, Engineering Manager
2835 Crescent Springs Road
PO Box 18640
Erlanger, KY 41018
(859) 426-2734
(859) 578-7893 fax
akramer@nkywater.org

Site Visit Scheduling
Jeff Schuchter
2835 Crescent Springs Road
PO Box 18640
Erlanger, KY 41018
(859) 426-2703
(859) 578-7893 fax
jschuchter@nkywater.org

3. Front-End Documents — **Engineer**

A. Bidding Requirements
   1. Location
   2. Date and Time
   3. Bid Bond
   4. Modify/Withdraw Bids
   5. Supplements – SRF
   6. Questions and Addenda

B. Non-Refundable Deposit

C. Site Visits – use web page to schedule site visits

D. Contract Times
   1. Award of Contract
   2. Notice to Proceed
   3. Substantial Completion
   4. Final Completion
   5. Liquidated Damages & UV System Guarantees/Warrantees
   6. Retainage

E. Employment Practices and Wage Rates

4. Bid Forms — **Engineer**

A. Lump Sum/Unit Price includes Contingency
B. Bid Alternatives

5. Technical Specifications/Drawings — **Engineer**

A. Summary of Work
B. Allowable Outages
C. Sub-Surface Information
D. Staging Area/On-Site Material Storage
E. Coordination with FTTP Advanced Treatment Contractor

6. Questions — **All**

Pre-Bid Conference
Advanced Treatment Project
Memorial Parkway Treatment Plant
Northern Kentucky Water District

November 23, 2009 10 AM

Attendance Register

No.	Attendee	Organization	Phone Number	E-Mail Address
1	Bill Wulfeck	NKWD	859-547-2595	wulfeck@nkywater.org
2	Amy Matracia	NKWD	859-547-3275	matracia@nkywater.org
3	Scott Shepherd	NKWD	859 426 2715	sshep@nkywater.org
4	LEN SMELTZER	MACHINE DRIVE CO.	859-394-4399	LSMELTZER@MACHINEDRIVE
5	Tom Moore	Building Crafts Inc	859-781-9500	tmoore@buildingcrafts.com
6	Mike Schoberg	Building Crafts Inc	859-781-9500	MSchoberg@buildingcrafts.com
7	BRYAN ROGERS	W. ROGERS CO	859-231-6290	bryan@wrogers.com
8	GEORGE WEBER	SHOOK CONSTRUCTION	937-276-6666	KBRUNER@SHOOKCONSTRUCTION.COM
9	Clinton Jones	Judy Construction Co	859-234-6900	cjones@judyconstructionco.com
10	Steve Judy	" "	" "	sjudy@judyconstructionco.com
11	Carey Henderson	Debra Kuempel	513 271-6500	cheninger@debra-kuempel.com
12	Rick Herrman	NKWD	859 578-5453	rherr@nkywater.org
13	Brent Tippey	HDR	859-223-3755	Brent.Tippey@HDRINC.com
14	Nick Winnicka	CH2M HILL	~~513-337-9351~~	Nicholas.winnicka@ch2m.com
15				

Pre-Bid Conference
Advanced Treatment Project
Memorial Parkway Treatment Plant
Northern Kentucky Water District

November 23, 2009 10 AM

Attendance Register

No.	Attendee	Organization	Phone Number	E-Mail Address
1	Amy Kramer	NKWD	(859) 426-2734	akramer@nkywater.org
2	DOY POLLEY	LAKESHORE	(270) 488-2601	doyp@LAKESHOREENG.COM
3	Doug Mitchell	PAE & Associates, Inc	(937) 833-0013	dmitchell-pae@woh.rr.com
4	Rick Eoff	EGC Construction	(859) 441-7947	reoff@egcconst.com
5	Rick Mack	CBT	513 671-9050	RMACK@CBTCompany.Com
6	Kerry Smith	Smith Contractors	502-839-4196	ks@sci82.com
7	TROY FRAEBEL	SHERWIN-WILLIAMS	859-552-7027	troy.e.fraebel@sherwin.com
8	DAN GRIMWOOD	Kokosing C.C.	614-212-5706	JWR@Kokosing.biz DCG@kokosing.biz
9	DAN LICKERT	GREATER COMFORT	859-491-4915	dlickert@GREATERCOMFORT.COM
10	Don Myers	3D Enterprises Contr. Corp	859-272-6618	drm@3Dky.com
11	Eric Scheidt	Delta Electric	513-421-7744	erics@dec ltd.us
12	Carl Arvin	Reynolds, Inc.	812-865-3232	carvin@reynoldsinc.com
13	MARTY SCHIRMER	DUGAN & MEYERS	513 891-4300	mschirmer@dugan-meyers.com
14	Mike Greer	NKWD	859-441-0763	mgreer@nkywater.org
15	Jeff Schuchter	NKWD	859-426-2703	jschuchter@nkywater.org

Pre-Bid Meeting Minutes
Memorial Parkway Treatment Plant
Northern Kentucky Water District
November 23, 2009

The Pre-bid conference was held at 10 AM local time. Copies of the Agenda and Attendance sheets are attached to these minutes.

Attendees were notified of the following:

- The bid opening has been changed to 2 PM local time, on Wednesday December 16, 2009. This will be included in Addendum No. 1 (AD1).
- 10% Bid bond required
- Supplements to the Bid Form – Bidder to fill in all blanks on the UV Sheets for both vendors. May be considered non-responsive bid if blanks are empty.
- Supplemental General Conditions – New DBE and EEO forms are required for this project. In addition, EEO goals are provided for Kenton and Campbell counties. Bidders requested to review these items closely as bidder must file documentation within 7 days of bid if requested.
- Additional work (replacement of filter valves and filling in old south flocculation basin) will be added by Addendum. This will likely be in Addendum 2.
- Bidders interested in individual site visits should schedule on line at www.nkywater.org
- Contact times and liquidated damages provisions were discussed. No change from bid documents.
- Retainage is 10% for entire project. No reduction at 50%.
- UV warranty requirements carry penalties for non-performance. Contractor should familiarize themself with these provisions.
- Applicable wage rates are included in the bid documents.
- Lump sum bid format
- Bid form has a $100,000 allowance for contingency conditions. This amount must be included in the total bid price and can only be accessed by the contractor with approval from the Owner
- Coordination between plant shutdowns at MPTP and FTTP is critical. Contractor should make themselves familiar with Coordination specification and be prepared to work with FTTP contractor. Shutdowns at FTTP will take priority.
- Monthly Coordination meetings will be held between FTTP and MPTP contractors.
- Access for construction restricted to main Memorial Parkway entrance. Memorial Parkway delivery entrance and Water Works Road entrance are to be used solely by NKWD.
- It was noted during the site visit that the travel on the hoist serving the backwash pumps may not extend the entire distance needed. The hoist system did not appear to be fully operable at the time.

The prospective bidders were given the opportunity to ask questions. These are provided below:

Question (Q): Does NKWD have a list of preferred or unacceptable subcontractors?

Answer (A): No

(Q): Can planholders obtain an electronic copy of the bidding documents for distribution to subs?

(A): No only paper copies will be available for purchase.

(Q): What is the role of each of the engineering firms and who will lead the construction administration?

(A): NKWD will oversee CA activities. Engineers (CH2M Hill and HDR have defined roles such as shop drawing review, etc.) but not day-to-day oversight

(Q): Does the programming require shipment to Canada of the processor?

(A): Bidder should expect that it does.

(Q): Concrete repair and restoration section is unclear on scope?

(A): It refers to repairs of new concrete walls and slabs or those modified during construction. There are no existing areas intended for restoration.

(Q): It was noted Filters 5 & 6 are to be taken offline while the influent channel is partially demolished and re-built. Can they be off line this long?

(A): As long as Filters 1-4 are able to remain in service, the plant can meet production needs.

(Q): The laydown and staging are limited. Can more area be provided?

(A) The bidders were told that the sludge building site could be used as long as access was maintained for NKWD. Other areas will be investigated.

(Q): Shoring needs are unclear?

(A): Contractor is expected to shore and support areas as needed to provide a safe work environment for all personnel working on site and security to NKWD in the protection of its assets. A shoring plan is required with an engineering stamp (KY) on it. NKWD and its agents will review this prior to allowing work to proceed.

(Q): Special inspections related to controlled fill are unclear?

(A) :This refers to any compacted fill such as granular or compacted crushed rock.

(Q): Can the lead/asbestos report be made available?

(A): The summary report is attached to these minutes.

These questions were asked during both the meeting and the site visit. The site visit lasted from approximately 1:00 PM to 3:00 PM when the last contractor left.

Memorial Parkway Treatment Plant
Chemical Building

Asbestos Inspection and Waste Determination

Prepared For:

Horizon Inspection Services
1638 Cowling Avenue
Louisville, Kentucky 40205

August 15, 2005
Project #5477-AA

Prepared By:

Abatement Solutions Technologies
1252 South 15th Street
Louisville, Kentucky 40210
502-635-5051

ABATEMENT SOLUTIONS TECHNOLOGIES
AST SERVICES

August 15, 2005

Mr. Graham Clark
Horizon Inspection Services
1638 Cowling Avenue
Louisville, KY 40205

RE: Sampling for asbestos containing materials and TCLP waste determination from the Memorial Parkway Treatment Plant Chemical Building.

Dear Graham:

Abatement Solutions Technologies conducted an asbestos inspection and TCLP waste determination at the Memorial Parkway Treatment Plant Chemical Building located in Fort Thomas, Kentucky. The purpose of the inspection was to determine if asbestos containing materials exist prior to future demolition of the Chemical Building and to determine the conditions of the waste stream.

The building is a three-story structure with one main roof. Sampling for asbestos materials took place on each floor and included the roof. A total of nine (9) samples were collected and analyzed from the building. Listed in the table below are the descriptions of sampled materials, the analytical results, and the quantity and location of the materials, which were confirmed to be asbestos containing (greater than 1% asbestos).

Sample S01, Corner of second floor, pipe elbow insulation material in concrete pipe chase	Chrysotile Asbestos 30-40%	20 linear feet within concrete pipe chase on 2nd floor
Sample S01, Corner of second floor, pipe elbow insulation material - on ground	Chrysotile Asbestos 30-40%	7 linear feet on ground on 2nd floor.
Sample S03, Corner of exterior of building, exterior coating material	Chrysotile Asbestos 5-10%	Approximately 10,000 square feet on building exterior

1252 South 15th Street • Louisville, Kentucky 40210 • 502-635-5051 • Fax 502-635-5598
abatementsolutionstech.com

The samples collected were analyzed utilizing polarized light microscopy with dispersion staining as defined in 40 CFR, Part 763, Subpart F, Appendix A at an AIHA accredited laboratory. PLM analysis is a standard analytical method for determining the presence of asbestos. By regulatory definition, only materials containing 1% or greater asbestos are considered being asbestos containing materials.

In accordance with Federal Regulations, identified friable materials or materials that might become friable from demolition activities (the definition of friable means any material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry) containing greater than 1% asbestos should be removed prior to demolition of the structure.

Sub-samples of building components were collected and mixed together to represent the total types and quantities of debris being removed from the building. The representative waste sample was testing using the Toxicity Characteristic Leaching Procedure (TCLP). Laboratory analysis of the waste reported a lead concentration of ≤ 0.5 PPM. This concentration is well below the 5.0 PPM standard; as such this waste stream has a non-hazardous classification.

Included with this report are the asbestos field sample logs, the laboratory sample results, sketches indicating the sample locations. If you have any questions related to the site visit, please contact me at (502) 635-5051.

Sincerely,

Scott Atcheson
Vice President of Sales

Summary of Asbestos Materials
Memorial Parkway Treatment Plant
Ft. Thomas, Kentucky
July, 2005

Summary of Asbestos-Containing Materials

Client: Abatement Solutions

Project Number: 59860 **Date:** July 22, 2005

Facility Location: Memorial Parkway Treatment Plant

Square Feet of Facility: 2,250 1st Floor Plan

Inspector: N. Leow

Sample Number	Material Type	Material Description	Type and Percent of Asbestos	Quantity of ACBM Present
01	TSI	Pipe Elbow Insulation	CHRY 30-40	20 linear feet within concrete pipe chase
01	TSI	Pipe Elbow Insulation	CHRY 30-40	7 linear feet on Ground Floor
03	Surfacing	Exterior Coating	CHRY 5-10	Approximately 10,000 sq. ft.

[1] Thermal System Insulation

MRS Analytical Laboratory, Inc.

Bulk Asbestos Report

Project Number:	59860	**Date Received:**	07-21-05
Client:	Abatement Solutions	**Date Reported:**	07-22-05
Facility:	Memorial Pkwy Treatment Plant	**Analysis Date:**	07-22-05
Sample Type:	Bulk Material	**Analyst:**	N. Leow
Date Sampled:	07-21-05	**Sampled By:**	N. Leow

TEST DESCRIPTION: Analysis of Bulk Material for Asbestos.

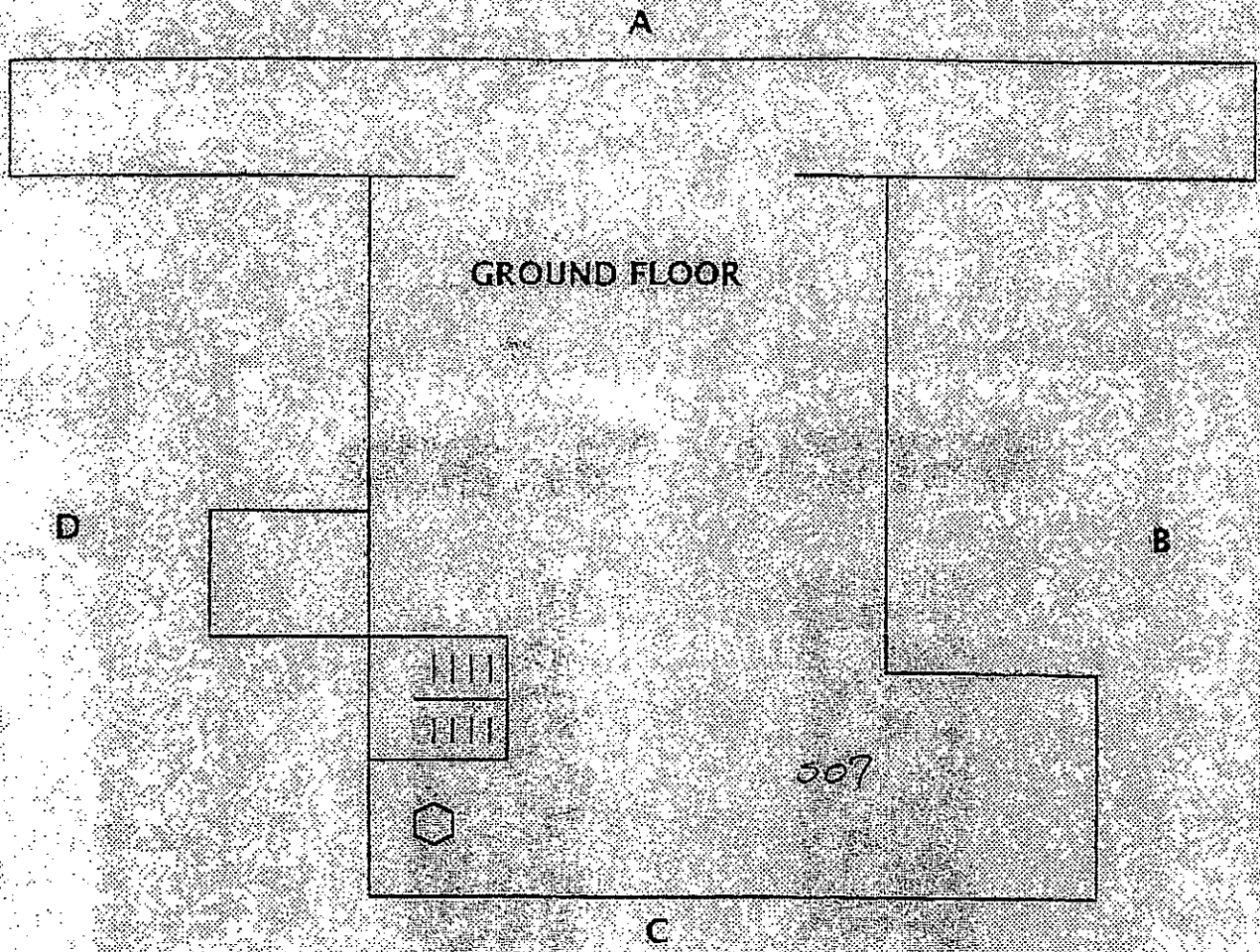
ANALYTICAL METHOD: Polarized Light Microscopy with Dispersion Staining as Defined in 40 CFR, Part 763, Subpart F, Appendix A.

Sample Number	*Laboratory Gross Description*	*Type and Percent Asbestos*
01	Pipe Elbow Insulation	30-40
02	Pipe Insulation	NAD
03	Exterior Coating	5-10
04	Roofing	NAD
05	Mastic	NAD
06	Table Tops	NAD
07	Vibration Damper	NAD
08	Window Caulk	NAD
09	Insulation Wrap	NAD

Reporting Limit: 1% Asbestos **NAD:** No Asbestos Detected

MRS Analytical Laboratory, Inc., is accredited and certified Proficient by the American Industrial Hygiene Association – Accreditation Number: AIHA-102459

Reviewed by Authorized Signatory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D
B
C
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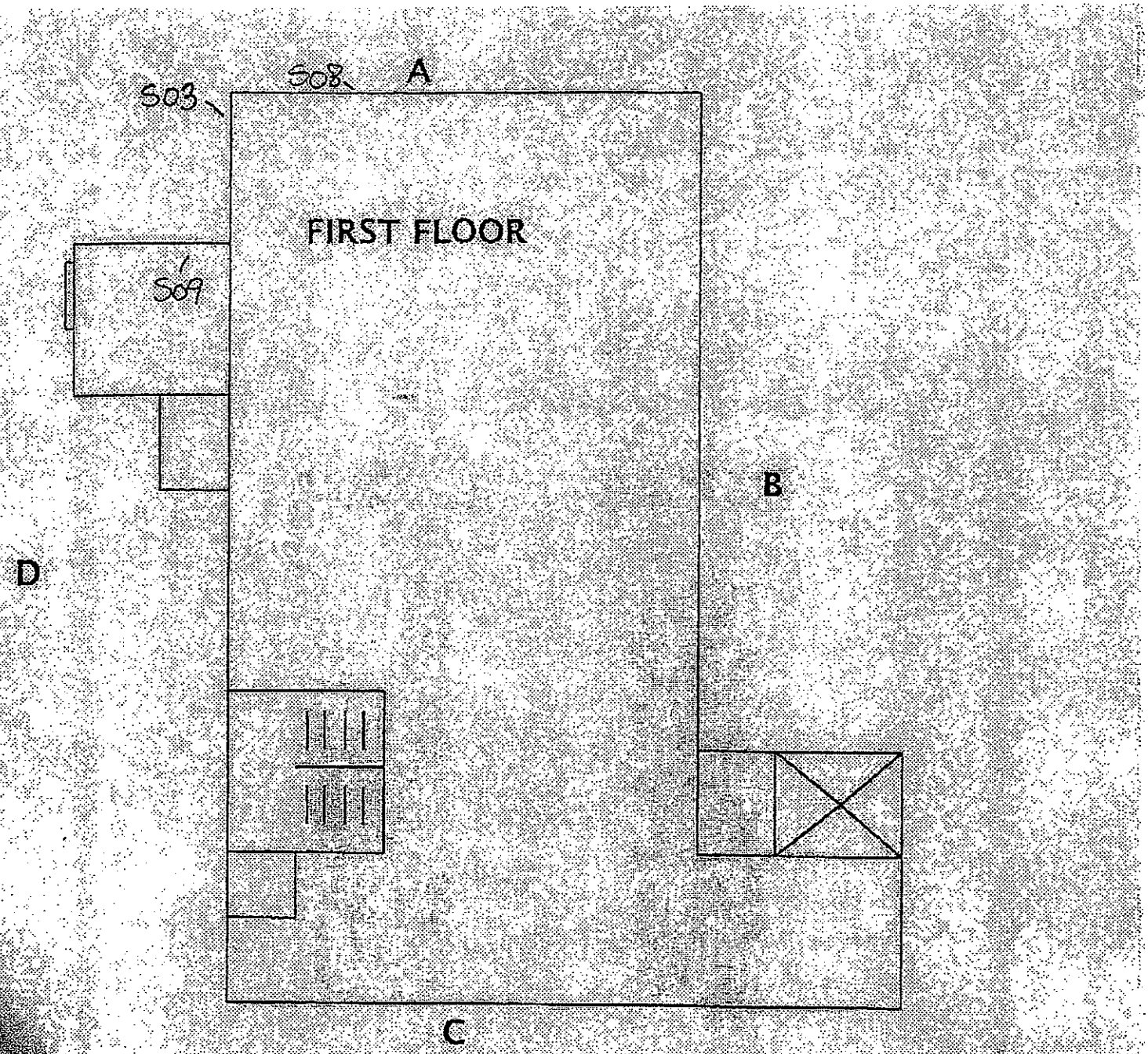
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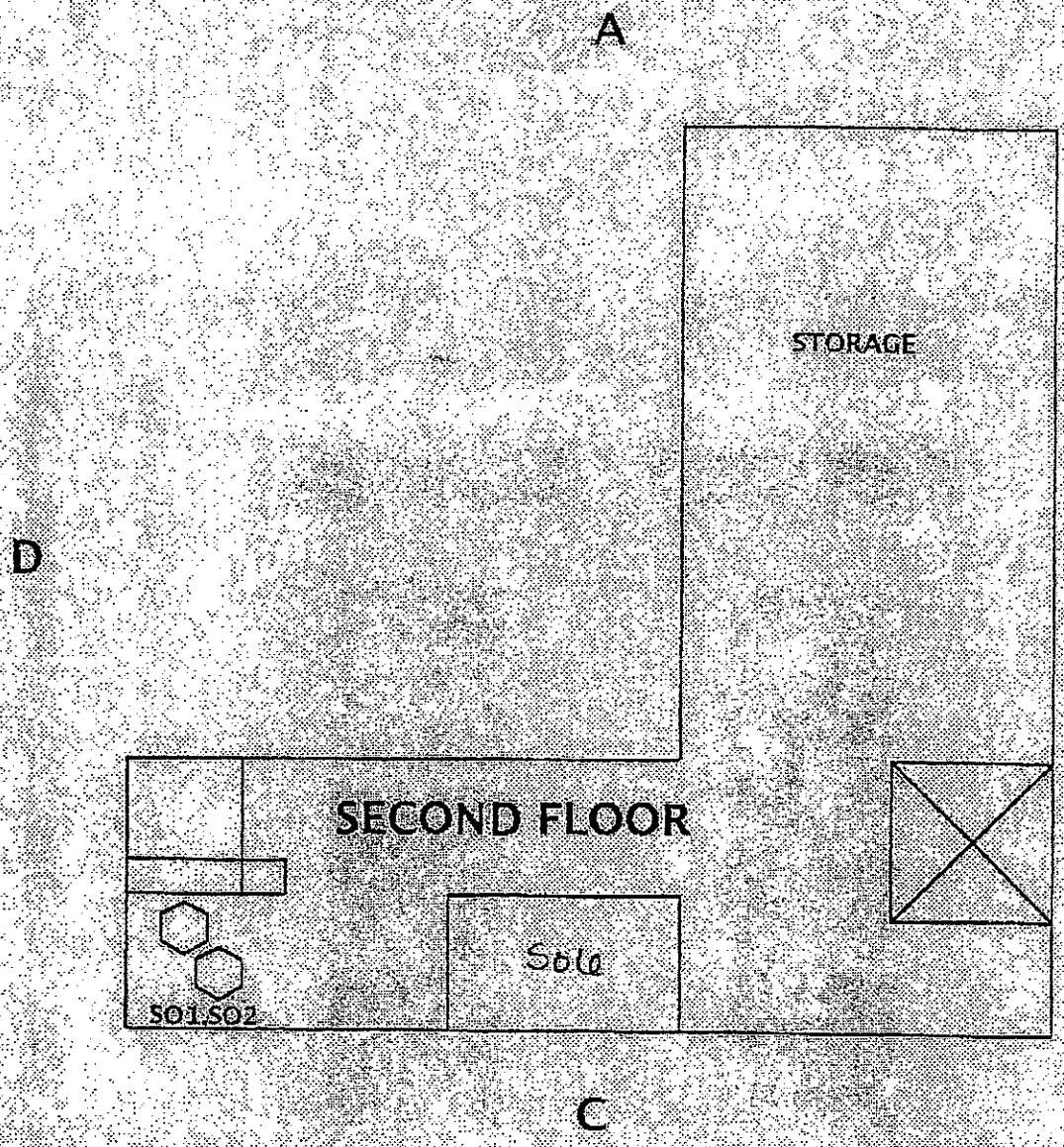
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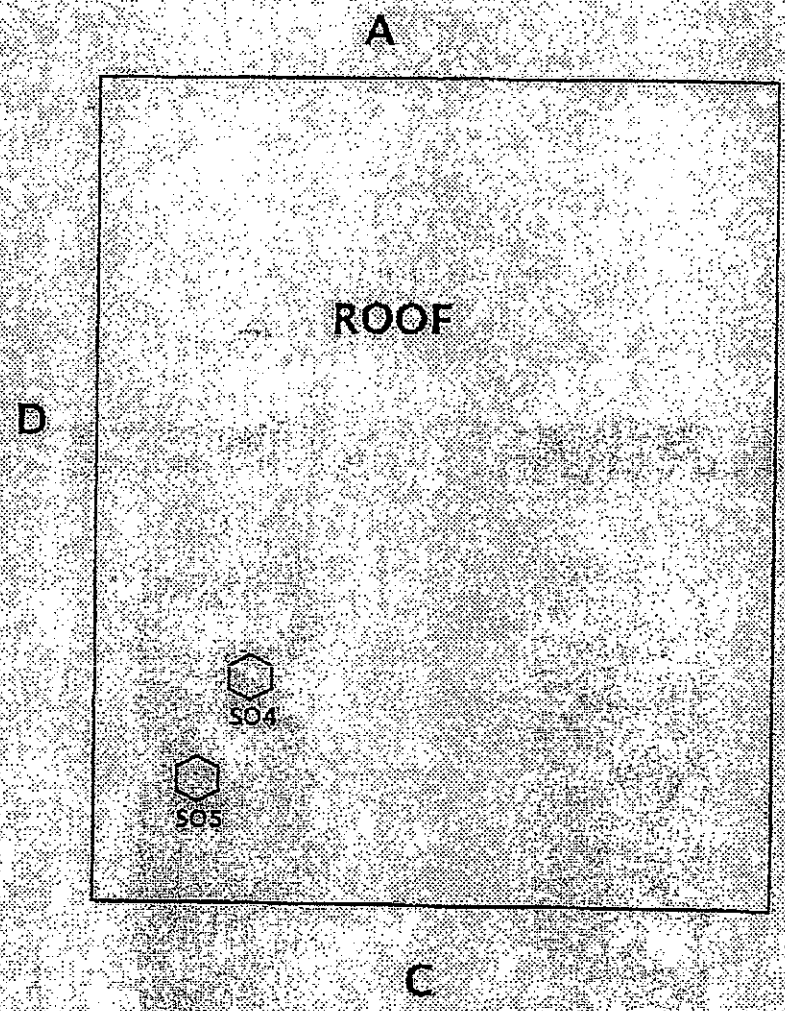
SECOND FLOOR
Sala
SO1 SO2
C


A
ROOF
D
B
SO4
SO5
C

Environmental Lead Compliance
Memorial Pkwy Treatment Plant
Ft. Thomas, Kentucky
July, 2005

To: Abatement Solutions Technologies
1252 South 15th Street
Louisville, Kentucky 40210
Attn: Chuck Russman

From: Micro-Analytics, Inc.
3310 Gilmore Industrial Boulevard
Louisville, Kentucky 40213

Date: August 9, 2005

Subject: Waste Determination

Introduction

The first step in determining if you need to register with the Division as a hazardous waste generator and obtain an EPA Identification Number is to conduct a waste determination.

On July 21, 2005, Micro-Analytics, Inc. collected a representative sample of the projected waste stream (demolition debris) from the following:

Memorial Parkway Treatment Plant, Chemical Building (Tower)
626 Alexandria Pike
Ft. Thomas, KY 41075

In order to facilitate demolition and satisfy RCRA and Kentucky Division of Waste Management regulations Micro-Analytics, Inc. performed the following lead screening and composite waste characterization testing:

1. Sub-samples of building components were collected using a power drill, or by removing portions of the component. Sub-samples were carefully selected to ensure that the resulting composite sample will be truly representative of the component.
2. Sub-samples were mixed together in proportion to their approximate percent by weight in the total quantity of debris being removed.

3. Composite samples were then submitted to Environmental Hazard Services, an accredited laboratory for TCLP lead analysis.

Results

The representative waste sample was tested using the Toxicity Characteristic Leaching Procedure (TCLP). Laboratory analysis of the waste reported a lead concentration of <0.5 PPM. This concentration is well below the 5.0 PPM standard. As such, **this waste stream has a non-hazardous classification.**

Please find attached the TCLP Lead Analysis Summary. If you have any questions or need additional information please feel free to call.

Sincerely,

Nicholas A. Leow, Site Inspector

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

7469 WHITE PINE ROAD · RICHMOND, VA 23237
804-275-4783 FAX 804-275-4907

TCLP (LEAD) ANALYSIS SUMMARY

CLIENT: Micro-Analytics, Inc.
8810 Gilmore Industrial Blvd., Suite C
Louisville, KY 40213

DATE OF SAMPLING: 21 JUL 2005
DATE OF RECEIPT: 25 JUL 2005
DATE OF ANALYSIS: 27 JUL 2005
DATE OF REPORT: 28 JUL 2005

CLIENT NUMBER: 18-2532 S
EHS PROJECT #: 07.05-8128
PROJECT: 59860

EHS SAMPLE #	CLIENT SAMPLE # / LABORATORY GROSS DESCRIPTION	SAMPLE WEIGHT (g)	INITIAL pH	CONCENTRATION PPM (mg/L)
01	TCLP 1/ Brick; Paint; Concrete; Metal; Glass; Wood; Fiberglass; Fiberboard	100	6.42	<0.50

QUALITY CONTROL DATA

BATCH#:	072705T-1
INCLUSIVE EHS SAMPLE NUMBERS:	01
Initial Calibration Verification (5.00ppm Pb)	102% Recovery
Continuing Calibration Verification 5 (5.00ppm Pb)	101% Recovery
Laboratory Control Standard	101% Recovery
Matrix Spike	118% Recovery
Duplicate Relative Percent Difference	0.00 RPD
Regulatory Limit	5.0mg/L
Reporting Limit	0.50mg/L
Method Detection Limit	0.060mg/L

METHOD: EPA SW846 1311/3010A/7420

ANALYST: Aubrey Simonds

Reviewed By Authorized Signatory:

Michael A. Mueller, MPH, Laboratory Director
Howard Varner, General Manager
Irma Rozewski, Quality Assurance Coordinator
David Xu, MS, Senior Chemist
Peng Jiang, MS, Technical Director

Method EPA SW846 1311 recommends 100g for analysis.

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume etc., was provided by the client. This report shall not be reproduced, except in full, without the written consent of Environmental Hazards Services, L.L.C. California Certification #2319; NY ELAP #11714.

LEGEND: g = gram; ml = milliliter; ug = microgram; Pb = lead; ppm = parts per million; mg/L = milligrams per liter

1 PL TCLP **EHS 07-05-3128** ...MENTAL HAZARDS SERVICES, L.L.C.
...mbird, Virginia 23237 Phone (804) 275-4700 Fax (804) 275-4997

CHAIN OF CUSTODY FORM

Company Name: Micro-Analytics, Inc — Date: 7-22-05
Address: 3310-C Gilmore Industrial Blvd — Contact Name: S. Hardin
City, State, Zip: Louisville, KY 40213 — Sampler Name: N. Lee
EHS Client Account #: 18-2532 S — Project #: 59860
Phone #: 502-964-8737 — Fax #: 502-964-1123
P.O. #:

Sample Number	Sample Date & Time	Asbestos: Bulk ID by PLM	Asbestos: (PCM) Fiber Count	Asbestos: PLM Point Count	Asbestos: PLM Gravimetric	Asbestos: TEM AHERA (Air)	Asbestos: TEM Chatfield (Bulk)	Lead: Air	Lead: Paint (%)	Lead: Paint (PPM)	Lead: Paint (mg/cm²)	Lead: Soil	Lead: Wipe * (See Note)	Lead: TCLP (Pb)	Lead: Waste Water	Other Metals (Specify metals below): TCLP RCRA 8	Other Metals: Welding Fume	Other Metals: Toxic Metal Profile	Indoor Air Quality: Bioaerosols	Indoor Air Quality: Surface Swab	Indoor Air Quality: Surface Tape	Indoor Air Quality: Bulk	Particulate: Total Nuisance (NIOSH 0500) ☐ Respirable (NIOSH 0600) ☐ Air Volume (L) OR Wipe Area (ft²) OR Scrape Area(cm²)	Comments
TCCP-1	7/21												X											114.5 Grams

* Do wipe samples submitted meet ASTM E1792 requirements? Yes ☐ No ☐

Released by: Nick Lee	Signature:	Date/Time: 7/22/05
Received by:	Signature:	Date/Time: 7/25/05 12:30
Released by:	Signature:	Date/Time:
Received by:	Signature:	Date/Time:

07/25/2005 09:02 804-964-1123 MICRO-ANALYTICS PAGE 01

SECTION 26 36 23
AUTOMATIC TRANSFER SWITCH

PART 1 GENERAL

1.01 SCOPE

A. It is the intent of this specification to provide a metal enclosed, medium voltage automatic transfer system with integrated distribution.

B. All components, testing and services specified and required for a complete system shall be included.

1.02 MANUFACTURERS QUALIFICATIONS

A. The equipment to be supplied shall provide the highest reliability and the greatest ease of maintenance.

B. The Manufacturer shall have experience in the design, building, testing and service of this type of equipment and be able to document their qualifications. Only suppliers with the ability and experience to provide this type of system shall be acceptable.

C. The Manufacturer shall have a minimum of 10 years experience in supplying this type of equipment.

1.03 APPLICABLE CODES AND STANDARDS

A. The following standards are required as they apply to the equipment specified. Current code dates in effect at the time the contract is awarded shall be followed.

1. American National Standards Institute, Inc. (ANSI)
   Institute of Electrical & Electronic Engineers (IEEE)
   a. C.37.20.1 Switchgear Assemblies
   b. C.57.13 Standard requirements for Instrument Transformers.
2. National Electric Manufacturers Association (NEMA)
   a. SG-5 Power Switchgear Assemblies
3. National Fire Protection Association (NFPA)
   a. NFPA 70-2002 National Electric Code
   b. NFPA 110 Emergency & Standby Power Systems
4. Underwriters Laboratory (UL)
5. Canadian Standard Association (CSA)
6. State and Local Codes as they apply.

1.04 DOCUMENTATION

A. Submittals for approval shall include the following:

1. Elevation drawings with estimated weights.
2. Outline drawing showing conduit entry areas and anchoring information.
3. AC and / or DC Schematic drawings.
4. Sequence of Operation.
5. Complete nameplate schedule.

B. One complete set of full size as-built drawings and material summary shall be shipped with the equipment, mounted on the inside of the control section door.

C. Two operation and maintenance manuals shall be supplied with the equipment when shipped. The manuals, at a minimum, shall contain:

1. Sequence of operation
2. Installation instructions
3. Maintenance instructions
4. Material summary
5. Complete drawings
6. Component instructions and manufacturers literature
7. Spare parts information

1.05 TESTING

A. The equipment shall be factory tested to simulate a complete and integrated system. The circuit breakers supplied shall be installed in their actual positions and electrically and mechanically tested. A narrative of the system operation shall be provided and shall be utilized when testing the equipment. Upon request, copies of the test reports shall be submitted to the engineer.

B. All testing shall be in accordance with any applicable standards.

1.06 SERVICE

A. The manufacturer shall maintain a competent, factory authorized service organization that is available on a 24-hour basis.

1.07 WARRANTY

A. The manufacturer shall warrant the equipment, accessories and operation for a period of one (1) year from the date of final acceptance or eighteen (18) months from the date of shipment.

PART 2 EQUIPMENT

2.01 MANUFACTURERS

A. Lake Shore Electric.

B. Russelectric.

C. Approved or equal.

2.02 CONSTRUCTION

A. The enclosure shall be made from a minimum of 14-gauge sheet steel and shall be provided with barriers and stiffeners to form a solid unitized assembly. Suitable means of lifting shall be provided.

B. All equipment bases shall be fabricated with an adequate number of anchor bolt holes designed to put the base in direct contact with the concrete pad when bolted.

C. All doors shall be pan type and be provided sufficient hinges and stiffeners to support the door and components for an absolute minimum deflection and wobbling when opening or closing. Doors must open a minimum of 105 degrees.

D. Front doors shall be supplied with a lockable handle. All door locks shall be keyed alike to operate from a single key, and one key shall be supplied for each lock. Full height doors will fasten at three points to secure the door firmly when closed. The rear of the transfer switch shall be accessible through bolted-on panels.

E. All equipment shall be arranged in a logical manner to facilitate ease of operation and maintenance of the equipment.

F. The complete assembly shall be thoroughly cleaned and treated prior to painting. The unit shall be painted ANSI-61 Light Gray and be suitable for indoor and outdoor application.

G. Main bus shall be rated 600 amps and shall be fabricated from silver plated copper. The maximum temperature rise allowed shall not exceed ANSI C37.20.1. All joints shall be bolted with a minimum of two bolts.

H. A ¼" x 2" copper ground bus shall extend the full length of the switchgear and shall effectively ground all non-current carrying metallic parts.

I. Control wiring shall be 600 volt, switchboard type, minimum size of 14-gauge. Use solderless compression type, forked tongue connectors for terminating all wires. Control wires shall be continuously marked with numbers and numbers shall be completely visible at all points of termination.

J. Control wiring in all high voltage compartments shall be enclosed in conduit.

K. Grommetted holes shall be provided between each of the vertical sections to allow control wiring to pass through. Wiring shall not be spliced and shall be free of abrasions and tool marks. The wires shall be neatly laced up and harnessed, and shall be supported to prevent sagging or breakage from weight or vibration. Wiring bundles shall be contained in covered metal or plastic gutters.

L. Engraved laminated plastic nameplates having white letters on black backgrounds shall identify major components, vertical sections and breakers.

M. Warning labels shall be provided with "DANGER HIGH VOLTAGE" for all access areas to power circuits.

2.03 COMPONENTS

A. ATS switching shall be accomplished through the use of drawout, vacuum circuit breakers. Ratings of the breakers shall comply with Section 3.01 below. Include all necessary accessories and special tools if required for operation of the circuit breaker.

B. Potential transformers shall be indoor type with ratings coordinated with the loads required per ANSI Standard C57.13. Primary and secondary fuses shall be provided for all potential transformers.

C. Control power fuses (600 volt) shall be mounted in locations where they are readily accessible. Pull-out type fuses shall be provided for all primary circuit and shall be of the current limiting type.

D. Terminal blocks shall be suitable for ring tongue terminals and provided with binding head screws, minimum screw size of 8/32. The terminal block rating shall be 600 volts.

E. Solid state controls, relays, timers or monitors shall meet the following specifications:

Accuracy: ±2% of set point
Temp Range: -40 degrees C (-40°F) to +65 degrees C (150°F)

Protection:	Transient overvoltage withstand of 1500 volts peak, 1msec. time constant
Ratings:	Current ratings to exceed application of devices. Devices shall be UL listed if available.

2.04 AUTOMATIC TRANSFER CONTROLS

A. Controls shall be microprocessor based and shall provide all necessary functions of the automatic transfer switch. The controller shall be equipped with a real time and date clock, battery backup, and non-volatile memory storage.

B. A HMI shall be provided containing a 2 line, 40 character, LCD display, LED indicating lights as specified herein, and a touch pads to allow access to the system.

C. The controller shall be equipped to accept power quality or condition signals from a variety of external relays or monitors connected to either the normal or emergency sources.

D. The controller shall store all timer and mode settings in non-volatile memory so that upon re-energizing the switch it will return to the previous position without loss of data.

E. The controller shall allow for five modes of operation: Off/Reset, Automatic, Load Test, Hand Crank and Fault.

F. In the fault mode, the transfer switch shall be locked and the reason for its failure shall be displayed on the HMI display.

G. The controller shall have complete diagnostic capabilities so that every input and output can be monitored for troubleshooting or maintenance purposes.

H. The controller shall have an operating range of -40°C to +85°C

I. The controller shall meet IEEE C62.41 surge test.

J. The controller shall be able to withstand unlimited power interruptions.

2.05 AUTOMATIC TRANSFER SWITCH FEATURES

A. The transfer switch controller shall be equipped with no less than 5 timers as follows:

1. Time Delay to Engine Start - Adjustable time delay after a failure of the Normal source before initiating an Engine-Start signal to allow for temporary short-duration fluctuations in voltage. Timer shall be field adjustable from 0 to 300 seconds, in 1-second increments.
2. Time Delay to Emergency - Adjustable time delay after the engine has started before transferring the load from the Normal source to the Emergency source. Timer shall be field adjustable from 0 to 300 seconds, in 1-second increments.
3. Time Delay to Return - Adjustable time delay after the return of Normal power before retransferring the load from the Emergency source to the Normal source. Timer shall be field adjustable from 0.0 to 60.0 minutes.
4. Engine Cool Down Timer - Adjustable time delay after retransferring the load from the Emergency source to the Normal source before shutting down the engine. Timer shall be field adjustable from 0.0 to 60 minutes, in 0.1-minute increments.
5. Minimum Run Timer - Adjustable time delay after starting engine before shutting it down. Timer shall be field adjustable from 0.0 to 60 minutes, in 0.1-minute increments.
6. Time Delay in Neutral - Adjustable time delay to provide delay between opening the contacts on one source and closing the contacts on the other source. This shall be the programmable time delay required when the automatic transfer switch is serving inductive loads. Timer shall be field adjustable from 0 to 300 seconds, in 1-second increments.

B. A Digital Plant Exerciser shall be provided to provide for the regular automatic exercising of the Emergency Power System on a pre-selected schedule at field adjustable periods. The controller shall allow exercising with load or without load. In the event of an engine-generator failure, when operating in the plant exerciser mode, the automatic transfer switch shall immediately return to the normal source, if available.

C. A Close Differential Under Voltage Relay shall be provided to continuously monitor normal voltage. The under voltage relay shall be field adjustable from 70% (seventy percent) to 100% (one hundred percent) of nominal voltage. Factory set at 90% (ninety percent) pick-up and 80% (eighty percent) dropout.

D. A single-phase frequency and voltage-sensing relay shall be provided for protection against transferring to the Emergency source until the generator has reached both operating frequency and voltage.

E. A Customer Relay Interface Board shall be provided to allow customer interface to the transfer switch controls. All interfaces shall be voltage free

contacts rated 10 amps at 120VAC. The following interface points shall be made available.

1. Engine start contacts consisting of one normally open and one normally closed.
2. Switch Position contacts consisting of two normally open and two normally closed.
3. Trouble contacts consisting of two normally open and two normally closed.

F. Light Emitting Diode (LED) pilot lights shall be provided on the HMI panel to indicate the following conditions:

1. Normal Source Available
2. Normal Switch Closed
3. Emergency Source Available
4. Emergency Switch Closed
5. System not in Automatic (Flashing light)
6. Normal Breaker Withdrawn
7. Emergency Breaker Withdrawn
8. Normal Breaker Test Position
9. Emergency Breaker Test Position

G. A Maintenance Disconnect switch shall be provided to disconnect control circuitry from line for maintenance purposes.

H. A momentary Load Test Switch shall be mounted inside the enclosure for ease of servicing. This switch shall cycle the transfer switch through a complete transfer to emergency and retransfer to normal.

I. Override Pushbutton: An Override Pushbutton shall be provided mounted on the inside of the enclosure to bypass the Time Delay to Return Timer.

J. A Key Pad Enable Switch shall be mounted inside the enclosure, which will inhibit use of the HMI operator interface.

K. Terminals shall be provided for the connection of dry contacts from a remote source to initiate transfer of the load from normal source to the emergency source.

L. A Thermostatically Controlled Strip Heater and exhaust fan shall be provided on all Outdoor Enclosed switches.

2.06 ADDITIONAL ACCESSORIES, EQUIPMENT AND FEATURES REQUIRED

A. Transfer Switch to have integrated distribution as shown on drawings. Vacuum Breaker distribution breakers to be 600AF, Fixed, Manually Operated with overcurrent protection.

B. Service Entrance Rated: The complete automatic transfer switch shall be properly labeled as suitable for use as service entrance equipment. LED pilot lights shall be provided on the HMI panel to indicate "Normal Tripped" or "Emergency Tripped" as necessary. Also included shall be over current protection on service source disconnect, lock out – tag out provisions, Neutral bus with ling, lugs, ground bonding and jumper strap, appropriate markings and service entrance disconnecting device.

C. Ground Fault Protection: Ground Fault Protections shall be provided where required by U.L. and/or NEC Article 230. Upon detection of a ground fault, the HMI will display the fault, both sources will be disconnected from load, and the trouble contacts shall change state. Transfer switch must be manually reset after the ground fault is cleared.

D. Surge Suppression: Secondary Surge Suppressors shall be provided on both Normal and Emergency sources.

E. Overcurrent Protection: Overcurrent protection shall be provided on the (Normal or Emergency) source with "tripped" indication on the HMI panel. Overcurrent protection shall also be provided on each distribution breaker.

F. ATS to have Load Side Digital Metering

2.07 SOURCE QUALITY CONTROL

A. Factory test components assembled switches and associated equipment to ensure proper operation. Check transfer time and voltage, frequency and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

PART 3 EXECUTION

3.01 APPLICATION

A. ATS with Distribution shall be 13,800volts, 3ϕ, 3wire, 60hertz, 600 amperes, 500MVA in an outdoor free standing enclosure. Vacuum Breakers to contain overcurrent protection.

3.02 INSTALLATION

A. Free Standing Equipment: Level and anchor unit to floor.

B. Identify components according to Division 16 Section "Basic Electrical Materials and Methods".

3.03 WIRING TO REMOTE COMPONENTS

A. Match type and number of cables and conductors to control and communications requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

3.04 CONNECTIONS

A. Ground equipment as indicated and as required by NFPA 70.

B. Connect power cables from both sources and load. Verify that both sources have the identical phase sequence.

3.05 FIELD QUALITY CONTROL

A. Testing: Test transfer switch products by operating them in all modes. Perform tests recommended by manufacturer under the supervision of manufacturer's factory-authorized service representative. Correct deficiencies and report results in writing. Record adjustable relay settings.

B. Testing: Perform the following field quality control testing under the supervision of the manufacturer's factory-authorized service representative in addition to tests recommended by the manufacturer:

1. Before energizing equipment, after transfer switch products have been installed:
   a. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Meet manufacturer's specified minimum resistance.
   b. Check for electrical continuity of circuits and for short circuits. Inspect for physical damage; proper installation and connection; and integrity of barriers, covers, and safety features.
   c. Perform manual transfer operation.
2. After energizing circuits, demonstrate interlocking sequence and operational function for each switch at least three times.

a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
b. Simulate loss of phase-to-ground voltage for each phase of normal source.
c. Verify time-delay settings.
d. Verify pickup and dropout voltages by data readout or inspection of control settings.
e. Perform contact resistance test across main contacts and correct values exceeding 500 microhms and values for one pole deviating by more than 50 percent from other poles.
f. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown sequence.

C. Coordinate tests with tests of generator plant and run them concurrently.

D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain transfer switches and related equipment as specified below:

1. Coordinate this training with that for generator equipment.
2. Training of Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing and maintaining equipment shall be provided.
3. Review all data in maintenance manuals.
4. Schedule training with Owner with at least seven days' advance notice.
5. Provide a minimum of four hours of instruction.

END OF SECTION

REVISED

HOIST/MONORAIL DATA SHEET

Project: Memorial Parkway WTP Advanced Treatment

Owner: Northern Kentucky Water District

Service: Equipment removal at GAC pipe gallery and pump station Number of Units: one

Equip. Tag Number(s): MP-Hoist-GAC-001

GENERAL REQUIREMENTS

Equipment Capacity: 2 tons

Method of Control: Pendant

Location of Control: at hoist

Equipment Location:

☒Indoors ☐Outdoors

Factory Testing:

☒Required ☐Not Required

Field Testing: ☐Not required

☒Required, functional and performance

Power Supply:

Voltage 460

Phase 3

Frequency 60

HOIST

Type:

☐Electric, Wire Rope ☒JElectric,, Chain

Service Class (ANSI):

☐H1 (standby) ☒H2 (light) ☐H3 (standard)

☐H4 (heavy) ☐H5 (severe)

Speed (fpm): _14____ to _14____

☒Constant Speed ☐Two Speed ☐Variable Speed

Motor hp:_____

TROLLEY

Type:

☐Top Running ☒Underhung

Service Class (ANSI):

☐A1 (standby) ☒A2 (infrequent) ☐B (light)

☐C (moderate) ☐D (heavy)

Speed (fpm): __n/a___ to __n/a___

☐Constant Speed ☐Variable Speed ☐Hand Operated

Motor hp:_____n/a_____

Electric Conductors: n/a

SPECIAL REQUIREMENTS

Accessories:

☐Central Lubrication System

☐OSHA operating and safety devices

Remote Controls:

☐Infrared, line-of-sight

☐Frequency modulated (FM)

Special Electrical Requirements:

_____

VERTICAL TURBINE PUMP DATA SHEET, 44 42 56.03-____

Tag Numbers: MP-GAC-1, MP-GAC-2, MP-GAC-3 and MP-GAC-4

Pump Name: GAC FEED PUMP NOS. 1, 2, 3 AND 4

Manufacturers and Product: (1) Peerless
(2) Flowserve Worthington
(3) Fairbanks Morse
(4) Weir Floway
(5) ITT Goulds Pumps

SERVICE CONDITIONS

Liquid Pumped (Material and Percent): FILTERED WATER

Pumping Temperature (Fahrenheit): Normal _____ Max 85 Min 32

Specific Gravity at 60 Degrees F: 1.001 Viscosity Range: _____

Vapor Pressure at 60 Degrees F: _____. pH: _____

Abrasive (Y/N) N Caused by: _____

Possible Scale Buildup (Y/N): N Caused by: _____

Corrosive (Y/N): N Caused by: _____

Total suspended solids (mg/L) NA.

Largest diameter solid pump can pass (inches) NA.

Min. NPSH Available (Ft. Absolute): _____

Altitude (Feet above Mean Sea Level): 769

Location: Indoor (Y/N): Y Outdoor (Y/N): N

PERFORMANCE REQUIREMENTS – (MP-GAC-1 and MP-GAC-2)

Capacity (US gpm): Rated: 7,000 Secondary: ___

Total Dynamic Head (Ft): Rated: 42 Secondary: _____

BHP at Rated Point: 95 Secondary: _____

Maximum Shutoff Pressure (Ft): 80

Min. Pump Hydraulic Efficiency at Rated Capacity (%): 80.

Max. NPSH Required at Rated Capacity (Ft. Absolute): 20

Max. Pump Speed at Rated Capacity (rpm): 900

Constant (Y/N): N

Adjustable (Y/N): Y

PERFORMANCE REQUIREMENTS - (MP-GAC-3 and MP-GAC-4)

Capacity (US gpm): Rated: 3,500 Secondary:

Dynamic Head (Ft): Rated: 42 Secondary: ___

BHP at Rated Point: 48 Secondary: _____

Maximum Shutoff Pressure (Ft): 80

Min. Pump Hydraulic Efficiency at Rated Capacity (%): 80.

Max. NPSH Required at Rated Capacity (Ft. Absolute): 20

Max. Pump Speed at Rated Capacity (rpm): 1250

Constant (Y/N): N

Adjustable (Y/N): Y

DESIGN AND MATERIALS

Pump Type: Open Line Shaft (Y/N) Y Bowl: _____
Bowl Wear Rings: Y Bowl Bearings: Bronze

Column: Steel, Flanged Line Shafting: 416 SS Max. Bearing Span (Feet): 5

Discharge Head:
Type: Above Base
Material: Fabricated Steel, ASTM A36/A36M

Discharge Nozzle Size (inches): 18" (Pumps 1 &2), 14" (Pumps 3 and 4)

Flange Standard/Class: 150

Impeller:
Type: Enclosed

Material: Bronze

Head Shaft Material: 416 SS Shaft Sleeve Material:

Shaft Sealing: Packing (Y/N) Mechanical (Y/N) Y
Type: Split Cartridge O-ring (Y/N)

Coupling:
Manufacturer Standard

Baseplate Material: Steel

Sole Plate (Y/N) __Y Material ____Steel Soleplate: Provide for support of pump assembly, including thrust and dynamic loads, as indicated. Top of soleplate shall be faced, drilled, and tapped for pump baseplate.

Motor Base Material: Steel

DRIVE MOTOR (MP-GAC-1 and MP-GAC-1)

(See Section 26 20 00, Low-Voltage AC Induction Motors 26 19 00, Medium-Voltage AC Induction Motors.)

Horsepower: 125 Voltage: 460 Phase: 3

Synchronous Speed (rpm): 900

Service Factor: 1.15

Motor nameplate horsepower shall not be exceeded at any head-capacity point on pump curve.

Enclosure: DIP _____ EXP _____ ODP _____ TEFC _____ CISD-TEFC _____
TEWAC _____ WPI _X____ WPII _____

Mounting Type: Vertical Hollow Shaft X Nonreverse Ratchet (Y/N) Y__
Vertical Solid Shaft _____

ABMA 9 and ABMA 11, B-10 Motor Bearing Life (hrs): 40,000

Adjustable Speed Drive. See Section 26 29 23, Low Voltage Adjustable Frequency Drive Systems.

DRIVE MOTOR (MP-GAC-3 and MP-GAC-4)

(See Section 26 20 00, Low-Voltage AC Induction Motors 26 19 00, Medium-Voltage AC Induction Motors.)

Horsepower: 60 Voltage: 460 Phase: 3

Synchronous Speed (rpm): 1250

Service Factor: 1.15

Motor nameplate horsepower shall not be exceeded at any head-capacity point on pump curve.

Enclosure: DIP _____ EXP _____ ODP _____ TEFC _____ CISD-TEFC _____ TEWAC _____ WPI _X____ WPII _____

Mounting Type: Vertical Hollow Shaft X_____ Nonreverse Ratchet (Y/N) Y___
Vertical Solid Shaft _____

ABMA 9 and ABMA 11, B-10 Motor Bearing Life (hrs): 40,000

Adjustable Speed Drive See Section 26 29 23, Low Voltage Adjustable Frequency Drive Systems.

REMARKS _____

VERTICAL TURBINE PUMP DATA SHEET, 44 42 56.03-____

Tag Numbers: MP-SW-P-1 & MP-SW-P-2

Pump Name: SLURRY WATER PUMP NOS. 1 & 2

Manufacturers and Product: (1) Peerless
(2) Flowserve Worthington
(3) Fairbanks Morse
(4) Weir Floway
(5) ITT Goulds Pumps

SERVICE CONDITIONS

Liquid Pumped (Material and Percent): FILTERED WATER

Pumping Temperature (Fahrenheit): Max 85 Min 32

Specific Gravity at 60 Degrees F: 1.001 Viscosity Range: _____

Vapor Pressure at 60 Degrees F: _____. pH: _____

Abrasive (Y/N) N Caused by: _____

Possible Scale Buildup (Y/N): N Caused by: _____

Corrosive (Y/N): N Caused by: _____

Total suspended solids (mg/L) NA.

Altitude (Feet above Mean Sea Level): 750

Location: Indoor (Y/N): Y Outdoor (Y/N): _____

PERFORMANCE REQUIREMENTS

Capacity (US gpm): Rated: 120 Secondary: _____

Total Dynamic Head (Ft): Rated: 265 Secondary: ____

BHP at Rated Point: 10 Secondary: _____

Maximum Shutoff Pressure (Ft): 400

Min. Pump Hydraulic Efficiency at Rated Capacity (%): 80

Max. NPSH Required at Rated Capacity (Ft. Absolute): 20

Max. Pump Speed at Rated Capacity (rpm): 3600

Constant (Y/N): N

Adjustable (Y/N): Y

Reverse Rotation: Pump shall be capable of operating at runaway speed in reverse rotation without damage.

DESIGN AND MATERIALS

Pump Type: Open Line Shaft (Y/N) _Y__Enclosed Line Shaft (Y/N) _N__

Bowl: _CI_____ Bowl Wear Rings: __Bronze_____ Bowl Lining: _____

Bowl and Suction Bell Maximum Diameter (inches): _____

Bowl Bearings: Bronze

Column: Steel Flanged_____ Column Lining: _____

Line Shafting: 416 SS_____ Max. Bearing Span (Feet): 5_____

Line Shaft Bearings: Fluted synthetic rubber with bronze, ASTM B584 C90500, shells_____Y_____

Discharge Head:

Type: Above Base- Cast Iron/Steel

Material: Fabricated Steel, ASTM A36/A36M Cast Ductile Iron, ASTM A536, Grade 60-40-18

Discharge Nozzle Size (inches): 4_____ Flange Standard/Class: 125#_____

Plain End (Y/N): __N____Thrust Tie Lugs (Y/N): __N____

Suction Can (Y/N): __N____Can Nominal Diameter (Inches): _____
Can Material: _____ Suction Can Bottom Elevation and Suction Nozzle Location as Shown on Drawings.

Impeller:

Type: Enclosed

Material: Bronze

Head Shaft Material: 416 SS_____ Shaft Sleeve Material: _____

Shaft Sealing: Packing (Y/N) _____ Mechanical (Y/N) Y_____
Type: Split Cartridge O-ring (Y/N) _____

Coupling:

Manufacturer Standard (Y/N) __Y____

Baseplate Material: _____

Sole Plate (Y/N) ____Y_____ Material _____Steel_____Soleplate: Provide for support of pump assembly, including thrust and dynamic loads, as indicated. Top of soleplate shall be faced, drilled, and tapped for pump baseplate.

Motor Base Material: Steel_____

DRIVE MOTOR (See Section 26 20 00, Low-Voltage AC Induction Motors 26 19 00, Medium-Voltage AC Induction Motors.)

Horsepower: 10 Voltage: 460 Phase: 3

Synchronous Speed (rpm): 3600_____

Service Factor: 1.15_____

Motor nameplate horsepower shall not be exceeded at any head-capacity point on pump curve.

Enclosure: DIP _____ EXP _____ ODP _____ TEFC _____ CISD-TEFC _____
TEWAC _____ WPI __X____ WPII _____

Mounting Type: Vertical Hollow Shaft _X_____ Nonreverse Ratchet (Y/N) _Y__
Vertical Solid Shaft _____

ABMA 9 and ABMA 11, B-10 Motor Bearing Life (hrs): 40,000_____

Adjustable Speed Drive. See Section 26 29 23, Low Voltage Adjustable Frequency Drive Systems.

REMARKS _____

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