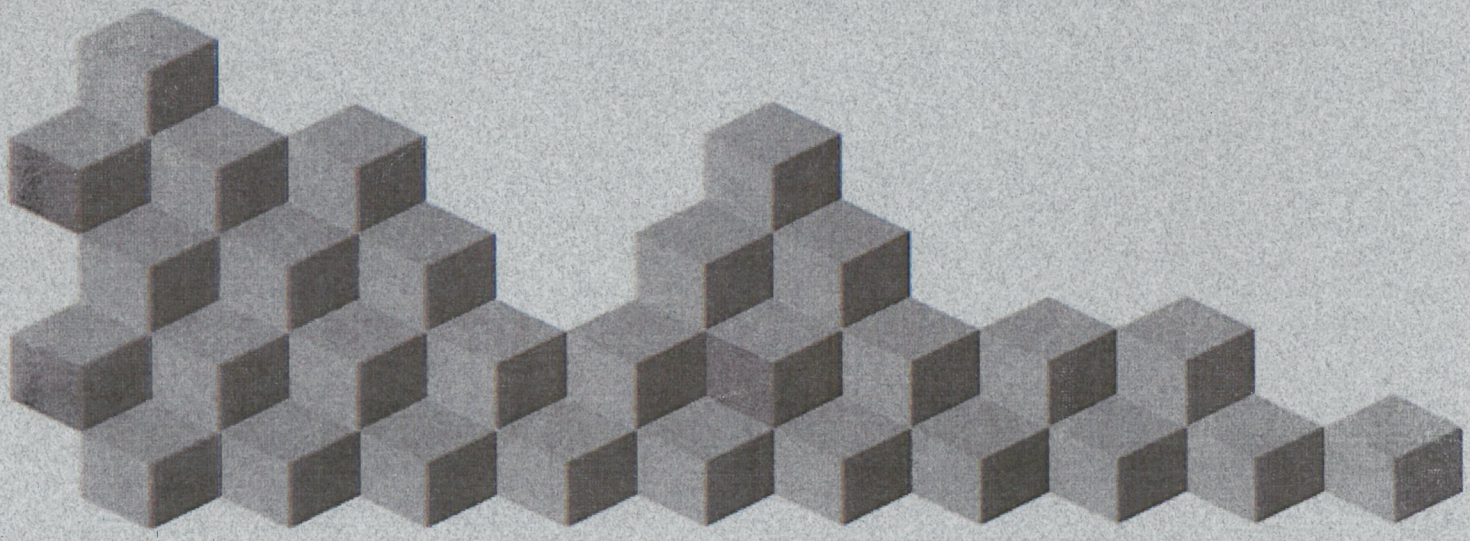
Environmental Consultants & Management Services

Asbestos Survey Report

Keegan's Bayou WWTP Improvements
9400 White Chapel Lane
HOUSTON, TX

WBS No. R-000265-0101-4
Task Number 14-14
ECMS Project Number: 3819

Prepared for:
City of Houston
Public Works and Engineering Department
Engineering & Construction Division
Geo-Environmental Branch
611 Walker-14th Floor, Houston, Texas 77002



ASBESTOS SURVEY REPORT

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611 Walker -14th Floor, Houston, Texas 77002

January 28, 2015

ECMS, Inc.
Engineering Management, Construction Support & Environmental Services

January 28, 2015

Public Works & Engineering Department
Engineering & Construction Division
Geo-Environmental Branch
611 Walker -14th Floor, Houston, Texas 77002

Re: Asbestos Survey
Keegan's Bayou WWTP Improvements
9400 White Chapel Lane
Houston, Tx

WBS No. R-000265-0101-4
Task Number 14-14
ECMS Project Number: 3819

Environmental Consulting & Management Services, Inc. (ECMS) is pleased to present the results of the asbestos and lead-based paint survey conducted at the above referenced facility.

This report includes the results of our findings from visual reconnaissance, sampling and laboratory analysis. An assessment of the information was made to arrive at the conclusions stated and the recommendations presented.

We appreciate the opportunity to be of service to you and look forward to working on future assignments. Should you have any questions concerning this report or if we can assist you with any other matter, please feel free to contact us. ECMS personnel are available for your assistance around the clock.

Sincerely,
Environmental Consulting & Management Services, Inc. (ECMS)

P.E., P.G.

Tyrone P. Dorian, P.E, P.G.
Individual Asbestos Consultant #10-5313
Lead Risk Assessor License #2070156

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Qualifications and Limitations

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

The conclusions and recommendations describe only the conditions present at the time of our assessment, in areas that were observed. Opinions and recommendations presented herein apply to facility conditions existing at the time of our investigation and those reasonably foreseeable.

This report is prepared for the sole and exclusive use of the City of Houston, its contractors or agents. It is designed to aid the building owner, architect, construction manager, general contractor, and potential abatement contractor in locating Asbestos-Containing Materials (ACM) and Lead-Based Paint (LBP).

Reasonable efforts were made to obtain representative samples of building materials and have those materials analyzed for asbestos or lead content. Should suspect materials be discovered during building renovation/demolition that have not been addressed, samples of the materials should be collected and analyzed for asbestos or lead content prior to renovation and/or demolition.

Notification to the Texas Department of State Health Services (DSHS) must be given prior to any renovations or demolition activities.

Executive Summary

Environmental Consultants & Management Services, Inc. (ECMS) conducted asbestos and lead surveys on January 13, 2015, at the Keegan's Bayou WWTP located at 9400 White Chapel Lane Houston, TX. The WWTP is an isolated operating facility situated on approximately 30 acres of land. Systems are located in buildings, below grade cast-in-place concrete structures and above grade at multiple levels. The interior of the facility contains pumping systems with distribution piping, valves, centrifuge pumps, electrical and control panels and lift stations. Paint deterioration was noted on painted equipment including, pumps, piping, pipe fittings, and pipe valves. This lift station is referenced as a wet pit facility with motors at grade level and pumping systems below grade to a depth of approximately 40- 50 feet. Entry into the lift station was through a personnel hatch via metal stairs with handrails.

Site inspections and bulk sample collections were conducted using standard protocols specified by the Texas Asbestos Health Protection Act (TAHPA) and the Texas Lead Reduction Rules. All accessible area of the facility was sampled as per design documents received. Inaccessible materials (gaskets, equipment and buried piping) are assumed to be asbestos and/or lead containing materials until tested.

J3 Resources, Inc. Inc. is a State of Texas Licensed Asbestos Laboratory {PCM, PLM, TEM) and NVLAP and ELLAP Accredited and performed all asbestos and lead analyses.

Asbestos Summary

Findings:

Twenty (20) bulk material samples consisting of; two base caulking/seals, ten large and small flange gaskets and eight valves were taken of suspect asbestos-containing materials. All collected samples are in fair condition. Samples were taken at the Gravity Thickener, Lift Station, Aeration Basin, WAS building, Stage 1 Air Lifts, Disinfection zone 1 and NP water systems. One (1) large flange gasket sample tested positive for asbestos contents in the Stage 1 air lift system.

Oil units at Blower Buildings #1 and #2 were not able to sample unless dismantled during non-operating cycles.

Recommendations:

Based on the analytical findings and site observation; No action necessary unless renovation, remodeling, or demolition is planned. (City of Houston Hazard Category C-3)

Additional Removal methods for areas not able to be sampled during inspection visit, carefully break flanges or seals. Wet seals and or gaskets with amended water to remove from steel piping or fittings.

Cost Estimate:

Estimated cost for gasket/seal abatement is $75 - $100 per flange (including disposal cost).

Lead Summary

Findings:

Five (5) homogenous areas of suspect lead-based paint were identified at the time of our site visit. Twelve (12) paint chip samples were taken and analyzed for lead content. Analytical results indicated that all samples were below reporting limits (BRL), of 5,000ppm lead concentration.

Lead-Containing Paint:

Grey and Red paint on large valves and piping at the lift station areas; contain lead levels at 2,083.2 ppm sample #L4. This is a City of Houston Hazard Category C-2: Lead Present (> 600 ppm or 0.06% but< 5,000 ppm or 0.5% by weight). OSHA regulations apply to workers during demolition or renovation.

Pale green paint on Air supply line valve located at the Aeration Basin contains lead levels at 533.3 ppm sample #L7. This is a City of Houston Hazard Category A. Allowable Lead Levels on painted material. OSHA regulations apply to workers during demolition or renovation.

Recommendations:

Recycle all metal components including those with lead containing paint. No lead abatement is required.

OSHA Requirements: The U.S. Occupational Safety and Health Administration (OSHA) do not specify a minimum lead concentration in its lead standard. Rather, it requires all employers to determine an exposure level and provide prescribed training, personal protective equipment, medical surveillance, and record keeping.
All Paint which has a detectable level of lead is considered a lead-containing paint by OSHA and should be handled in the following ways:

1. Notify any contractor cutting, abrading or disturbing lead containing paint that the paint contains the listed concentrations of lead.
2. Metal components should be dismantled by unfastening bolts where possible. Cutting, abrading or welding on painted metal components should be discouraged.
3. Disposal of painted metal components should be through a metal recycling company that accepts metal with lead paint.

Cost Estimate:

TCLP testing costs are estimated at $200.00 per sample if required.

COMPREHENSIVE ASBESTOS SURVEY

Environmental Consulting & Management Services, Inc. (ECMS) has completed a comprehensive asbestos survey at the Keegan's Bayou WWTP located at 9400 White Chapel Lane, Houston, Texas, and referred to as the "facility".

Scope of Services

This survey was performed to determine the presence, location, and condition of Asbestos-Containing Materials (ACM) at the referenced facilities. Site inspections and bulk sample collections were conducted using standard protocols for sampling and analysis specified by the Texas Asbestos Health Protection Act (TAHPA). All accessible areas of the facility were inspected and suspect materials sampled. Inaccessible materials were assumed to be asbestos-containing materials until available for testing (drop gaskets, equipment gaskets, and underground piping). Site records were available for use during the inspection.

Tyrone P. Dorian, an EPA-accredited/TDH-Licensed Asbestos Inspector with ECMS performed the facility inspection on January 13, 2015. The samples were collected in a manner that reduced potential for fiber and dust release and exposure using standard methods. All samples were deposited into secure containers and labeled for transport to the J3 Resources, Inc. in Houston, Texas. J3 Resources, Inc. is a State Licensed Asbestos Laboratory (PCM, PLM, TEM) and NVLAP Accredited.

Only materials accessible at the time of the survey were inspected. Underground components and equipment were not accessible.

The inspection consisted of the following:

- Sampling of suspect Asbestos-Containing Materials (ACMs).
- Quantifying and qualifying ACM.
- Locating ACM samples on computer generated maps.
- Preparing an inspection report.

Facility Description

The WWTP is an isolated operating facility situated on approximately 30 acres of land. Systems are located in buildings, below grade cast-in-place concrete structures and above grade at multiple levels. The interior of the facility contains pumping systems with distribution piping, valves, centrifuge pumps, electrical and control panels and lift stations. Paint deterioration was noted on painted equipment including, pumps, piping, pipe fittings, and pipe valves. This lift station is referenced as a wet pit facility with motors at grade level and pumping systems below grade to a depth of approximately 40- 50 feet. Entry into the lift station was through a personnel hatch via metal stairs with handrails.

Sampling Techniques and Laboratory Methods

This section details the sampling and laboratory methods used in the comprehensive asbestos survey to quantify and assess the condition of the confirmed ACM.

Survey Methods

This section addresses the criteria necessary for identifying, evaluating and assessing suspect Asbestos- Containing Materials (ACMs).

a. Homogeneous Areas: Prior to collecting bulk samples of suspect ACM, distinct homogeneous sampling areas and specific sampling sites were defined based on building construction dates. A homogeneous sample area can be defined as a material that is similar in appearance, color, and generally having the same episode of installation as surrounding "like" material. Attempts were made in all cases to obtain representative samples of like materials, as this is the most cost-effective method for determination of ACM. It should be assumed by the building owner, contractor, and the abatement contractors that the composition of like materials in a single homogeneous area is the same. Homogeneous areas sampled as part of this survey include materials which have been identified by ECMS as ACM and have been classified as friable (material containing more than one-percent asbestos that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure) or non-friable (material containing more than one-percent asbestos that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure). Friable materials are more likely to become airborne, thereby increasing the potential for health hazards.

b. Hazard Assessment: According to AHERA (December 30, 1986), verified friable or assumed ACM uncovered in an inspection or re-inspection of a facility shall be accessed in view of past, present, or future likelihood of disturbance and may include the following:

    1. Location of material present.
    2. Condition of material: type of damage, severity of damage, and the extent or spread of damage.
    3. Accessibility of the materials.
    4. Potential for disturbance of the material.
    5. Known or suspected causes of damage (i.e., air erosion, vandalism, service or repair, vibration, and water).
    6. Preventive measures which might eliminate the likelihood of undamaged ACM from becoming significantly damaged.
    7. Actions to be taken to protect human health.

The above hazard assessment factors will be discussed according to classifications of verified ACM. The ACM is usually examined and prioritized according to hazard categories based on condition, location, potential for damage and potential for fiber release. The asbestos hazard categories as defined by the City of Houston are presented in Table I as follows:

Table 1: HAZARD CATEGORY AND RESPONSE ACTION	
Hazard Category	**Response Action**
C-1: Asbestos Present	Serious health hazard, as defined by EPA, abatement should be a top priority
C-2: Asbestos Present	Health hazard, as defined by EPA, abatement should be planned
C-3: Asbestos Present	No action necessary unless renovation, remodeling, or demolition is planned
B-1: Asbestos Present	Contains I% asbestos, or less, not regulated by TDH
B-2: Asbestos Present	Adequately enclosed
B-3: Asbestos Present	Adequately encapsulated
A: No asbestos found	N/A
A-1: Asbestos Abated	Once identified asbestos containing materials have been abated

c. Field Methods: All accessible areas of the facility were inspected for the presence of suspect ACM. Based on visual surveillance, four (4) homogeneous areas were suspect of ACM at the subject site at the time of our site visit.

Laboratory Methods

The materials sampled were analyzed using the Polarized Light Microscopy (PLM) methods with dispersion-staining techniques according to US EPA Interim Method EPA 600/M4-82-020. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with a special light-refractive oil emulsion stain. The prepared slide is then subjected to a variety of tests while being viewed under varying polarization of light.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is estimation, any material that contains over one percent (> 1%) of any type of asbestos using the PLM Method is considered an ACM and must be handled according to OSHA, EPA, and State regulations if disturbed.

J3 Resources, Inc. participates in the EPA Quality Assurance Program for Polarized Light Microscopy and is accredited by the EPA/NIST. This program helps ensure accurate repeatable results on the part of the analyst.

Asbestos-Containing Material (ACM) Verification and Assessment

Twenty (20) bulk material samples consisting of; two base caulking/seals, ten large and small flange gaskets and eight valves were taken of suspect asbestos-containing materials. All collected samples are in fair condition. Samples were taken at the Gravity Thickener, Lift Station, Aeration Basin, WAS building, Stage 1 Air Lifts, Disinfection zone 1 and NP water systems. One (1) large flange gasket sample tested positive for asbestos contents in the Stage 1 air lift system.

Hazard Assessment Results

The exact hazard ratings as defined by the City of Houston Hazard Category and Response Action (Table 1) are referenced in Table 2.

TABLE 2: SUSPECT ACM ANALYTICAL RESULTS						
Homogenous Area No.	Material	Location	Type*	Damaged*	Hazard Risk*	Asbestos Content (ND= None Detected)
1	Gaskets	At main 16" diameter air supply line leading to stainless steel pipe Stage 1 air lift system	Non-friable	Fair Condition	C-3	75%
2	Gaskets	within pumping assembly and Aeration Basin (Large, medium and small flanges	Non-friable	Fair Condition	A	ND
3	Gaskets	within the WAS buildings Disinfection zones and NP water system (gate valves, piping systems(Large, medium and small flanges)	Non friable	Fair Condition	A	ND
4	Base Seal and Base Caulking	Lift Station Area (Exhaust fan 1 & 2)	Non friable	Fair Condition	A	ND

Findings and Recommendations

Findings

Twenty (20) bulk material samples consisting of; two base caulking/seals, ten large and small flange gaskets and eight valves were taken of suspect asbestos-containing materials. All collected samples are in fair condition. Samples were taken at the Gravity Thickener, Lift Station, Aeration Basin, WAS building, Stage 1 Air Lifts, Disinfection zone 1 and NP water systems. One (1) large flange gasket sample tested positive for asbestos contents in the Stage 1 air lift system.

Recommendations

Based on the analytical findings and site observation; No action necessary unless renovation, remodeling, or demolition is planned. (City of Houston Hazard Category C-3).

Additional Removal methods for areas not able to be sampled during inspection visit, carefully break flanges or seals. Wet seals and or gaskets with amended water to remove from steel piping or fittings

Cost Estimate:

Estimated cost for gasket abatement is $75 - $100 per flange (including disposal cost).

CHECK LIST FOR ASBESTOS SURVEYS

NAME OF THE FACILITY: **Keegan's Bayou WWTP**

FACILITY ADDRESS: **9400 White Chapel Lane, Houston, Texas**

DATE OF THE SURVEY: **01/13/2015**

CONSULTANT: **ECMS, Inc.**

INSPECTOR (S) NAME: **Tyrone P. Dorian**

Note: Items/information listed below must be included in the report. Use this checklist to ensure completeness of your report. Mark "X" or "check" in front of the information included in the report. *Submit completed check list with the report. If a facility is surveyed for asbestos and lead, the survey reports shall be segregated in one binder or preferably two separate reports.*

1.	✓	Date and Contract number of the survey
2.	✓	Scope of work
3.	✓	Copy of the inspectors TDH license
4.	✓	Name and address of the facility
5.	N/A	Statement of building records were used in the inspection and if not, why?
6.	N/A	Date of construction and last renovation (if any) of the building.
7.	✓	Cover letter (in report) certain executive summary or executive summary begin the report format
8.	✓	List of areas that were not inspected. Explain.
9.	✓	Procedures and protocols used to collect bulk samples.
10.	✓	List of measures taken to prevent potential fiber release form locations where samples were extracted
11.	✓	Drawings and/or photographs with sample locations marked to facilitate future location of materials sampled.
12.	✓	Statement...if an accredited (NVLAP) laboratory was used for Sample Analysis.
13.	✓	Copy of the laboratory accreditation certificate.
14.	✓	Copy of the laboratory analysis results of the bulk samples.
15.	✓	Statement (by the laboratory) regarding Quality Assurance and Quality Control performed.
16.	✓	Copy of the chain of custody form for the bulk samples.
17.	✓	List of materials assumed to be containing asbestos.
18.	✓	City of Houston Asbestos Hazard Categorization (AHC) list and categorization of all the samples according to the AHC list included in the report.
19.	N/A	Condition of the building structure such as deterioration, structural problems, or other damages.

If Asbestos Present:

20.	N/A	Statement...if repeat analysis using point counting PLM was done as required by the city for the samples that show less than 5% asbestos.
21.	✓	Photographs of all Materials proven to be ACM are included.
22.	✓	All asbestos containing materials are classified as Friable or Non-Friable.
23.	✓	Recommendations are made for all Asbestos Containing Materials.
24.	✓	Reasonably accurate quantities of ACM's are estimated and given in the report.
25.	✓	Cost estimations are given for abatement.
26.	N/A	Operation and Maintenance Plans are recommended.

LEAD-BASED PAINT SURVEY

Environmental Consultants and Management Services, Inc. (ECMS) performed a Lead-Based Paint Survey at the Keegan's Bayou WWTP located at 9400 White Chapel Lane, in Houston, Texas, and referred to as the "facility". Tyrone P. Dorian, an EPA/TDH-certified Lead Risk Assessor with ECMS, performed the facility inspection on January 13, 2015. The purpose of this assessment was to determine if Lead-Based Paint (LBP) was present at the facility.

Scope of Services

ECMS was contracted by the City of Houston to perform the following scope of services:

1. Collect paint samples at the facility;
2. Submit the paint samples to a laboratory for the analysis of lead content; and,
3. Prepare a report presenting the analytical results, including recommendations for abatement of any lead-based painted materials discovered.

Sampling and Analysis

Paint Samples Collection

Five (5) homogeneous areas were identified. A total of twelve (12) material samples of suspect Lead-Based-Paint (LBP) materials were collected and analyzed. The paint chips were placed in re-closable plastic bags, labeled and shipped to J3 Labs for analysis. Description and location of the samples are included in Table 2. HUD sampling procedures and guidelines for evaluation and control of lead-based paint in housing were followed for this survey. Lead containing paint hazard categories as defined by the City of Houston are presented in Table 1 as follows:

Table 1: HAZARD CATEGORY AND RESPONSE ACTION

Hazard Category	Response Action
C-1: Lead Present	Health Hazard, as defined by applicable federal, state and city regulations. Abatement should be a top priority. (> 5,000 ppm or 0.5% by weight)
C-2: Lead Present	No action necessary when the material is adequately enclosed must be addressed prior to demolition or renovation. OSHA regulations apply to workers or the public.(> 600 ppm or 0.06% but< 5,000 ppm or 0.5% by weight)
A: Allowable Lead Level	< 600 ppm or 0.06% by weight
A-1: Lead Abated	Once identified; lead containing materials (LCM) have been abated

TABLE 2: SUSPECT LBP ANALYTICAL RESULTS			
Homogeneous Area	**Location**	**Color / Hazard**	**Lead Concentration - ppm (BDL=Below Detectable Limits)**
1	Lift Station	Grey/Category C-2	2,083.2ppm
2	Aeration Basin	Pale Green/Category A	533.3ppm
3	NP Water System	Pale Blue/Category A	BDL
4	Digester & Disinfection Zone	Light Cream & Grey/Category A	BDL
5	Building & Clarifiers	Rust & Yellow/Category A	BDL

Laboratory Analytical Results

J3 Labs is accredited by the American Industrial Hygiene Association for environmental lead analysis, and is recognized by the Environmental Protection Agency (EPA) under the National Lead Laboratory Accreditation Program. Flame AA method (SW-846, 3050B/7420) was utilized to detect the lead content in the paint materials sampled. Lead-based paint is defined as a paint chip with a lead content of 0.5% by weight or greater in a dry film of paint applied.

Findings and Recommendations

Findings

Five (5) homogenous areas of suspect lead-based paint were identified at the time of our site visit. Twelve (12) paint chip samples were taken and analyzed for lead content. Analytical results indicated that all samples were below reporting limits (BRL), of 5,000ppm lead concentration.

Grey and Red paint on large valves and piping at the lift station areas; contain lead levels at 2,083.2 ppm sample #L4. This is a City of Houston Hazard Category C-2: Lead Present (> 600 ppm or 0.06% but< 5,000 ppm or 0.5% by weight). OSHA regulations apply to workers during demolition or renovation.

Pale green paint on Air supply line valve located at the Aeration Basin contains lead levels at 533.3 ppm sample #L7. This is a City of Houston Hazard Category A. Allowable Lead Levels on painted material. OSHA regulations apply to workers during demolition or renovation.

Recommendations

Recycle all metal components including those with lead containing paint. No lead abatement is required.

OSHA Requirements: The U.S. Occupational Safety and Health Administration (OSHA) do not specify a minimum lead concentration in its lead standard. Rather, it requires all employers to determine an exposure level and provide prescribed training, personal protective equipment, medical surveillance, and record keeping.

All Paint which has a detectable level of lead is considered a lead-containing paint by OSHA and should be handled in the following ways:

1. Notify any contractor cutting, abrading or disturbing lead containing paint that the paint contains the listed concentrations of lead.
2. Metal components should be dismantled by unfastening bolts where possible. Cutting, abrading or welding on painted metal components should be discouraged.
3. Disposal of painted metal components should be through a metal recycling company that accepts metal with lead paint.

CHECK LIST FOR LEAD SURVEYS

NAME OF THE FACILITY: **Keegan's Bayou WWTP**
FACILITY ADDRESS: 9400 White Chapel Lane, Houston, Texas
DATE OF THE SURVEY: **01/13/15**
CONSULTANT: **ECMS, Inc.**
Sr. INSPECTOR(S) NAME: **Tyrone P. Dorian**

Note: Items/information listed below must be included in the report. Use this check list to ensure completeness of your report. Mark "X" or "check" in front of the information included in the report. Submit completed check list with the report. If a facility is surveyed for lead and asbestos, the survey reports shall be segregated in one binder or preferably two separate reports.

1.	✓	Statement...if "HUD Guidelines for Evaluation and Control of Lead Based Paint in Housing" or any other criteria were followed for the survey.
2.	✓	Date and Contract number of the survey.
3.	✓	Scope of the work.
4.	✓	Copy of the inspector (s) TDH Certificate.
5.	✓	Name and Address of the facility.
6.	N/A	Statement...if building records were used in the inspection, and if not, Why?
7.	✓	Cover letter (in report) containing executive summary or executive summary at the beginning of the report format.
8.	N/A	Date of construction and last renovation (if any) of the building.
9.	N/A	List of areas that were not inspected. Explain.
10.	N/A	Condition of the building structure such as deterioration, structural problems or other damages.
11.	✓	List of components assumed to have lead based paint or coating, if any.
12.	✓	City of Houston Lead Hazard Categorization (LHC) list and categorization of all the samples according to the LHC list included in the report.

If Analyzer Used:

13.	N/A	Performance Characteristics Sheet (PCS) for the XRF equipment/s used. Calibration Check Test Results (Form 7.2, HUD Guidelines, or equivalent).
14.	N/A	Calibration Check Test Results (Form 7.2, HUD Guidelines, or equivalent).
15.	N/A	Statement...if HUD Guidelines were followed for Calibration Check Test of the XRF equipment and replacement XRF equipment, if used.
16.	N/A	Installation date and type of source for XRF equipment and replacement equipment, if used.
17.	N/A	Drawings and photographs with XRF reading locations marked to facilitate future location of XRF readings.

If Samples Taken for Laboratory Analysis:

18.	✓	Procedures and protocols used to collect paint chip samples.
19.	✓	Copy of the chain of custody form for samples.
20.	✓	Statement...if an accredited (NLLAPIELLAP) laboratory was used for Sample Analysis.
21.	✓	Copy of the Laboratory accreditation certificate.
22.	✓	Copy of the laboratory analysis results of the paint chip samples.
23.	✓	Statement (by the laboratory) regarding Quality Assurance and Quality Control performed.
24.	✓	Photographs with sample locations marked to facilitate future location of coating materials sampled.

If Lead Found:

25.	✓	Photographs of all component areas proven to have lead.
26.	✓	Recommendations for all components proven to have lead based paint or coatings.
27.	N/A	Recommendations for Operation and Maintenance Plans.
28.	N/A	Estimated quantities of Lead Containing Materials.
29.	N/A	Cost estimations for abatement.

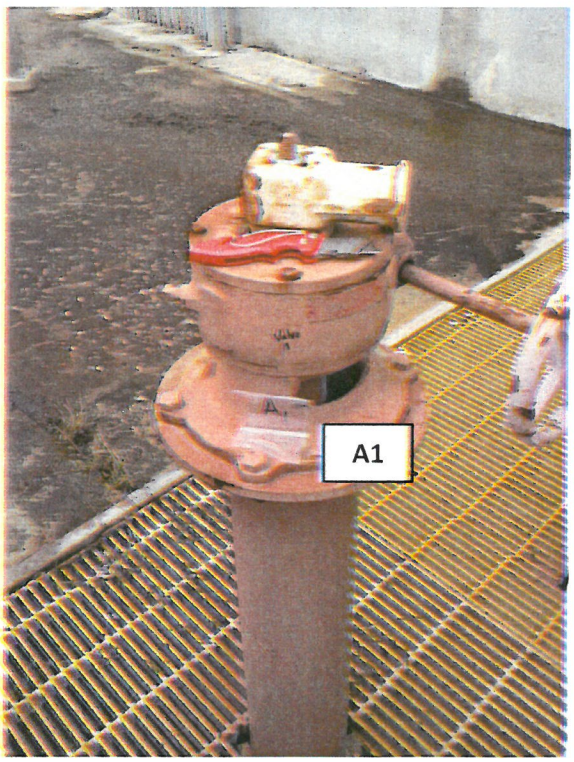
APPENDIX A
FACILITY LOCATION

DEPARTMENT OF PUBLIC WORKS & ENGINEERING
KEEGANS BAYOU WWTP
940 WHITE CHAPEL LANE
F.N. 250

APPENDIX B

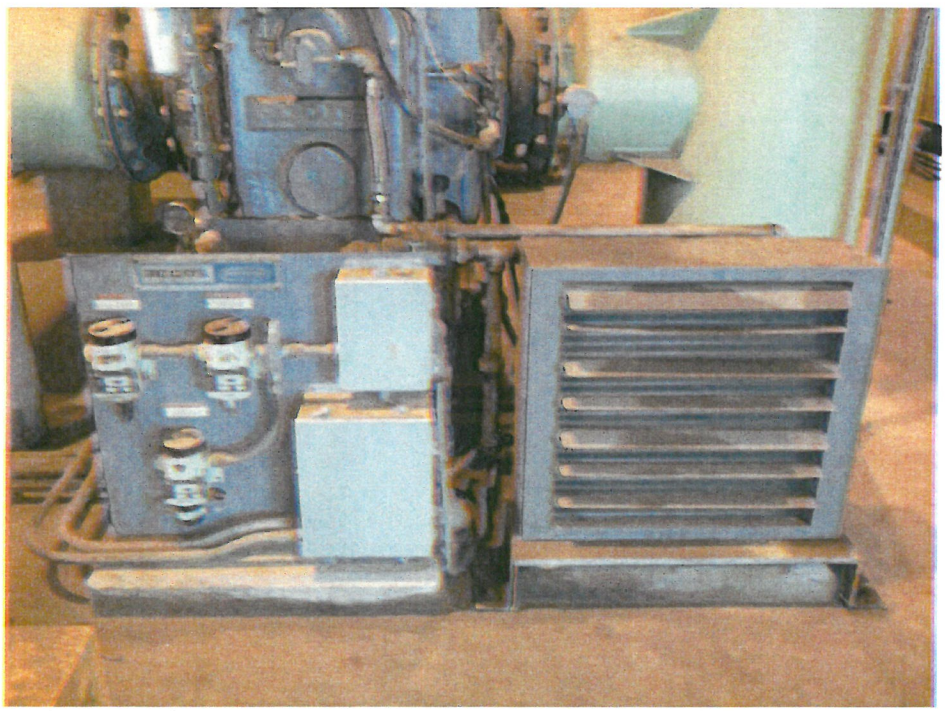
SITE PHOTOGRAPHS

Clarifier System



Valve Gasket Material

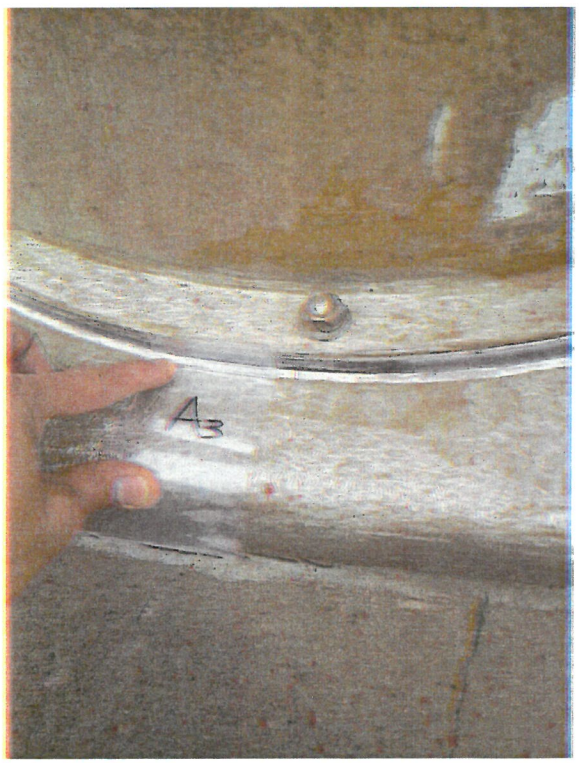
No Access to ACM samples.



Oil Cooling systems-six units
No access to potential ACM items without dismanteling.

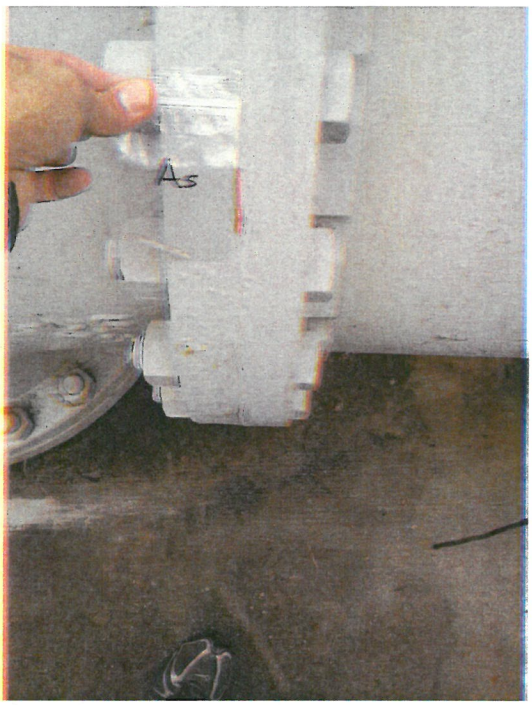
Lift Station

Base Seal exhaust fan 1

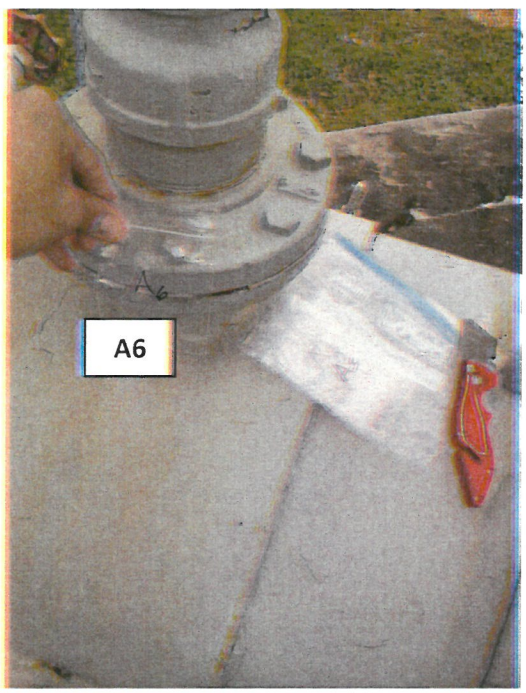


Base Caulking exhaust fan 2

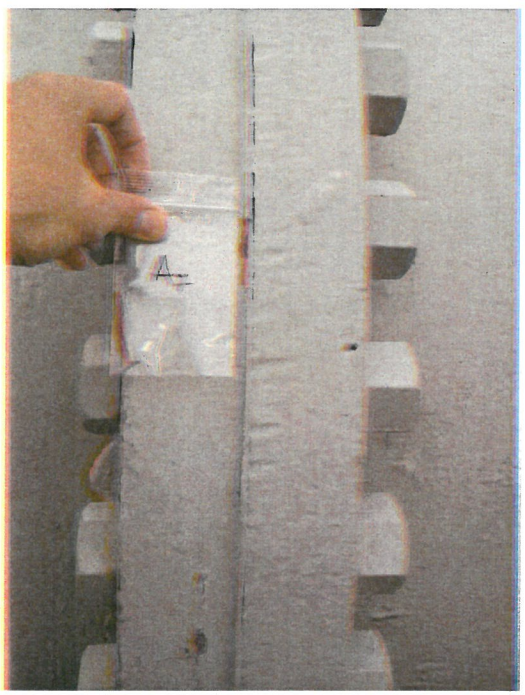
Gasket exhaust fan 1



Large flange gasket pipe system #3



Small flange gasket pipe system #1



Large flange gasket adjacent to large gate valve

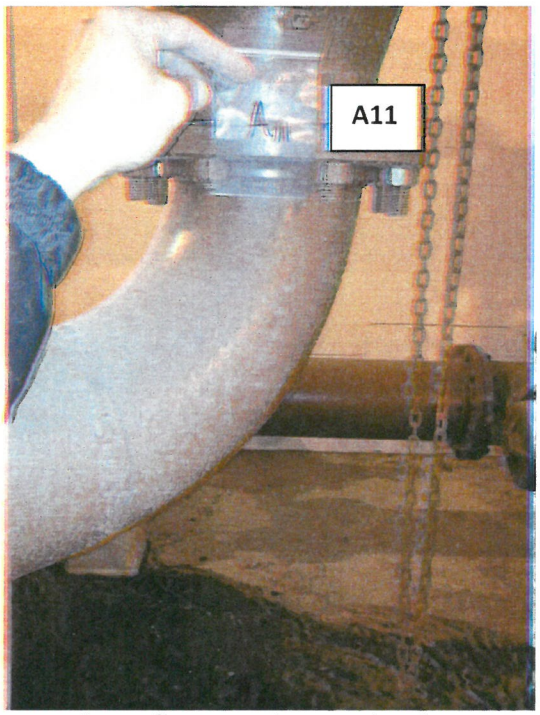
Aeration Basin

Air Line vertical valve gasket flange 1

Air Line valve gasket flange 7

WAS Building

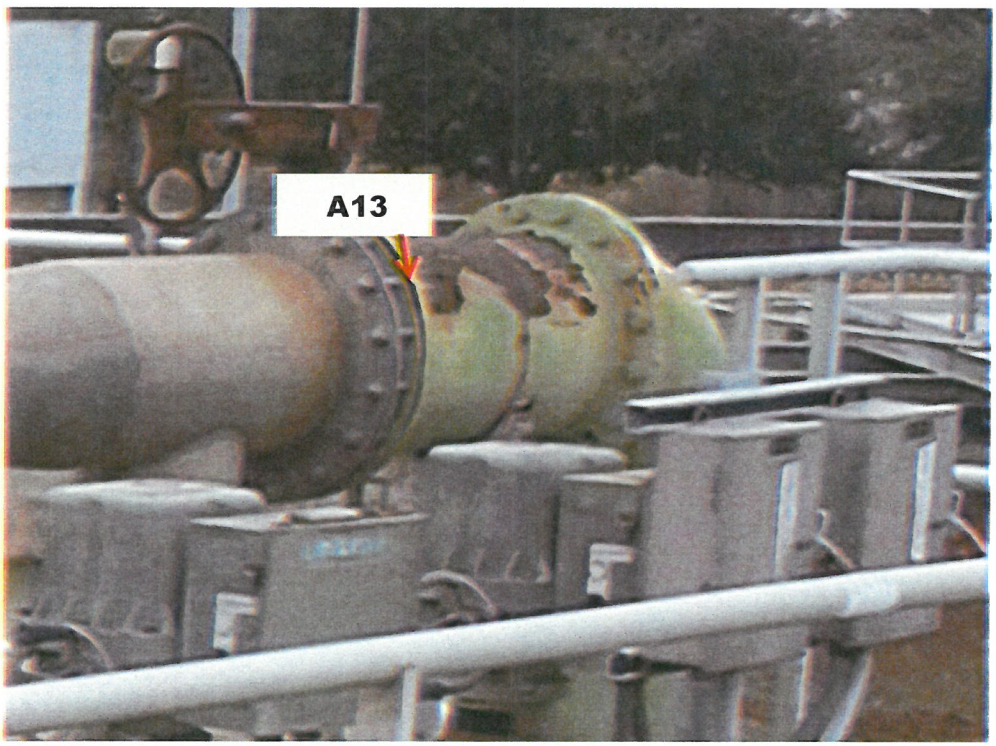
Small flange gasket at pump system #3



Large flange gasket overhead at system #2

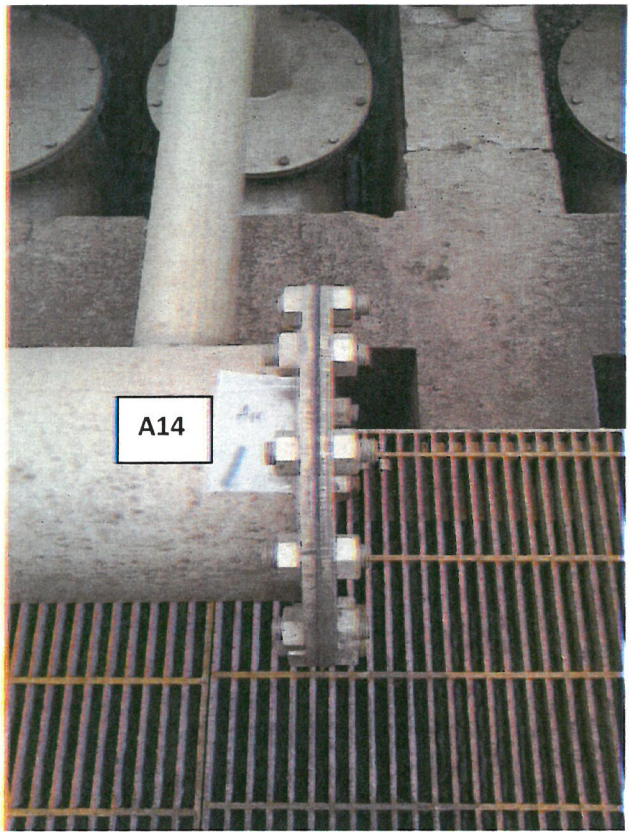
Large flange gasket at gate valve system #3

Stage 1 Air Lifts

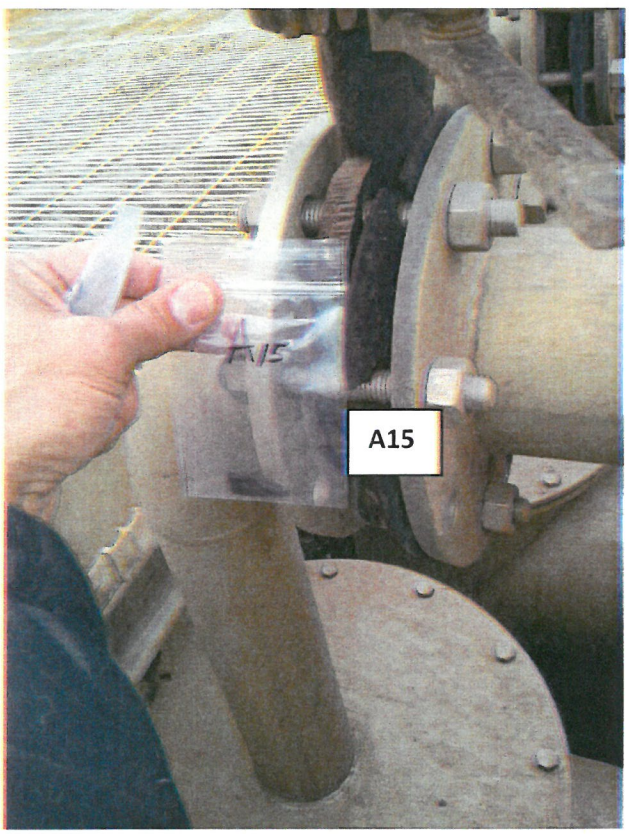


Large flange gasket at air supply line

Stage 1 Air Lifts

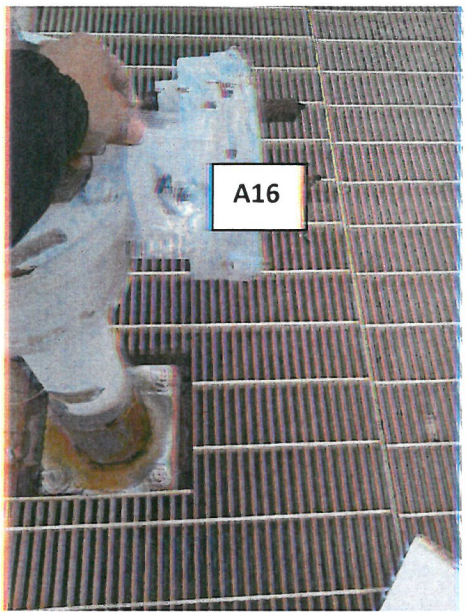


Large flange gasket on stainless steel pipe



Small flange gasket on stainless steel pipe

Disinfection Zone #1

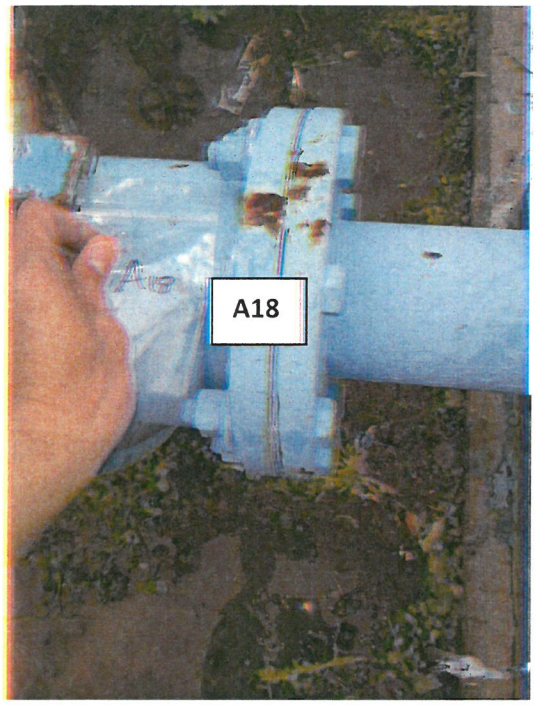


Sluice gate valve

NP Water system

Flange at valve at pump system #3

NP Water System



Flange at valve at pump system #1

Flange at valve at pump system #2

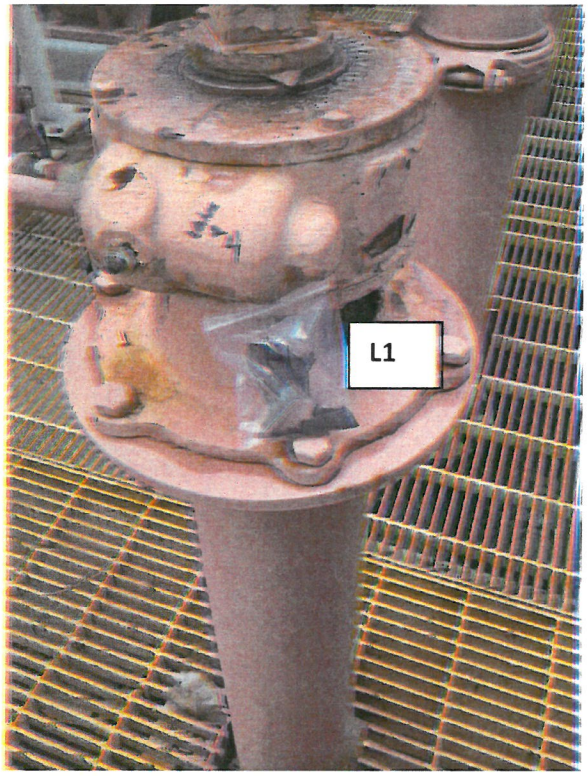
Large flange of exit line at west side

No Access to ACM samples.

Oil Cooling systems-five units

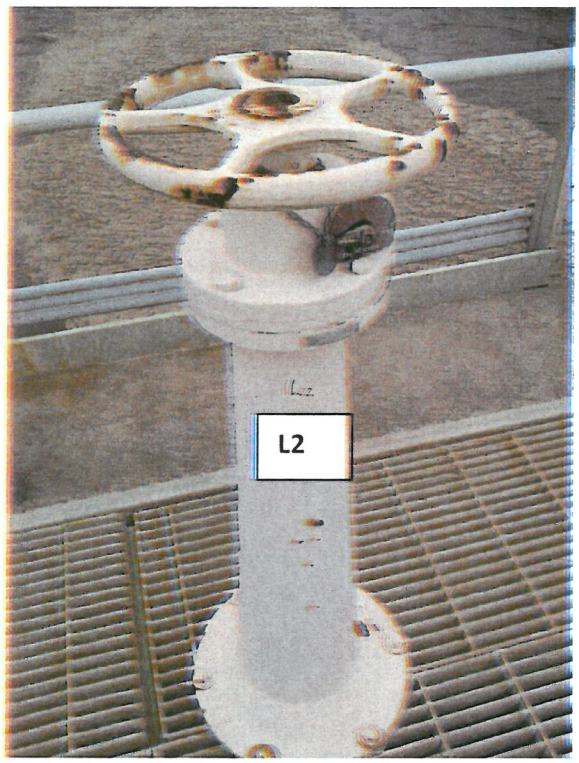
No access to potential ACM items without dismantling

Gravity Thickeners



Paint coating vertical valve #4

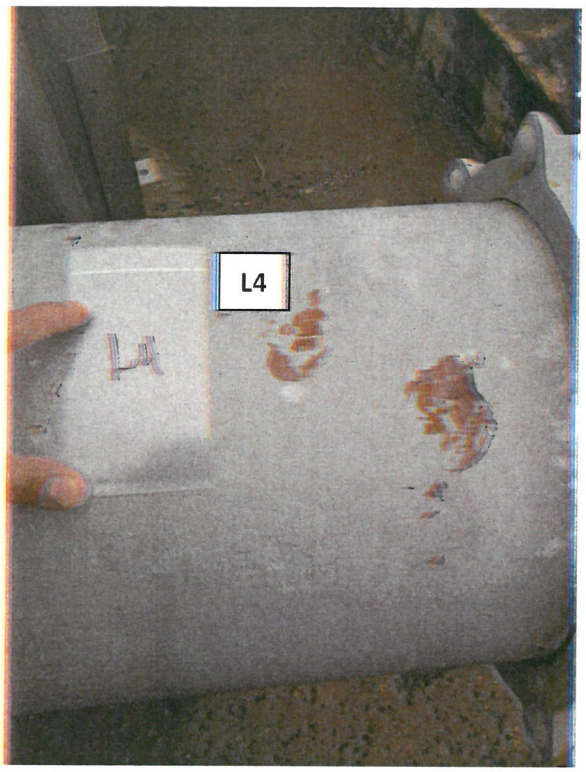
Digester Basins full view



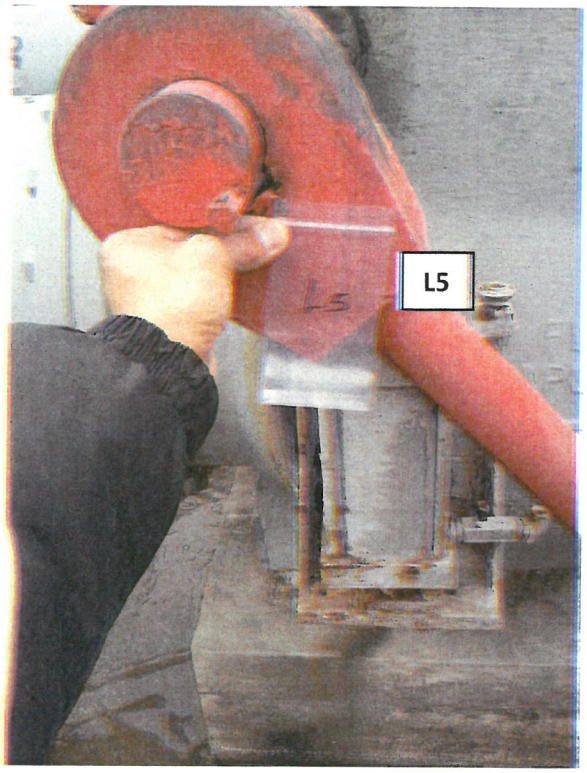
Vertical valve sludge transfer valve

Vertical valve air regulator

Lift Station



Large valve and piping



Large valve control arm

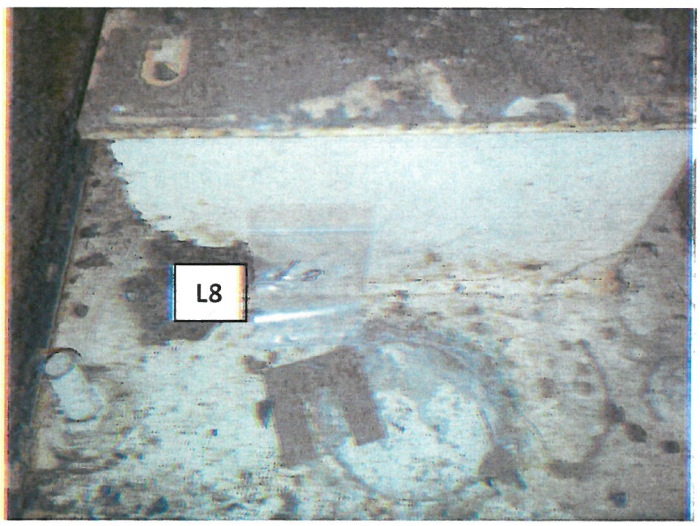
Large valve turning wheel

Aeration Basin

Sluice gate valve

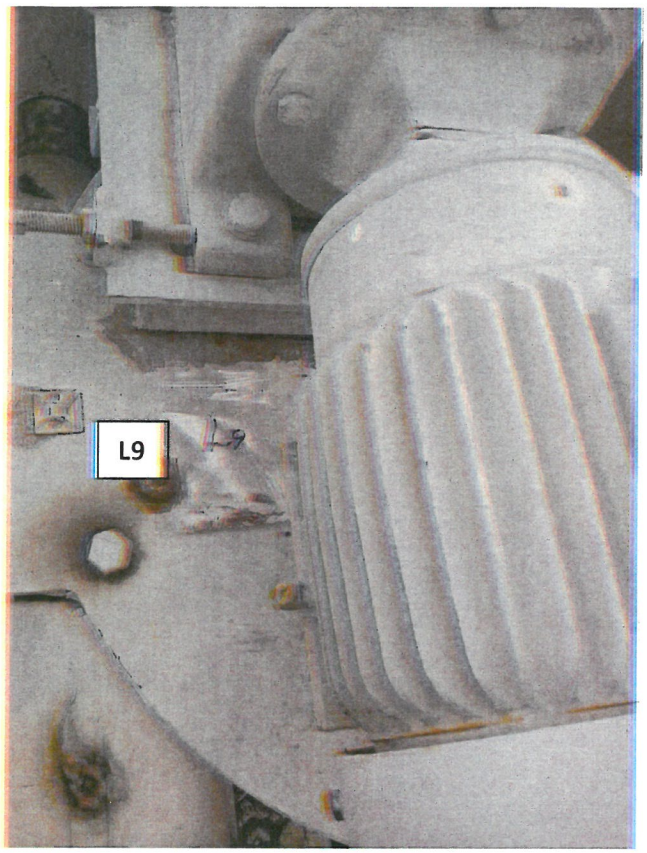
Air supply line valves

WAS Building



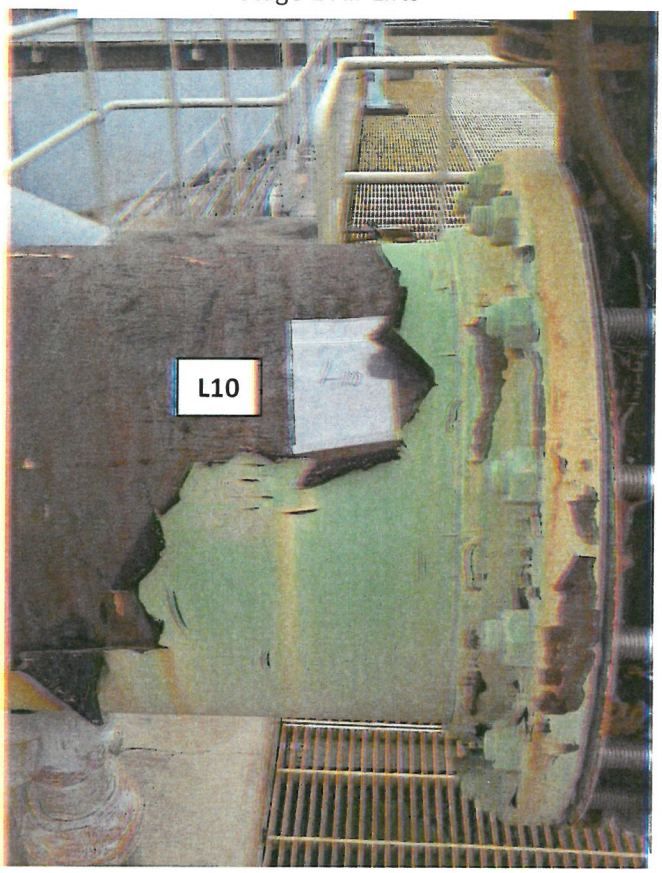
Old Pump housing and base in WBS Building

Regular Clarifiers



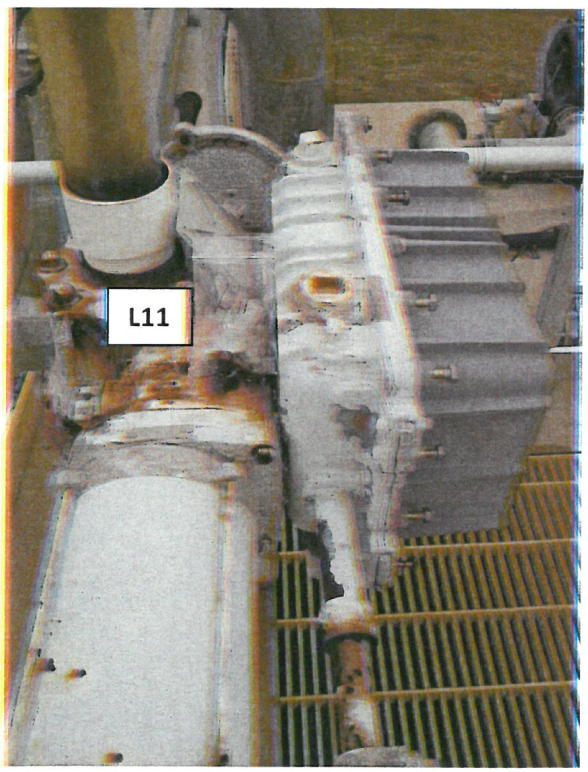
Drive motor unit at clarifier #3

Stage 1 Air Lifts



Large vertical air line 16" diameter

Disinfection Zone #1



Metering Pump

NP Water System

Pumping systems and lines

APPENDIX C

ASBESTOS ANALYTICAL RESULTS

J3 Resources, Inc.
6110 W. 34th Street, Houston, Texas 77092
Phone: (713) 290-0221 - Fax: (713) 290-0248
J3Resources.com

Bulk Asbestos Fiber Analysis by Polarized Light Microscopy (PLM)

EPA 600/M4-82-020; 600/R-93/116

Tyrone Dorian
ECMS, Inc.
4911 Lyons Avenue
Houston TX 77020

J3 Order #: JH1562208
Project #: 3919 A
Date Received: 14-Jan-2015
Date Analyzed: 19-Jan-2015
Date Reported: 19-Jan-2015

Keegan's Bayou WWTP

Sample ID #	Sample Description	Asbestos Constituents	Non-Asbestos Constituents	
A1	Paint/ Vinyl, Gray/ Red, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A2	Flooring, White/ Black, Homogeneous	None Detected	Fibrous Glass Other Non-Fibrous Material	<1% 100%
A3	Caulk, Gray/ White, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A4	Caulk, Gray/ White, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A5	Paint/ Vinyl, Gray/ Red, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A6	Paint/ Vinyl, Gray/ Black, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A7	Paint/ Vinyl, Gray/ Red, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A8	Fiberboard, Green/ White, Homogeneous	None Detected	Cellulose Fiber Wollastonite Other Non-Fibrous Material	25% <1 75%
A9	Fiberboard, Green/ White, Homogeneous	None Detected	Cellulose Fiber Wollastonite Other Non-Fibrous Material	25% <1 75%
A10	Paint/ Vinyl, Brown/ Black, Homogeneous	None Detected	Other Non-Fibrous Material	100%
A11	Paint/ Vinyl, Brown/ Red, Homogeneous	None Detected	Other Non-Fibrous Material	100%

Wanda Porch Analyst

Lee W. Poye Lab Director

This report relates only to the materials tested. This report is for the exclusive use of the addressed client and shall not be reproduced except in full, without written approval by J3 Resources, Inc. (J3). Samples are analyzed according to the methods listed above and are subject to the inherent limitations of PLM and interference of matrix components. Reporting limit for the above method is a function of the quantity of sample analyzed, matrix interference, sample preparation, fiber size, and distribution. Asbestos may be detected in concentrations of <1% by area if sufficient material is analyzed. J3 recommends TEM confirmation of soils, vermiculite and non-friable organically bound materials (NOB) reported as None Detected or < 1% Asbestos by PLM. All samples received in good condition unless otherwise noted. This report shall not be used to claim product approval, certification, or endorsement by NVLAP, NIST, or any agency of the federal government.

NVLAP Lab Code: 200525-0; AIHA Lab ID: 157714; TDSHS License: 30-0273

J3 Resources, Inc.
6110 W. 34th Street, Houston, Texas 77092
Phone: (713) 290-0221 - Fax: (713) 290-0248
J3Resources.com

Bulk Asbestos Fiber Analysis by Polarized Light Microscopy (PLM)

EPA 600/M4-82-020; 600/R-93/116

Tyrone Dorian
ECMS, Inc.
4911 Lyons Avenue
Houston TX 77020

J3 Order #: JH1562208
Project #: 3919 A
Date Received: 14-Jan-2015
Date Analyzed: 19-Jan-2015
Date Reported: 19-Jan-2015

Keegan's Bayou WWTP

Sample ID #	Sample Description	Asbestos Constituents		Non-Asbestos Constituents	
A12	Paint/ Vinyl, Brown/ Red, Homogeneous	None Detected		Other Non-Fibrous Material	100%
A13	Gasket, Gray, Homogeneous	Chrysotile	75%	Other Non-Fibrous Material	25%
A14	Vinyl, Black, Homogeneous	None Detected		Other Non-Fibrous Material	100%
A15	Vinyl, Black, Homogeneous	None Detected		Other Non-Fibrous Material	100%
A16	Paint/ Vinyl, Blue/ White, Homogeneous	None Detected		Other Non-Fibrous Material	100%
A17	Vinyl, Red, Homogeneous	None Detected		Other Non-Fibrous Material	100%
A18	Paint/ Fiberboard, Blue/ Green, Homogeneous	None Detected		Cellulose Fiber Wollastonite Other Non-Fibrous Material	10% 2% 88%
A19	Vinyl, Red, Homogeneous	None Detected		Other Non-Fibrous Material	100%
A20	Paint/ Vinyl, Blue/ Black, Homogeneous	None Detected		Wollastonite Other Non-Fibrous Material	Trace 100%

Wanda Porch Analyst

Lee W. Poye Lab Director

This report relates only to the materials tested. This report is for the exclusive use of the addressed client and shall not be reproduced except in full, without written approval by J3 Resources, Inc. (J3). Samples are analyzed according to the methods listed above and are subject to the inherent limitations of PLM and interference of matrix components. Reporting limit for the above method is a function of the quantity of sample analyzed, matrix interference, sample preparation, fiber size, and distribution. Asbestos may be detected in concentrations of <1% by area if sufficient material is analyzed. J3 recommends TEM confirmation of soils, vermiculite and non-friable organically bound materials (NOB) reported as None Detected or < 1% Asbestos by PLM. All samples received in good condition unless otherwise noted. This report shall not be used to claim product approval, certification, or endorsement by NVLAP, NIST, or any agency of the federal government.

NVLAP Lab Code: 200525-0; AIHA Lab ID: 157714; TDSHS License: 30-0273

IH CHAIN OF CUSTODY

J3 Order # (Lab use only) 7208

J3 resources, inc.

Submitter Name:		Bill to:	
Company:	ECMS	Address:	ECMS
Address:		City/State:	Zip:
City/State:	Zip:	PO #:	

Project Information

Project Name:	Keegan's Bayou WWTP	Project Manager:	
Project #:	3819 A	Notification By:	Email: ☑ Verbal: ☐ Text: ☐
Email Report To:	ECMS	Email Invoice To:	ECMS

Special Instructions:

Turnaround Times – Please Select One

Emergency* ☐	1 Day ☐	2 Day ☐	3 Day ☐	5 Day ☑

ASBESTOS

PLM - Bulk	PCM - Air	TEM - Air	TEM - Bulk	TEM - Water	TEM - Dust	TEM/PLM Soil/Vermiculite/Ore
EPA 600/R-93/116 ☑ Visual Estimation (<1%) ○ 400 Point Count 0.25% ○ 1,000 Point Count 0.1% ○ Gravimetric Reduction ○ Matrix Reduction (+/-) ○ NIOSH 9002 ○ OSHA ID-191	○ NIOSH 7400 ○ ASTM D7201 ○ ISO 8672 ○ OSHA ID-160	○ AHERA ○ NIOSH 7402 ○ ASTM D6281 ○ ISO 10312 ○ ISO 13794	○ Gravimetric Reduction (<1%) ○ Matrix Reduction (+/-) ○ Qualitative (+/-) ○ Drop Mount ○ Filtration	○ EPA 100.2 Drinking Water ○ >10 µm fibers ○ ≥0.5 µm fibers ○ EPA 100.2 Effluent / WW	○ ASTM D5755 Microvac ○ ASTM D6480 Wipe ○ 600/J-93/167 Carpet - EPA ○ Bulk Dust Qualitative	○ ASTM 7521-TEM (+/-) ○ ASTM 5721-TEM (<1%) ○ CARB 435-Modified ○ Soil – PLM Only (+/-) ○ Vermiculite - TEM (+/-) ○ Vermiculite-Cincinnati ○ Erionite ID

METALS

Flame AA	Graphite Furnace AA - LEAD	ICP
○ Lead In Paint – SW846 7420/3050B ○ Lead In Air – NIOSH 7082 ○ Lead in Wipes – SW846 7420/3050B ○ Lead In Soil – SW846 7420/3050B	○ Drinking Water – EPA 200.9 ○ Wastewater – SW846-7421 ○ Soil/Sludge – SW846-7421 ○ Air – NIOSH 7105	○ Elements In Air – NIOSH 7300 ○ Wipe/Soil – SW846-6010B ○ Effluent – SW846-6010B ○ Welding Fume – NIOSH 7300M ○ TCLP – SW846-1311/6010B

PARTICULATES

Gravimetric
○ NIOSH 0500 – Total Particulates ○ NIOSH 0600 – Respirable Particulates

Total Number of Samples Submitted: 20 **Positive Stop:** ☐ YES ☐ NO

Signatures

Relinquished By:		Date: 1/14/15	Time:
Received By:		Date: 1/14/15	Time:
Relinquished By:		Date:	Time:
Received By:		Date:	Time:

** Emergency TAT requires prior lab notification. All samples analyzed outside normal business hours are charged at Emergency rate.*
***TAT's are in Business Days rather than Hours (i.e.1 Day TAT = End of Next Business Day)*

J3 Resources, Inc. ◆ 6110 West 34th Street ◆ Houston, Texas 77092 ◆ tel: 713/290-0221 ◆ fax: 713/290-0248

IH CHAIN OF CUSTODY

Project Name/Number Keegan's Bayou WINTT Page 2 of 2

ECMS #3819

SAMPLE IDENTIFICATION

SAMPLE NUMBER	SAMPLE LOCATION / MATERIAL	VOLUME
A1		
A20		

Comments/Special Instructions:

J3 Resources, Inc. • 6110 West 34th Street • Houston, Texas 77092 • tel: 713/290-0221 • fax: 713/290-0248

APPENDIX C

LEAD ANALYTICAL RESULTS

J3 Resources, Inc.
6110 West 34th Street, Houston, Texas 77092
Phone: (713) 290-0221 – Fax: (713) 290-0248
j3resources.com

Lead in Paint Performed by Flame AA – USEPA SW846 7420/3050B

Attn: Tyrone Dorian
ECMS
4911 Lyons Avenue
Houston, TX 77020

J3 Order #: JH1562203
Date Received: 01/14/2015
Date Analyzed: 01/15/2015
Date Reported: 01/20/2015

Keegan's Bayou WWTP / Project #: 3819B

SAMPLE ID	MATERIAL DESCRIPTION/LOCATION	LEAD CONCENTRATION (mg/kg)	LEAD CONCENTRATION (%)
L1	Facility WE	<RL	<RL
L2	Facility WE	<RL	<RL
L3	Facility WE	<RL	<RL
L4	Facility WE	**2,083.2**	**0.2083**
L5	Facility WE	<RL	<RL
L6	Facility WE	<RL	<RL
L7	Facility WE	**533.3**	**0.0533**
L8	Facility WE	<RL	<RL
L9	Facility WE	<RL	<RL
L10	Facility WE	<RL	<RL
L11	Facility WE	<RL	<RL
L12	Facility WE	<RL	<RL

<RL = Less than Reporting Limit

E. Nguyen
Analyst

Laboratory Supervisor

This report relates only to the samples submitted. The analysis has been conducted according to the method(s) listed above. Blank corrections are not applied to data unless requested by the customer. This report is for the exclusive use of the addressed customer and shall not be reproduced except in full without written approval by J3 Resources, Inc. (J3). Unless otherwise noted, all quality control samples performed within specifications established by the laboratory. Reporting Limit: 0.50ppm

J3 Resources, Inc.
6110 West 34th Street, Houston, Texas 77092
Phone: (713) 290-0221 – Fax: (713) 290-0248
j3resources.com

Lead in Paint Performed by
Flame AA – USEPA SW846 7420/3050B

Laboratory QA/QC Results

Attn: Tyrone Dorian
ECMS
4911 Lyons Avenue
Houston, TX 77020

J3 Order #:	**JH1562203**
Date Received:	**01/14/2015**
Date Analyzed:	**01/15/2015**
Date Reported:	**01/20/2015**

Keegan's Bayou WWTP / Project #: 3819B

Correlation Coefficient	0.9999
Reporting Limit Verification	101%
Initial Calibration Verification	98.4%
Initial Calibration Blank	< 0.5ppm
Continuing Calibration Verification	98.6%, 102.2%
Continuing Calibration Blank	< 0.5ppm
Method Blank	< 12.5ppm
Laboratory Control Samples	107%
Matrix Spikes	99%
Matrix Spike Duplicates	101%
Relative Percent Differences	2%

E. Nguyen
Analyst

Laboratory Supervisor

This report relates only to the samples submitted. The analysis has been conducted according to the method(s) listed above. Blank corrections are not applied to data unless requested by the customer. This report is for the exclusive use of the addressed customer and shall not be reproduced except in full without written approval by J3 Resources, Inc. (J3). Unless otherwise noted, all quality control samples performed within specifications established by the laboratory. Reporting Limit: 0.50ppm

IH CHAIN OF CUSTODY

J3 Order # (Lab use only) 2203

J3 resources, inc.

Submitter Name:	**Bill to:**
Company:	**Address:** ECMS
Address: ECMS	**City/State:** **Zip:**
City/State: **Zip:**	**PO #:**

Project Information

Project Name: Keegan's Bayou WWTP	Project Manager:
Project #: 3819B	Notification By: Email: ☐ Verbal: ☐ Text: ☐
Email Report To: ECMS	Email Invoice To: ECMS
Special Instructions:	

Turnaround Times – Please Select One

Emergency* ☐	1 Day ☐	2 Day ☐	3 Day ☐	5 Day ☑

ASBESTOS

PLM - Bulk	PCM - Air	TEM - Air	TEM - Bulk	TEM - Water	TEM - Dust	TEM/PLM Soil/Vermiculite/Ore
EPA 600/R-93/116 ○ Visual Estimation (<1%) ○ 400 Point Count 0.25% ○ 1,000 Point Count 0.1% ○ Gravimetric Reduction ○ Matrix Reduction (+/-) ○ NIOSH 9002 ○ OSHA ID-191	○ NIOSH 7400 ○ ASTM D7201 ○ ISO 8672 ○ OSHA ID-160	○ AHERA ○ NIOSH 7402 ○ ASTM D6281 ○ ISO 10312 ○ ISO 13794	○ Gravimetric Reduction (<1%) ○ Matrix Reduction (+/-) ○ Qualitative (+/-) ○ Drop Mount ○ Filtration	○ EPA 100.2 Drinking Water ○ >10 µm fibers ○ ≥0.5 µm fibers ○ EPA 100.2 Effluent / WW	○ ASTM D5755 Microvac ○ ASTM D6480 Wipe ○ 600/J-93/167 Carpet - EPA ○ Bulk Dust Qualitative	○ ASTM 7521-TEM (+/-) ○ ASTM 5721-TEM (<1%) ○ CARB 435-Modified ○ Soil – PLM Only (+/-) ○ Vermiculite - TEM (+/-) ○ Vermiculite-Cincinnati ○ Erionite ID

METALS

Flame AA	Graphite Furnace AA - LEAD	ICP
○ Lead in ~~Paint – SW846-7420/3050B~~	○ Drinking Water – EPA 200.9	○ Elements in Air – NIOSH 7300
○ Lead in Air – NIOSH 7082	○ Wastewater – SW846-7421	○ Wipe/Soil – SW846-6010B
○ Lead in Wipes – SW846 7420/3050B	○ Soil/Sludge – SW846-7421	○ Effluent – SW846-6010B
○ Lead in Soil – SW846 7420/3050B	○ Air – NIOSH 7105	○ Welding Fume – NIOSH 7300M
		○ TCLP – SW846-1311/6010B

PARTICULATES

Gravimetric
○ NIOSH 0500 – Total Particulates
○ NIOSH 0600 – Respirable Particulates

Total Number of Samples Submitted: 12 **Positive Stop:** ☐ YES ☐ NO

Signatures

Relinquished By:		**Date:** 1/13/15	**Time:**
Received By:		**Date:** 1/14/15	**Time:**
Relinquished By:		**Date:**	**Time:**
Received By:		**Date:**	**Time:**

**Emergency TAT requires prior lab notification. All samples analyzed outside normal business hours are charged at Emergency rate.*
***TAT's are in Business Days rather than Hours (i.e.1 Day TAT = End of Next Business Day)*

J3 Resources, Inc. ◆ 6110 West 34th Street ◆ Houston, Texas 77092 ◆ tel: 713/290-0221 ◆ fax: 713/290-0248

IH CHAIN OF CUSTODY

Project Name/Number Keegan's Bayou WWTP 3819B

Page 2 of 2

SAMPLE IDENTIFICATION

SAMPLE NUMBER	SAMPLE LOCATION / MATERIAL	VOLUME
L1		
L12		

Comments/Special Instructions:

J3 Resources, Inc. • 6110 West 34th Street • Houston, Texas 77092 • tel: 713/290-0221 • fax: 713/290-0248

APPENDIX D
LICENSE AND CERTIFICATION

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

ENVIRONMENTAL CONSULTANT AND MANAGEMENT SERVICES

is certified to perform as a

Asbestos Consultant Agency

in the State of Texas within the purview of Texas Occupations Code, chapter 1954, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

DAVID LAKEY, M.D.
COMMISSIONER OF HEALTH

License Number: 100476

Control Number: 96664

Expiration Date: 1/11/2016

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

Texas Department of State Health Services

Asbestos Individual Consultant

TYRONE P DORIAN
License No. 105313
Control No. 96734
Expiration Date: 10/1/2016

NATEC OF TEXAS, INC.
www.natectx.com

Tyrone P. Dorian
Name

NPDR091614-7338
Certification #

Asbestos Project Designer Refresher
Approved Course

9/16/2014 (Course Date) 9/16/2015 (Expiration Date) TX 10168136 (DL#)

NATEC OF TEXAS, INC.
www.natectx.com

Tyrone P. Dorian
Name

NMPR091714-7388
Certification #

Asbestos Management Planner Refresher
Approved Course

9/17/2014 (Course Date) 9/17/2015 (Expiration Date) TX 10168136 (DL#)

NATEC OF TEXAS, INC.
www.natectx.com

Tyrone P. Dorian
Name

NIR082114-7388
Certification #

Asbestos Inspector Refresher
Approved Course

8/21/14 (Course Date) 8/21/2015 (Expiration Date) TX 10168136 (DL#)

NATEC OF TEXAS, INC.
www.natectx.com

Tyrone P. Dorian
Name

NR082114-7388
Certification #

Air Monitoring Technician Refresher
Approved Course

8/21/2014 (Course Date) 8/21/2015 (Expiration Date) TX 10168136 (DL#)

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

Be it known that

ECMS INC

is certified to perform as a

Lead Firm

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1955 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Environmental Lead Reduction, as long as this license is not suspended or revoked.

David L. Lakey, M.D.
Commissioner of Health

License Number: 2110005

Control Number 0655

Expiration Date: 6/18/2016

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

Be it known that

TYRONE P DORIAN

is certified to perform as a

Lead Risk Assessor

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1955 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Environmental Lead Reduction, as long as this license is not suspended or revoked.

David L. Lakey, M.D.
Commissioner of Health

License Number: 2070156

Expiration Date: 3/29/2016

Void After Expiration Date

VOID IF ALTERED

Control Number: 6970

NON-TRANSFERABLE

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200525-0

J3 Resources, Inc.

Houston, TX

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2014-04-01 through 2015-03-31

Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

J3 RESOURCES INC

is certified to perform as a

Asbestos Laboratory
PCM, PLM, TEM

in the State of Texas within the purview of Texas Occupations Code, chapter 1954, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

DAVID LAKEY, M.D.
COMMISSIONER OF HEALTH

License Number: 300273

Expiration Date: 3/15/2016

Control Number: 95940

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

J3 Resources, Inc.

6110 West 34th Street, Houston, TX 77092

Laboratory ID: 157714

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories* in the following:

LABORATORY ACCREDITATION PROGRAMS

✓	**INDUSTRIAL HYGIENE**	Accreditation Expires: 05/01/2016
✓	**ENVIRONMENTAL LEAD**	Accreditation Expires: 05/01/2016
✓	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: 05/01/2016
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached **Scope of Accreditation**. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached **Scope of Accreditation**. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Gerald R Schultz

Gerald Schultz, CIH
Chairperson, Analytical Accreditation Board

Cheryl O. Morton

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

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