PART II

ENVIRONMENTAL RESOURCES

PART II - ENVIRONMENTAL RESOURCES INFORMATION

A. Fish, Wildlife and Related Environmental Values

(1) Describe the measures to be taken, using the best technology currently available to minimize disturbances and adverse impacts to fish and wildlife and achieve enhancement of this resource where practicable within the proposed permit area.

The operations will include set-backs from all streams, diversion ditches and berms to redirect surface water, sediment basins, and combinations of silt fences, hay bale filters berms, or rock check dams as needed to control run-off and sedimentation.

(2) Describe in detail the measures to be taken to restore or enhance, or steps to be taken to avoid disturbance of habitats of unusually high value for fish and wildlife located within the proposed permit area.

The operations will include set-backs from all streams, diversion ditches and berms to redirect surface water, sediment basins, and combinations of silt fences, hay bale filter berms, or rock check dams as needed to control run-off and sedimentation. The disturbed areas will be promptly reclaimed when work in that area is complete.

(3) Are there any wetland areas such as streams, lakes, marshes, etc., located in or adjacent to the proposed permit area which will be disturbed by the mining activities?

(**X**) Yes ( ) No

If yes, briefly describe the feature(s), its location and the extent of the proposed disturbance. Describe in detail measures to be taken to restore the area.

Within Increment 1 area (the first area to be mined), a potential 3.3 acre wetlands area (designated W-11) was indicated on the Preliminary Wetlands/Jurisdictional Waters Determination prepared by AST Environmental and submitted to the US Army Corps of Engineers (USACE). A functional assessment of W-11 was performed by dividing the area into three portions (W-11a, W-11b and W-11c). The Mean Functional Capacity Index (Mean FCI) for each of the three portions were 0.8, 0.9, and 0.6, respectively. The areas of each assessed portion are 0.4, 1.3 and 1.6 acres. The total Activity Credits for each portion are 0.3, 1.1 and 0.9, respectively for a total Activity Credit of 2.3. A copy of the USACE Jurisdictional Determination concurring with the functional assessment is included in Attachment II.A.3-1 (STILL PENDING). This potential wetland area (W-11) may be disturbed by mining related activities including Sedimentation Basin construction, topsoil stockpiles and coal stockpiles. Therefore, mitigation will be completed in accordance with the Mitigation Plan once it is submitted to and approved by the USACE using the total Activity Credits of 2.3 for mitigation purposes.

If a stream channel diversion is proposed, describe in detail (including maps, diagrams or cross sections, if necessary) how the provisions will be met. Include a copy of all other necessary State or Federal approvals.

Not Applicable. No stream channel diversions are proposed.

(4) Is fish and wildlife habitat to be primary or secondary post-mining land use?

( ) Yes (**X**) No

If yes, describe in detail the post-mining measures to be taken to attain this land use including the target specie(s) of wildlife, plant species to be used and a map delineating the proposed arrangement of plant groupings and water sources on the permit area following reclamation.

(5) If the pre-mining land use is fish and wildlife habitat and the proposed post-mining land use is cropland, describe the post-mining provisions to be made for wildlife. Attach a map showing the location of trees, hedges, or fence rows to be used to diversify habitat if appropriate.

Not Applicable. Pre-mining and post-mining land uses are pasture and undeveloped land, therefore, no further response to this section is necessary.

(6) If the post-mining land use is to be residential, commercial or industrial, describe the post-mining provisions to be made for wildlife such as greenbelts, trees or hedgerows composed of plant species useful for wildlife.

Not Applicable. Post-mining land use will be pastures and undeveloped land, therefore, no further response to this section is necessary).

(7) If any exceptions are proposed, describe in detail the proposed practice including target species of wildlife, plant species to be used, planting rate and/or stocking density, planting pattern with appropriate map and anticipated results of the proposed practice.

Not Applicable. No exceptions are proposed, therefore, no further response to this section is necessary.

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, and archeological, cultural, and historic resources.

See Attachment II.A.

(8) Fish and Wildlife Enhancement and Protection Plan 880-X-8F-.18 (880-X-8I-.18)

(1) Areas of Special Concern

(a) Wetlands:

1. List any wetlands, ponds, lakes, streams, rivers, etc. that have been identified by the DCNR or USFWS as areas of special concern.

See USFWS and DCNR letters in Attachment II.A.8.1.a.1-1.

2. Identify any direct or indirect impacts which could occur as a result of the proposed mine operation.

Direct impacts will be avoided by mining activities which have been planned to avoid streams and wetlands, except for the wetland designated as W-11. Wetland W-11 will be mined through, but will be mitigated off-site.

Indirect impacts will be limited to temporary changes in the quantity of water that would normally enter the on-site streams. Construction of diversion berms and sedimentation basins, and the redirection of rainfall within the operations areas to the sedimentation basins will temporarily change to surface flow into streams until reclamation in that area is completed.

3. List the measures to be taken to avoid, protect, or minimize impacts, including, but not limited to: buffer zones, treatment facilities, exclusion from the permit area, etc.

The operations will include set-backs from all streams, construction of diversion ditches and diversion berms to redirect surface water, construction of sedimentation basins, and combinations of silt fences, hay bale filter berms, or rock check dams as needed to control run-off and sedimentation. The disturbed areas will be promptly reclaimed when work in that area is complete. The goal will be to reclaim to pre-mine conditions and provide additional water holding depressions to enhance the area for fish and wildlife.

4. If direct or indirect impacts are unavoidable, describe in detail the measures to be used to restore the area to pre-disturbance conditions and to enhance it. This must include design plans for the physical reconstruction of the wetland/pond/stream as well as revegetation of riparian species.

The disturbed areas will be promptly reclaimed when work in that area is complete. The goal will be to reclaim to pre-mine conditions and provide additional water holding depressions to enhance the area for fish and wildlife.

5. Any disturbance of a wetland area requires the approval of the U. S. Army Corps of Engineers. We will assist in the coordination with the Corps of Engineers as well as the USFWS and DCNR, but any permit required from the Corps is the responsibility of the operator.

Ridgeholm fully understands that it is their responsibility to obtain the needed permits and has been coordinating these activities with the USACE.

(b) Endangered/Threatened Species and Critical Habitats

Attachment II.A.8.1.a.1-1 provides a Protected Species Habitat Assessment, as well as correspondence with USFWS and DCNR. A site specific Bat Habitat study is also included in Attachment II.A.8.1.a.1-1.

1. Identify any endangered or threatened plant or animal species or their critical habitat which may be directly or indirectly impacted by the proposed mining operation.

The proposed mining methods will avoid those areas that are potential habitats. No impact to endangered or threatened species, or their critical habitat are anticipated.

2. Describe the potential impact

The proposed mining methods will avoid those areas that are potential habitats. No impact to endangered or threatened species, or their critical habitat are anticipated.

3. Describe in detail the measures which will be taken to prevent any adverse impact to the species or its habitat. Include design plans or specifications for any structures or facilities which are necessary to prevent such impacts.

The proposed mining methods will minimize the potential impact to endangered or threatened species, or their critical habitat. To minimize potential impact to summertime bat roosting, tree clearing for the project will only occur from October 15 to March 31.

(c) Other Areas of Special Concern

1. Identify the area of special concern

No other areas of special concern are indicated.

2. Describe the potential impact

No other areas of special concern are indicated.

3. Describe in detail the measures which will be taken to prevent any adverse impact to the species or its habitat. Include design plans or specifications for any structures or facilities which are necessary to prevent such impacts.

No other areas of special concern are indicated.

(2) General Provision for Enhancement and Protection of Fish and Wildlife

(a) Describe those measures which will be taken during the active mining phase of the operation to minimize or prevent impacts to fish and wildlife, i.e., treatment facilities, buffer zones, etc.

The operations will include set-backs from all streams, diversion ditches and diversion berms to redirect surface water, sedimentation basins, and combinations of silt fences, hay bale filter berms, or rock check dams as needed to control run-off and sedimentation.

The sedimentation basins will be used to maintain water quality from the mining activities to the receiving streams. The disturbed areas will be promptly reclaimed when work in that area is complete. The goal will be to reclaim to pre-mine conditions and provide additional water holding depressions to enhance the area for fish and wildlife.

(b) Describe the measures to be implemented during the reclamation process to enhance fish and wildlife.

1. **During the reclamation process, areas will be graded to provide small water-holding depressions.**

2. **Species of herbaceous vegetation, including Kobe Lespedeza, browntop millet, and other species commonly known to provide food and cover to wildlife may be planted to enhance wildlife.**

3. **Any areas greater than 50 acres in size, will be broken up by vegetation types to provide maximum variation in the resulting vegetation types on a reclaimed area. Grazing land or pasture land will be interspersed with plantings of trees and shrubs in optimum locations to increase diversity of food and cover.**

B. Cultural, Historical and Archaeological Resources

(1) Describe and identify any cultural or historical resources located in or adjacent to the proposed permit area which are listed on the National Register of Historic Places. Delineate the location of the resources on the permit map. Describe in detail the measures to be taken to minimize or prevent adverse impacts on the resource(s).

There are no cultural or historical resources located in or adjacent to the proposed permit area which are listed on the National Register of Historic Places.

(2) Describe and identify any known significant archaeological sites located in or adjacent to the proposed permit area. The description shall be based on all available information including, but not limited to, data of State and local archaeological agencies. Delineate the site(s) on the permit map.

See Attachment II.B.2-1 for a Cultural Resources Survey performed by the Office of Archaeological Research at the University of Alabama for the permit. Only one off-site Historic Architectural Resource (HAR) was identified, and labelled as HAR3. HAR3 is not located in or adjacent to Increments 1, 2 and 3. HAR3 is located over 4,000 feet south of Increment 1. No on-site or other off-site HARs were identified. See Attachment II.B.2-2 for concurrence by the Alabama Historical Commission.

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, and archeological, cultural and historic resources.

See Attachment II.A.

C. Threatened and Endangered Species

Identify any threatened or endangered species of plants or animals or critical habitats of such species located in or adjacent to the proposed permit area. Delineate the location of the specie(s) or habitat(s) on the permit map.

See Attachment II.A.8.1.a.1-1

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation f the application for information on

land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, and archeological, cultural and historic resources.

See Attachment II.A

D. Lands Unsuitable for Mining

(1) Are there any areas located in or adjacent to the proposed permit area which have been designated unsuitable for mining or are under study for such designation in an administrative proceeding?

( ) Yes (**XX**) No

If yes, give the name(s) of the area(s) if known. Delineate the area(s) on the permit area(s) on the permit map.

(2) Describe in detail the measures to be taken to minimize or prevent adverse impacts on any public park.

Not Applicable. No public parks in the vicinity.

(3) Are requests for waivers included in this application?

( ) Yes (**XX**) No

(4) Do you claim exemption to this part based upon:

(a) Operations existing on the proposed permit area on August 3, 1977; or

(b) Operations subject to valid existing rights on August 3, 1977; or

(c) Substantial legal and financial commitments made prior to January 4, 1977?

( ) Yes (**XX**) No

If Yes, give reason(s) for claim with appropriate documentation.

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, and archeological, cultural, and historic resources.

See Attachment II.A

E. Geology

The following shall be provided for all Technical Data submitted in answer to these parts:

(a) The names of persons or organizations who collected and analyzed the data.

(b) The dates of collection and analysis.

(c) A description of the methodology used to collect and analyze the data.

(1) Give a description of the geology within the proposed permit area including, but not limited to, the logs of drill holes, or a description of a highwall, with thickness of the overburden and coal down to the first aquifer to be affected below the lowest coal seam to be mined to identify acid forming or toxic forming zones.

See Attachment II.E.1 with Appendix II.E.1-A and Appendix II.E.1-B.

(2) Chemical analysis conducted to identify acid forming or toxic forming zones shall be made on a representative number of samples of the overburden within the permit area. Sampling of the overburden may be collected at 5 ft. intervals from a lithologic unit or from the entire thickness if the unit is less than 5 ft. thick, when the lithology is below the oxidized zone; from the oxidized zone one composite sample shall be collected and analyzed. Samples may be taken from drill holes or from channel samples from a highwall.

See Attachment II.E.2 with Appendix II.E.2-A

(3) Analysis of each overburden sample shall be run for total sulfur. If the sulfur content is one percent or greater it is recommended that additional analysis be run for pyritic sulfur. From a composite sample of each drill hole or channel sample of the highwall, neutralization potential analysis shall be run and the acid-base account calculated using the average of the sulfur content for the sampling location. Results shall be included in the permit application.

See Attachment II.E.2 with Appendix II.E.2-A and Appendix II.E.2-B.

(4) Total sulfur analysis of the coal seam(s) to be mined shall be run and reported with the permit application.

See Attachment II.E.2 and Appendix II.E.2-B.

(5) The name, depth, thickness, strike and dip of the coal seam(s) to be mined shall be included in the permit application.

Attachment II.E.1 presents the names, strike and dip of the coal seams to be mined (Upper Cliff and Underwood).

(6) Location of the coal crop line(s) within the proposed permit area are to be shown on an appropriate map.

No outcrops were found exposed within the permit area. However, it is suspected that a weathered coal crop may exist at about elevation 1,380 feet mean sea level within Increment 1.

(7) All necessary maps and cross sections needed to support the geologic description shall conform with the requirements.

Figure II.E.1-A-1 in Appendix II.E.1-A presents the map of boring locations. Figures II.E.1-B-1, II.E.1-B-2 and II.E.1-B-3 in Appendix II.E.1-B present the cross-sections that depict the geologic description.

(8) When used to collect information for the permit application, elevations and locations of test borings, core samples or other sample sites shall be provided (topographic map accuracy is adequate).

Appendix II.E.1-A presents the elevations and locations of the test borings that were performed as part of this permitting effort.

F. Groundwater Hydrology

See Attachment II.F, Appendix II.F-1, which contains Figures II.F-1-1, II.F-1-2, II.F-1-3, II.F-1-4, II.F-1-5, II.F-1-6 and II.F-1-7

The following shall be provided for all Technical Data submitted in answer to these parts:

(a) The names of persons or organizations who collected and analyzed the data.

(b) The dates of collection and analysis.

(c) A description of the methodology used to collect and analyze the data.

The permit application shall contain a description of the groundwater hydrology within the proposed permit area and potentially impacted off-site areas. In obtaining the necessary base line or pre-mining information the applicant should be guided in conducting the studies by the availability and usage of groundwater in the potentially impacted off-site areas with particular emphasis being placed on those locations where present or potential future usage of the groundwater is of local importance. The description should be based on a comprehensive survey of existing water wells and springs that may be affected by the proposed mining operations or from wells drilled by the applicant. Information addressed in the survey shall include:

(1) State elevation of the groundwater.

(2) Elevation and depth below the surface of any aquifer(s) or water table encountered.

(3) The lithologic description and thickness of any aquifer(s) encountered.

(4) Results of aquifer test(s), if conducted, shall be reported identifying the transmissivity, draw down, recovery rates, and specific capacity.

(5) Known uses of the groundwater such as light industrial, agricultural, domestic, etc. estimating the approximate amount of water used per day.

(6) Quality of the groundwater should be determined using sampling and laboratory techniques or equally reliable methods to determine at a minimum:

(i) pH

(ii) Total iron, mg/l

(iii) Total manganese; mg/l

(iv) Total dissolved solids or specific conductance at 25º C if the latter can be shown as a direct relationship with total dissolved solids.

(7) Describe any geological structures including their orientation that will have an affect on the movement of the groundwater in the aquifer such as:

(i) Joint systems

(ii) Faults or fault zones

(iii) Folds

(iv) Cleats in the coal and

(v) Bedding planes

(8) Appropriate maps and cross sections needed to supplement the description of the groundwater hydrology shall conform with the requirements.

G. Surface Water Hydrology

See Attachment II.G

The following shall be provided for all Technical Data submitted in answer to these parts:

(a) The names of persons or organizations who collected and analyzed the data

(b) The dates of collection and analysis

(c) A description of the methodology used to collect and analyze the data.

The permit application shall contain information and a description of the surface water that will flow into or from the proposed permit area in a form and to a degree that will describe seasonal variations in both quantity and qualify of the surface water within the proposed permit area and potentially impacted off-site areas. The pre-mine or base-line study should be designed to a level that takes into consideration water availability and present and potential future usage of the surface water. The period of time for which such a survey should be conducted is flexible, but should be adequate to properly evaluate low flow and high flow conditions based on either site specific studies, or where available, from existing data files which are reasonable and statistically representative of the proposed permit and potentially impacted off-site areas. At a minimum the submitted information on the surface water hydrology shall include:

(1) Name of the water shed(s) which will receive discharge from the proposed permit area.

(2) The location of any surface water bodies such as streams, lakes, important impoundments or springs that may be adversely affected by the proposed mining operations.

(3) Known use of the surface water leaving the proposed permit area (or that will receive discharges from it), if any.

(4) Water quality data shall be submitted to identify seasonal flow characteristics of, at a minimum:

(i) pH

(ii) Total iron, mg/l

(iii) Total manganese, mg/l

(iv) Total suspended solids

(v) Total dissolved solids or specific conductance at 25º C if the latter can be shown to have a direct relationship with the total dissolved solids;

(vi) Base-line acidity information shall be provided if the need for acid-neutralization is anticipated for the proposed mining operation or if required by the regulatory authority.

(5) Water sampling and analytical methods listed in the references or their equivalent should be used.

(6) When modeling or other simulation methods are employed to evaluate the affects of mining on the hydrologic regime both on and off the proposed permit area, representative seasonal precipitation data shall be reported.

(7) The location of monitoring stations used to collect data for the permit application should be shown on a map which conforms to the standards.

H. Determination of the Probable Hydrologic Consequences

See Attachment II.H

The following shall be provided for all Technical Data submitted in answer to these parts:

(a) The names of persons or organizations who collected and analyzed the data

(b) The dates of collection and analysis

(c) A description of the methodology used to collect and analyze the data

The permit application shall contain a determination of the probable hydrologic consequences (PHC). The probable hydrologic consequence (PHC) is a prediction of possible adverse affects of the proposed surface mining and reclamation activities upon the quantity and quality of surface and groundwater systems both on and off the proposed permit area and is based upon the results and findings of the base line or pre-mining geologic and hydrologic studies. The assessment may be based upon site specific studies or from representative data that can be transferred or can be made to simulate the condition at the proposed permit and off-site areas.

(1) Specifically, the PHC prediction shall include an estimate of the impact of the mining and reclamation operations upon the dissolved and suspended solids, total iron, total manganese and pH of surface and ground water.

(2) In the event it is determined that off-site water quantity and quality cannot be protected from adverse affects of the proposed surface mining operations, the applicant shall identify an alternative source of water supply of at least equal quality and quantity that can be developed to replace the existing one.

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, and archeological, cultural, and historic resources.

I. Land Use Information

(1) Describe in detail the land use(s) existing at the time of the application. Give the number of acres and describe sufficiently so the areas can be identified on a map. If necessary, include a map showing land use units.

See Figure II.I.1-1 in Appendix II.I.1.

Increment	Area, acres	Land Use
1	120	Pasture/grassland (65 acres) Undeveloped (55 acres)
2	58	Pasture/grassland (38 acres) Undeveloped (20 acres)
3	107	Pasture/grassland (13 acres) Undeveloped (94 acres)
Total	285	

(2) Give the applicable land use classification under local law, if any.

Not Applicable.

(3) Is any of the area prime farmland? (**X**) YES ( ) NO

If yes, submit the information required.
If no, show or state how the determination was made.

See Appendix II.I.3 for Farmland Classification information from USDA Natural Resource Conservation Service.

(4) Has the land use of any area on the proposed permit changed within the last 5 years?
( ) YES (**X**) NO

If yes, identify those areas and describe their historic use.

(5) Has any area within the proposed permit been previously mined?
( ) YES (**X**) NO

If yes, complete the following:

(a) Describe the area or show on a map.

(b) Was the area reclaimed? ( ) YES ( ) NO
If yes, under what law? ( ) 1969, ( ) 1975, ( ) Interim Law

(c) Describe the land use of the area prior to any mining, or if this cannot be determined, describe the land use(s) of surrounding unmined land.

(6) Describe in detail, land uses of areas adjacent to the proposed permit area.

Areas adjacent to the proposed permit area are similar to permit area, with mostly pastures, hay fields, undeveloped land, and some houses and out buildings

(7) Discuss the capability of the lands within the permit area to support a variety of land uses other than the current use.

Based on the USDA Natural Resource Conservation Service web soil survey for DeKalb County, Alabama, the area is somewhat to very limited for development of small commercial buildings. Agricultural use is limited to the current uses.

(8) Give the pre-mining productivity of the proposed permit area based on actual yield data or estimates based on data from similar sites. (If estimates, give sources of data used).

Limited productivity data were available through the USDA Natural Resource Conservation Service web soil survey for DeKalb County, Alabama. Fescue yield ranges from 3 to 10 AUM. Pasture yield ranges from 5 to 12 AUM. Soybean yield ranges from 30 to 35 Bu for the majority of soils in the permit area. Corn yield ranges from 70 to 75 Bu for the majority of the soils in the permit area. Oat yield is 70 Bu for the majority of the soils in the permit area.

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, and archeological, cultural, and historic resources.

See Attachment II.A

J. Vegetation Information:

Delineate on a map, or describe in detail, the existing plant communities within the proposed permit area (and adjacent if required). List the predominant overstory, understory, and ground cover species (use common name only). Give approximate acreage covered by each plant community and approximate age of timber stands.

The vegetative cover commonly found on Hartsell-Muskingum soil is mixed hardwoods and pines in the forested areas. The canopy in this area consists of various oaks, hickories, sweetgum, elm, maple and pines. The undergrowth includes primarily shrubs, vines, and briarwood, such as, southern dewberry, Virginia creeper, poison ivy, muscadine grape, greenbriers, and exotic Japanese honeysuckle.

Provide the name, address and position of officials of each private or academic research organization or governmental agency consulted in preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quality, and archeological, cultural, and historic resources.

See Attachment II.A

ATTACHMENT II.A

PUBLIC- PRIVATE CONTACTS

ATTACHMENT II.A

PUBLIC – PRIVATE CONTACTS

Wetlands Designation

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Cultural, Historical, Archaeological

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Frank White, State Historic Preservation Officer
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Land Use and Vegetation

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Standard Laboratories, Inc.(Overburden Testing)
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Hydrology

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Analytical Environmental Services, Inc.
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Atlanta, Georgia 30340

Soils

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Marietta, Georgia, 30062

S&ME (Soil Lab Testing)
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Chattanooga, Tennessee 37416

Moreland Altobelli Associates, Inc.
2211 Beaver Ruin Road
Suite 190
Norcross Ga 30071

ATTACHMENT II.A.3-1

ATTACHMENT II.A.3-1

A Preliminary Wetlands/Jurisdictional Water Determination Report has been submitted to USACE. Concurrence by the USACE is still PENDING.

ATTACHMENT II.A.8.1.a.1-1

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June 18, 2014

Mr. Dan Everson
United States Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

RE: USFWS Reference No, 2014-TA-0209
Protected Species Habitat Assessment Addendum
Dekalb County, Alabama

Dear Mr. Everson,

On behalf of Ridgeholm Energy Partners, LLC. (Ridgeholm), EarthCon Consultants, Inc. (EarthCon) is pleased to submit additional information regarding the federally listed Indiana Bat (*Myotis sodalis*) and Northern Long-Ear Bat (*Myotis septentrionalis*) and the proposed Ridgeholm John Poe surface mine in Dekalb County, Alabama.

You previously received information from AST Environmental dated December 28, 2013 and February 25, 2014 and have responded to each of these in letters dated January 24, 2014 and March 4, 2014, respectively.

Since these initial submittals, Ridgeholm has decided to limit their Alabama Surface Mining Commission permit area from over 1,000 acres to include only three increments totaling approximately 283 acres. The proposed Increments 1, 2 and 3 are shown on Figure 1 included in Appendix A.

Ridgeholm has also requested that Mr. Dan Spaulding perform a specific bat habitat study for development of these three increments. Mr. Spaulding conducted a habitat assessment on the subject area between June 7 and June 16, 2014. His findings indicated that "No suitable habitat for the bats was available and no bats were observed at the site, therefore, no impacts are to be expected from the project." A copy of this habitat study by Mr. Spaulding dated June 17, 2014, is included in Appendix B.

We would appreciate your review of this new information and request that the requirement to limit tree removal from October 15 to March 31 be changed to allow tree removal year round.

If you have any questions regarding this request, please feel free to contact Robert Decker or Gary Horwitch at 281-240-5200.

Sincerely,
EARTHCON CONSULTANTS, INC.

Robert Decker, P.E. (TX, FL, CO)
Senior Engineer

Gary Horwitch, P.E. (AL # 32845-E)
Principal Engineer/Vice President

cc: Ridgeholm Energy Partners, LLC

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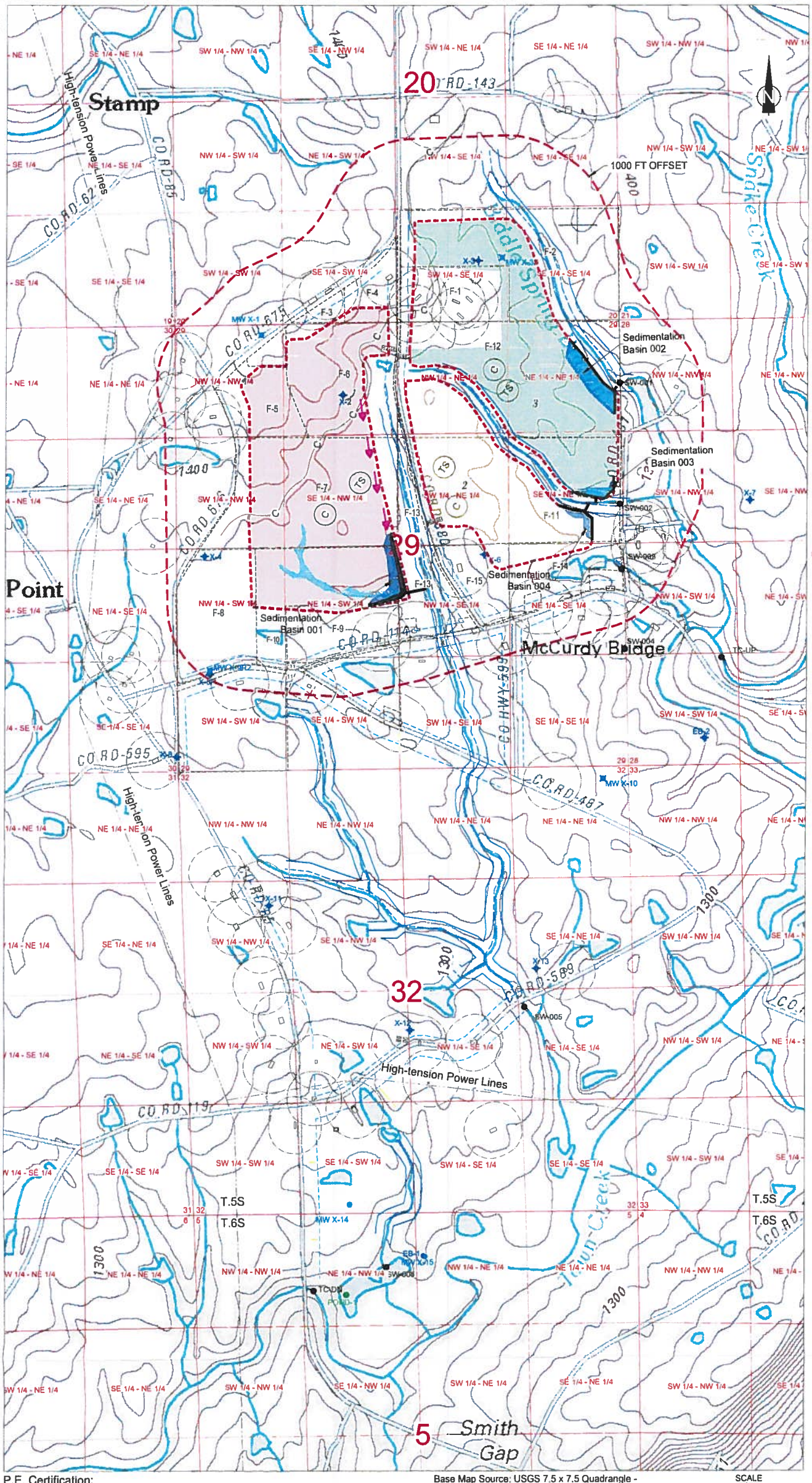
APPENDIX A



LEGEND

- Increments: Proposed Areas to be Disturbed by Mining
- Wetland
- Exploration Boring Location
- Drainage Basin
- Property Ownership
- Sediment Basin
- Surface Water Sampling Locations and Outfall
- Perennial Stream
- Impounded Water
- Occupied Dwelling with 300' Offset
- High Tension Powerline
- Roadway Offset
- Perennial Stream
- Stream Offset
- Monitoring Well Location
- Parcel Boundary
- 29 Section Number
- SW 1/4 - SW 1/4 Quarter-Quarter of Section
- Primary Haul Road
- Pre-Mining Percent Slope
- Countour Line
- Diversion Ditch
- C Coal Crop
- C Coal Stockpile (Location Subject to Change
- TS Top Soil Stockpile (Location Subject to Change)
- Temporary Spoil Storage Area
- Final Highwall Reclamation Bench

PERCENT OF SLOPE PRE-MINING:

INCREMENT 1:	2.9%
INCREMENT 2:	1.7%
INCREMENT 3:	2.3%

INCREMENT COLOR CODE:

- INCREMENT 1
- INCREMENT 2
- INCREMENT 3

OWNERSHIP LEGEND:

F-1	Biddle, James Edward & Dorothy Evelyn
F-2	Clark, Laura Mae
F-3	Biddle, Jason
F-4	Biddle, Paul & Norma
F-5	Mitchell, Mark &
F-6	Biddle, Jason
F-7	Biddle, Bessie, M.
F-8	McCurdy, Robert D & Martha A
F-9	Haynes, Larry, J & Hazel M
F-10	Haynes, Hazel L & Larry J
F-11	Biddle, Houston R Jr.
F-12	Biddle, Jack R
F-13	Johnson, Donna M & Tim
F-14	McCurdy, James H
F-15	Hulgan, Donald

INCREMENT 1

MINING AREA	119.34 AC.
PRIMARY ROADS	0.11 AC.
BASIN 001	2.18 AC
TOTAL BONDED AREA	119.34 AC

INCREMENT 2

MINING AREA	56.53 AC.
PRIMARY ROADS	0.14 AC.
BASIN 004	1.05 AC
TOTAL BONDED AREA	56.53 AC

INCREMENT 3

MINING AREA	106.68 AC.
PRIMARY ROADS	0.07 AC.
BASIN 002, 003	4.78 AC.
TOTAL BONDED AREA	106.68 AC

TOTAL PERMIT AREA 282.55 AC

P.E. Certification:
I hereby certify this map to be true and correct to the best of my knowledge and belief:

Gary Horwitch, P.E.
Alabama Professional Engineer No. 32845-PE

Base Map Source: USGS 7.5 x 7.5 Quadrangle - Dugout Valley, 2011

Property located within Township 5S, Range 9E, Sections 20 and 29.

SCALE FEET
0 500 1000

Ridgeholm Energy Partners, LLC.
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

EARTHCON®
Environmental Challenges
BUSINESS SOLUTIONS®
EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, Tx 77014

PERMIT MAP
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	05/2014	1

APPENDIX B

DAN SPAULDING Environment Consultant

965 A.P. HOLLINGSWORTH ROAD, WELLINGTON , ALABAMA 36279
CELL: 256-458-0422 **OFFICE**: 256-237-6766 **FAX**: 256-237-6776

17 June 2014

Robert A. Decker, P.E.
Senior Engineer
EarthCon Consultants, Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

Dear Mr. Decker:

This letter is my report of findings from a study to determine if any habitat for the federally listed Indiana bat (*Myotis sodalis*) and Northern Long-Ear Bat (*Myotis septentrionalis*) occurs on approximately 283 acre site (in 3 increments of 119 acres; 57 acres; and 107 acres) of a proposed surface mining project at John Poe Mine in DeKalb County, Alabama. I conducted a habitat assessment between the dates of June 7-16, 2014. **No** suitable habitat for the bats was available and no bats were observed at the site, therefore, no impacts are to be expected from the project.

The site is located east of SR-85 and north or SR-144 between County Roads 675 and 141 southeast of the town of Henagar. The area is in a rural setting and contains disturbed areas with scattered patches of woods. The project is within the Sand Mountain district of the Cumberland Plateau.

Habitat Description

The sites surveyed contained pasture (Fig. 1) with adjacent secondary woodlands (Fig. 2). The forested areas were mostly were a mix of hardwoods and pines. This habitat occurs in patches

around pastures and along intermittent streams and drainages. Common canopy trees occurring in various combinations include post oak (*Quercus stellata*), southern red oak (*Quercus falcata*), black oak (*Quercus velutina*) mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), and Virginia pine (*Pinus virginiana*).

Common woody plants that were found under the canopy are black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), persimmon (*Diospyros virginiana*), black cherry (*Prunus serotina*), sassafras (*Sassafras albidum*), winged elm (*Ulmus alata*), flowering dogwood (*Cornus florida*), and red cedar (*Juniperus virginiana*), Chinese privet (*Ligustrum sinense*), sparkleberry (*Vaccinium arboreum*), winged sumac (*Rhus copallinum*), southern dewberry (*Rubus trivialis*), muscadine grape (*Vitis rotundifolia*), southern dewberry (*Rubus trivialis*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), greenbriers (*Smilax* spp.) and the exotic Japanese honeysuckle (*Lonicera japonica*).

Threatened and Endangered Species

No suitable habitat was located in the project area and no bats were observed. Both species require caves or rock shelters for its hibernacula during the winter season and typically need larger trees with exfoliating bark or old dead to dying trees for summer roosting. These bats migrate to foraging areas from their hibernacula in the summer and will hibernate in caves during the fall and winter. The habitat of the site was poor for summer roosting and no caves or rock shelters were observed.

Additional Studies And Mitigation Recommendations

Based on literature review and a field survey of the project site, **no** additional studies are required to be in compliance with state and federal endangered species laws associated with project impacts to Threatened & Endangered species. It is recommended that appropriate Best Management Practices (BMPs) be applied to minimize siltation and in-stream disturbance to sediments, which can help to mitigate impacts to water quality in the project area.

http://swcc.alabama.gov/pages/erosion_handbook.aspx

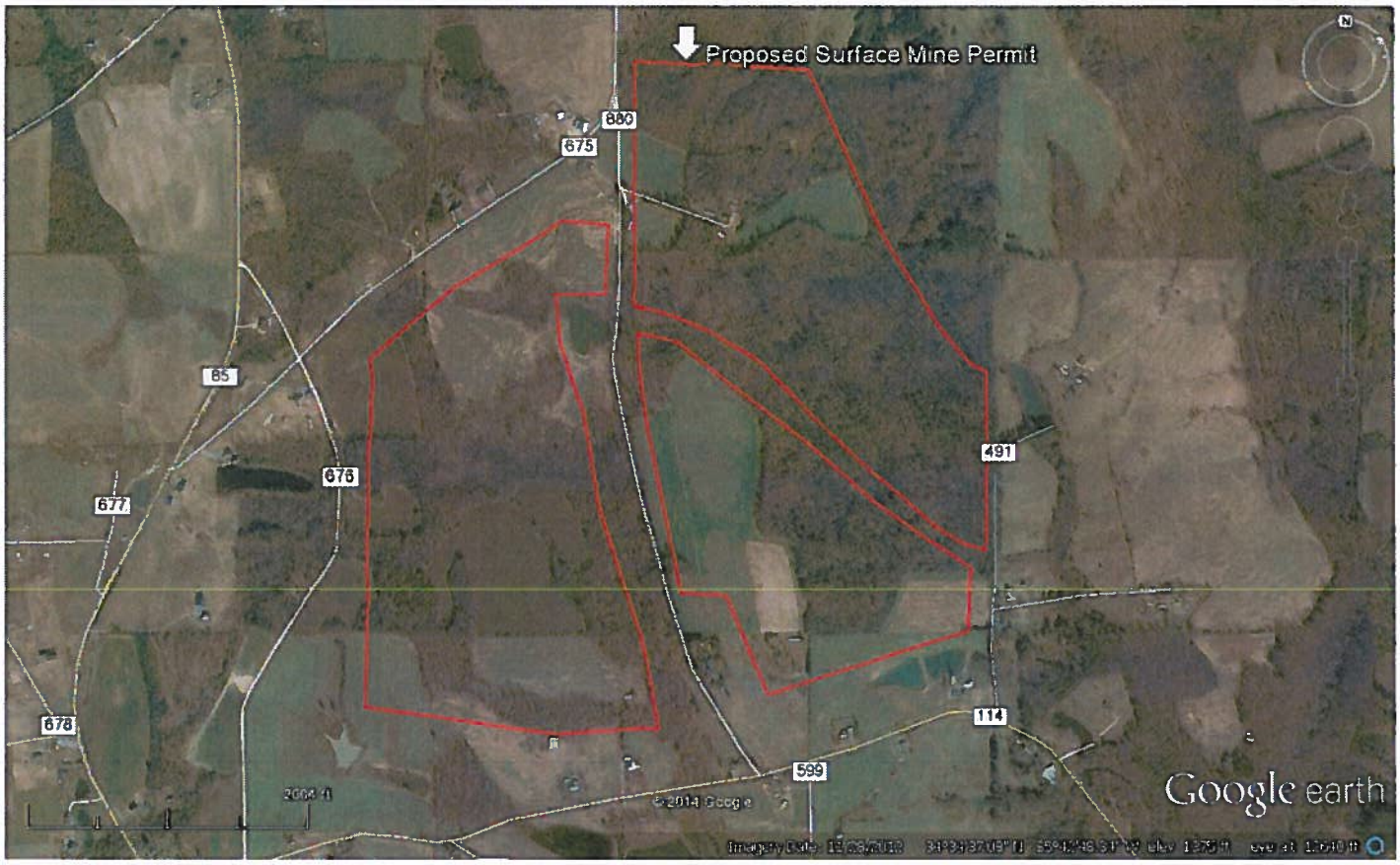
Sincerely,

Daniel D. Spaulding

Daniel D. Spaulding
Environmental Consultant
dspaulding@annistonmuseum.org

Attachments:
Site Map
Site Photographs

SITE VICINITY MAP



SITE PHOTOGRAPHS

Figure 1. Woods

Figure 2. Pasture

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WILDLIFE AND FRESHWATER FISHERIES DIVISION

64 North Union Street, Ste. 567
P. O. Box 301456
Montgomery, AL 36130-1456
Phone: (334) 242-3465 Fax: (334) 242-3032
www.outdooralabama.com

ROBERT BENTLEY
GOVERNOR

N. GUNTER GUY, JR.
COMMISSIONER

CURTIS JONES
DEPUTY COMMISSIONER

The mission of the Wildlife and Freshwater Fisheries Division is to manage, protect, conserve, and enhance the wildlife and aquatic resources of Alabama for the sustainable benefit of the people of Alabama.

CHARLES F. "CHUCK" SYKES
DIRECTOR

FRED R. HARDERS
ASSISTANT DIRECTOR

April 17, 2014

Mr. Jeff Selby
Mr. Michael McConnell
AST Environmental
98 Mark Selby Private Drive
Decatur, Alabama 35603

RE: Protected Species Habitat Assessment
1,046.4 Acre Site – DeKalb County, Alabama

Dear Mr. Selby and Mr. McConnell:

The Division of Wildlife and Freshwater Fisheries, Department of Conservation and Natural Resources has reviewed the above-referenced project and provides the following comments:

- Based on the information provided in your letter dated March 11, 2014 and our own research, it does not appear that this project will adversely affect any state- or federally protected species. We note that you have coordinated with the U. S. Fish and Wildlife Service by letter dated March 04, 2014 and January 24, 2014 regarding potential impacts to federally-protected species for the proposed project area. If adverse impacts to state-protected species occur as a result of the project, further coordination with the Division of Wildlife and Freshwater Fisheries (334-353-7484) will be required.

- No net loss of stream or wetland function and habitat should occur as a result of the project. If flowing streams, ditches, or wetlands will be impacted by the proposed activity, the U.S. Army Corps of Engineers - Nashville District ("the Corps"; 615-369-7500), should be contacted to determine if the activity falls under a Corps regulation requiring mitigation for adverse ecological, morphological, or hydrological impacts. Be advised that the Corps advises that all wetlands on mine sites, whether on previously disturbed or pristine areas, fall within the category of jurisdictional wetlands; however, dredge and fill activities might be permitted under specified conditions. We have no objection to the use of a wetland mitigation protocol such as WRAP (the Wetland Rapid Assessment Procedure), provided it is properly applied and provided that temporal losses are correctly accounted for. We have no objection to the purchase of mitigation credits from a Corps-sanctioned wetland mitigation bank.

- The density or diversity of aquatic biota is not adversely impacted and that aquatic habitat quality in streams and wetlands is not diminished: excessive siltation resulting from uncontrolled erosion at a mine site can be as destructive to the aquatic ecosystem of a stream or wetland as acid mine

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, gender, national origin, or disability in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

discharges. Sediment ponds should be temporary and subsequently removed post mining. The best way to protect aquatic habitat is to prevent sediment from entering a stream or wetland, not to contain the sediment within the stream or wetland once it has entered the aquatic ecosystem. We therefore recommend that spoil banks or other slopes be grassed as early as possible (well prior to reclamation), that silt barriers, terraces, and check dams be properly installed and maintained, that streamside buffer zones be 200 feet in width and well vegetated in order to function properly, that sedimentation ponds not be constructed in streams or wetlands, and that the mine owner/operator should be responsible for restoration or mitigation if streams or wetlands are adversely impacted by mining activities.

- Channel realignment, excavation, diversion or alteration of flow, impoundment, or excessive sedimentation of streams should not occur as a result of mining. If such impacts do occur, the mine owner/operator should provide corrective action through active restoration or stream mitigation for unresolved impacts.

- State water quality standards (particularly those related to erosion control, water turbidity, and dissolved oxygen) should be strictly adhered to.

We appreciate the opportunity to comment on this project. Please contact me if we may be of further assistance (334-353-7484).

Sincerely,

Taconya D. Goar

Taconya D. Goar
Environmental Coordinator

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO
2014-TA-0209

MAR 04 2014

Mr. Jeff Selby
AST Environmental
98 Mark Selby Private Drive
Decatur, AL 35603

Dear Mr. Selby:

Thank you for your February 25, 2014, letter written in response to our January 24, 2014, letter and requesting our concurrence that the proposed John Poe Mine in DeKalb County, Alabama, is not likely to adversely affect the endangered gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), green pitcher plant (*Sarracenia oreophila*) and harperella (*Ptilimnium nodosum*), as well as the proposed endangered northern long-eared bat (*Myotis septentrionalis*). The proposed project is a 1,046-acre surface coal mine located at approximately 34°34'52.6"N and -85°41'44.65"W. We are providing the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA).

Based upon the information and photos contained in your February 25, 2014, letter, any habitat that may have once existed in the proposed project area for the green pitcher plant and harperella appears to have been degraded or destroyed as a result of cattle activity. We, therefore, concur with your assessment that the proposed project is not likely to affect these two endangered plant species. Your original letter, dated December 28, 2013, contained sufficient information to support your assertion that no suitable habitat (caves, karst) for the gray bat existed on site. Therefore, we concur with your assessment that the proposed project is not likely to affect the gray bat. In your most recent correspondence you state that all tree clearing for the project will occur from October 15 to March 31, in accordance with the Range-wide Indiana Bat Protection and Enhancement Plan Guidelines (July 2009). Based on this confirmation, we concur with your conclusion that the proposed action may affect, but is not likely to adversely affect, the endangered Indiana bat and proposed endangered northern long-eared bat.

In view of this, we believe that requirements of section 7 of the Endangered Species Act (Act) have been satisfied. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner that was not previously considered; (2) this action is subsequently modified in a manner not previously considered in this assessment; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

If you have any questions or need additional information, please contact Ms. Karen Marlowe of my staff at (205) 726-2667. Please use the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: USACE, Birmingham, AL
ASMC, Jasper, AL

February 25, 2014 JS12-136D

United States Fish and Wildlife Service
1208-B Main Street
Daphne AL 36526

To: Mr. Dan Everson

RE: Response to a letter dated January 24, 2014
USFWS Reference 2014-TA-0209
Protected Species Habitat Assessment
1,046.4 Acre Site - DeKalb County, Alabama

Mr. Everson:

This letter is in response to a letter from your office dated January 24, 2014. This project and response was discussed with Karen Marlow (USFWS) on February 21, 2014. The proposed project is a surface coal mine to be operated by Ridgeholm Energy Partners, LLC (Ridgeholm). AST Environmental (AST) performed a protected species habitat assessment for the referenced project. Your response to our initial report indicated concern for the following species:

Green pitcher-plant (*Sarracenia oreophila*)	Endangered
Harperella (*Ptilimnium nodosum*)	Endangered

- The 3.3-acre degraded wetland (wetland number W-11) to be impacted during phase 1 of the proposed mining operation is located within an active cattle operation. Due to the degraded nature of this wetland and the ongoing influence of the cattle operation, AST does not believe that it provides suitable habitat for Harperella or the Green pitcher-plant. Additional photographs of this area are included to support this position.

- All streams located on site will be avoided during the proposed mining operations along with a 200-feet wide buffer centered on each stream. By doing so Harperella habitat will be avoided and so will potential impacts to individuals if they exist on site.

Indiana bat (*Myotis sodalis*)	Endangered
Gray bat (*Myotis grisescens*)	Endangered
Northern long-eared bat (*Myotis septentrionalis*)	Proposed Endangered

- In order to avoid adverse effects to listed bat species that may potentially forage or roost on site during the summer season, Ridgeholm will limit tree removal to a period from October 15 to March 31.

It is our professional opinion that further surveys for the two listed plant species are not needed for wetland W-11 due to the lack of suitable habitat and the ongoing disturbance to the botanical community by the active cattle operation. AST is requesting written approval for our plan to proceed with the project. Should you need additional information or have questions, please feel free to contact me at (256) 476-7355.

Sincerely,

Jeff Selby, M.S.
Member / Senior Biologist
AST Environmental

Michael McConnell
Environmental Scientist
AST Environmental

PHOTOGRAPH 1

Wetland W-11. Degraded wetland / Cattle mire located within proposed Phase 1. Taken by Mike McConnell, 7-25-13.

PHOTOGRAPH 2

Wetland W-11. Degraded wetland / Cattle mire located within proposed Phase 1. Taken by Mike McConnell, 7-25-13.

PHOTOGRAPH 3

Wetland W-11. Degraded wetland / Cattle mire located within proposed Phase 1. Taken by Mike McConnell, 7-25-13.

PHOTOGRAPH 4

Wetland W-11. Degraded wetland / Cattle mire located within proposed Phase 1. Taken by Mike McConnell, 7-25-13.

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:
2014-TA-0209

JAN 24 2014

Mr. Jeff Selby
AST Environmental
98 Mark Selby Private Drive
Decatur, AL 35603

Dear Mr. Selby:

Thank you for your December 28, 2013, letter with which you transmitted a protected species habitat assessment for Ridgeholm Energy Partners, LLC's proposed John Poe Mine in DeKalb County, Alabama. The proposed project is a 1,046-acre surface coal mine located at approximately 34°34'52.6"N and -85°41'44.65"W. We have reviewed the information and are providing the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Endangered, Threatened and Proposed Species

We have determined that the following federally listed and proposed species may occur within the proposed project area:

Gray bat, *Myotis grisescens* - Endangered
Indiana bat, *Myotis sodalis* - Endangered
Northern long-eared bat, *Myotis septentrionalis* - Proposed Endangered
Green pitcher plant, *Sarracenia oreophila* - Endangered
Harperella, *Ptilimnium nodosum* - Endangered

According to your protected species habitat assessment, suitable summer roosting habitat for the Indiana bat is present on the site, as well as suitable habitat for the green pitcher plant and harperella. Based upon the habitat description, there is also suitable summer roosting habitat on site for the proposed endangered Northern long-eared bat. Although you state that, even though there is potential summer roosting and forage habitat on site for the Indiana bat you do not expect this species to be affected by the proposed mining operation, you provided no information upon which this opinion may have been based. Similarly, you state that the green pitcher plant and harperella are not expected to be impacted by the proposed surface coal mining operation because "...all streams and most wetlands will be avoided during mining operations." Systematic surveys for these plant species on site were not performed.

In accordance with the 2013 Revised Range-wide Indiana Bat Summer Survey Guidelines (May 2013) (http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html, the next step (Step 3 in the guidelines) is to assess the potential for adverse effects to the Indiana bat. Please provide information on how you will avoid adverse effects (e.g., selective tree removal, timing of tree removal, etc.), or, if you are unable to do so, the results of your acoustic and/or mist-netting surveys. For information on the Northern long-eared bat and Federal agency responsibilities as they pertain to this proposed endangered species, please refer to the Northern Long-Eared Bat Interim Conference and Planning Guidance (January 2014), available at http://www.fws.gov/midwest/endangered/mammals/nlba/index.html.

We recommend that surveys for the plant species identified above be conducted by a qualified botanist. Prior experience with the species is strongly recommended for the botanist conducting the survey. A visit to a known population of each of the plant species identified above immediately prior to any surveys is recommended to become familiar with the species, habitat and condition of plants at that time of year. Surveys cannot be accepted if the plants have no above-ground vegetation at the time of the surveys. Please provide the name of the surveyor, his/her credentials, and a thorough description of survey methods and habitats present, including shrub and forb species observed.

Aquatic Concerns

We recommend a maximum discharge turbidity of 10 NTUs (nephelometric turbidity units) or receiving stream background levels for turbidity in any discharge from your site. We also recommend a vegetated buffer of at least 100 feet for all tributaries.

Additional Recommendations

We recommend adhering to Alabama Surface Mining Commission Administrative Code, Chapter 880-X-10C, PERFORMANCE STANDARDS SURFACE MINING ACTIVITIES, and the development of an erosion control plan tailored to the mining site. We also recommend development of mine plans that closely adhere to protective measures in ADEM regulations sections 335-6-10-.06(a) and (c) to maintain minimum water quality conditions applicable to all State waters.

We would like to emphasize the importance of the following BMPs to control erosion and minimize impacts to aquatic systems:

- provide 100-ft naturally vegetated buffers (150-ft in steep areas) adjacent to any streams, ditches, or drainages consisting of trees, shrubs, and grasses, or other herbaceous species to protect surface waters from soil runoff and mining contaminants.

- size settling ponds to accommodate a 25-year, 24-hour rain or flood event and avoid placing ponds in sites with steep topography or in buffer areas.

- inspect BMP structures within 24 hours of each significant rainfall event and take immediate corrective action if erosion or soil runoff is observed.

- monitor water quality (especially turbidity or total suspended solids) to assure that discharges/runoff do not increase stream turbidity above background levels.

- immediately revegetate any disturbed areas not actively mined.

- execute any work that results in exposed earth on slopes leading to wetlands or surface waters during periods when significant rainfall is not predicted.

- maintain the State's standard for pH at all times ("Wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5" (ADEM 1992)). This is particularly important for sustaining a healthy ecosystem and aquatic fauna.

For additional information regarding best management practices, consult the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (March 2009), available on-line at: http://swcc.alabama.gov/pages/erosion_control.aspx?sm=b_b.

Upon receipt and review of the recommended species survey reports and habitat assessments, we will provide a section 7 review of your project. If you have any questions or need additional information, please contact Ms. Karen Marlowe of my staff at (205) 726-2667. Please use the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

Dan Everson

Dan Everson
Deputy Field Supervisor
Alabama Ecological Services Field Office

cc: USACE, Birmingham, AL
ASMC, Jasper, AL

December 28, 2013 JS12-136D

United States Fish and Wildlife Service
1208-B Main Street
Daphne AL 36526

To: Mr. William Pearson, USFWS

RE: Protected Species Habitat Assessment
1,046.4 Acre Site - DeKalb County, Alabama

Mr. Pearson:

AST Environmental (AST) has performed an assessment in order to determine if the presence or absence of suitable habitat for the protected species exists within the project boundary of a proposed surface coal mine located in DeKalb County Alabama. This assessment was conducted at the request of Mr. Sam Magruder of Ridgeholm Energy Partners, LLC. This habitat assessment was completed in general accordance with the provisions of the Endangered Species Act of 1973.

INTRODUCTION

The subject property is a 1,046.4 acre site located in DeKalb County near Henagar, Alabama. The subject property is situated east of County Road 85 and south of County Road 143. The subject property consists of wooded tracts with standing timber, livestock pastures and hay fields. There are single family residential dwellings and small farming operations located throughout the property. The site includes several headwater tributaries to Town Creek and associated wetlands.

During the past year, AST has worked with Ridgeholm Energy Partners in an effort to initially inventory natural resources located on the subject property and to ultimately assist with planning of proposed mining operations in order to minimize environmental impacts associated with project implementation. This was achieved primarily by developing a mining plan which reduced and avoided proposed impacts to streams and wetlands.

The phased mining plan calls for the avoidance of nearly all wetlands and streams located within the project boundary. One low quality wetland is planned to be impacted during Phase 1 of the proposed mining operation. This wetland is approximately 3.33 acres in size and currently located within an active cattle pasture (see map).

PROTECTED SPECIES HABITAT ASSESSMENT

AST obtained information from the USFWS database and other published documents, and also conducted a field investigation as part of the habitat assessment. The following species are listed by the USFWS for DeKalb County:

Upland combshell (*Epioblasma metastriata*)	Endangered
Finelined pocketbook (*Lampsilis altilis*)	Threatened
Ovate clubshell (*Pleurobema perovatum*)	Endangered
Southern clubshell (*Pleurobema decisum*)	Endangered
Blue shiner (*Cyprinella caerulea*)	Threatened
Green pitcher-plant (*Sarracenia oreophila*)	Endangered
Harperella (*Ptilimnium nodosum*)	Endangered
Kral's water-plantain (*Sagittaria secundifolia*)	Threatened
Indiana bat (*Myotis sodalis*)	Endangered
Gray bat (*Myotis grisescens*)	Endangered

FIELD RECONNAISANCE

Following the published information review, AST conducted a field reconnaissance of the subject property throughout 2013. The majority of the subject property is primarily used for agriculture. A large portion of the property is currently in livestock pastures, hay fields and standing timber (see attached photograph log). The subject property is located within the Town Creek watershed. Ephemeral, intermittent, and perennial tributaries to Town Creek are located on site and drain primarily in a southerly to easterly direction. Wetlands and constructed farm ponds are associated with many of the tributaries located on site. All streams and wetlands will be avoided on site, except for a 3.33 acre low quality cattle mire wetland.

Surveys with the intent to collect protected species were not conducted as part of this assessment; however documentation of incidental observations of individuals or populations of protected species was included in the scope of this assessment.

HABITAT ASSESSMENT

Mussels

- The **Upland Combshell** is federally listed as an endangered species. It is endemic to the Mobile River Basin and restricted to shoal habitats in medium to large rivers (Mirarchi, et. al.).

- The **Finelined Pocketbook** is federally listed as threatened. It is endemic to the eastern reaches of the Mobile River Basin and exists in various tributaries of most major rivers within its distribution (Mirarchi, et. al.).

- The **Ovate Clubshell** is federally listed as an endangered species. It is endemic to the Mobile River Basin and found in medium to large streams in coastal plain streams and rarely found within main riffle or runs of these streams (Mirarchi, et. al.).

- The **Southern Clubshell** is federally listed as an endangered species. It is endemic to the Mobile River Basin. Its habitat includes flowing areas in medium to large streams but can also be found in deep gravely sand in slow steady current and occasionally in swift shallow shoals and pools (Mirarchi, et. al.).

The target mussel species listed for DeKalb County are primarily associated with the Mobile River Basin and have historically been found in the Coosa, Tombigbee, and Tallapoosa River systems (NatureServe).

Suitable habitat for freshwater mussels within the project boundary is marginal and limited to one perennial stream (a tributary to Town Creek). This small perennial is likely not large enough to provide stable habitat for these species. Freshwater mussel populations or individuals are not expected to be present on site and are not expected to be affected by the proposed activities. Streams located on the subject property will be avoided during mining operations with a 100 feet buffer extending from the top of each bank, additionally, a series of sedimentation ponds will eliminate discharge of suspended solids from mining operations into adjacent waterways .

Fish

- The **Blue Shiner** is listed as a threatened species. The Blue Shiner is endemic to the Mobile Basin and uncommonly found in a few flowing streams of the Coosa River system (Mirarchi, et. al.) It prefers cool, clear, small to medium-sized rivers with firm sand, gravel, or rubble substrate in pools and areas with moderate current (NatureServe)

Suitable habitat for Blue Shiner within the project boundary is marginal and limited to one small perennial stream (a tributary to Town Creek). This perennial is likely not large enough to provide suitable habitat for the Blue Shiner. Blue Shiner populations or individuals are not expected to be present on site and are not expected to be affected by the proposed activities because all streams will be avoided during mining operations.

Vegetation

- The **Green Pitcher-plant** is a federally endangered species. It inhabits seepage bogs and stream banks, as well as moist upland areas. It has an unusual yellow flower that blooms from April through June.

Suitable habitat for Green Pitcher-plant is present on site, primarily within the headwater tributaries of Town Creek and associated wetlands. No incidental sightings of Green Pitcher-plant occurred during the habitat assessments. All wetlands will be avoided except for a 3.33 acre wetland in Phase 1. This wetland is a low quality wetland within a cattle pasture and is influenced by cattle traffic and grazing (see Photograph 1). Green Pitcher-plant individuals or populations are not expected to be affected by the proposed activities because all streams and most wetlands will be avoided during mining operations.

- The **Harperella** is a federally endangered species. It inhabits rocky riverbeds, upland depression ponds and granite outcrop seepages. It blooms from July through October.

Suitable habitat for Harperella is present on site, primarily within the headwater tributaries of Town Creek and various upland farm ponds on site. These areas and appropriate buffers will be avoided during phased mining operations. No incidental sightings of Harperella occurred during the assessments. Harperella individuals or populations are not expected to be affected by the proposed activities because all streams and most wetlands will be avoided during mining operations.

- The **Kral's Water-plantain** is federally listed as threatened. It is an aquatic plant that grows on or below the water surface in rocky creek beds and nearby slopes. It blooms inconspicuously from May through the fall.

Suitable habitat for Kral's Water-plantain is present on site, primarily within the headwater tributaries of Town Creek. No incidental sightings of Kral's Water-plantain occurred during the assessment. Kral's Water-plantain individuals or populations are not expected to be affected by the proposed activities because all streams and most wetlands will be avoided during mining operations.

Bats

- The **Gray Bat** is federally listed as an endangered species. The Gray Bat is a year-round cave resident, normally inhabiting caves located within one mile of a major river or reservoir. They roost in warm caves scattered along rivers in the summer to establish colonies. In the winter they relocate and hibernate deep within caves. Gray Bats are insect eaters and usually hunt and feed over water.

No caves or significant bluffs were observed throughout the survey area; however, a limestone outcropping is present on site, south of CR-487 (see photographs 18 and 19). Karst features such as seeps and springs do exist on site. Potentially suitable habitat for the Gray Bat is not present within the survey area. No incidental observations of Gray Bats were made during the habitat assessment.

Based upon lack of habitat, the Gray Bat is not expected to be present within the proposed project area; however potentially suitable summer forage habitat may be present. Gray Bat populations or individuals are not expected to be affected by the proposed project.

- The **Indiana Bat** is federally listed as endangered. This species is closely associated with caves, although the Indiana bat is suspected to dwell within floodplain and upland forests during the warmer months. Indiana Bats have been known to roost in trees smaller than 10 inches *dbh*. Indiana Bats usually breed in early October. Breeding typically takes place at night and occurs in large subterranean rooms near cave entrances. According to Harvey, et al., 85 percent of Indiana Bats hibernate in nine caves located in the eastern US.

No caves or significant bluffs were observed throughout the survey area; however, a limestone outcropping is present on site, south of CR-487 (see photographs 18 and 19). Riparian areas and wetlands were common throughout the survey area, primarily associated with ephemeral and intermittent drainages. Potential breeding or hibernating habitat for the Indiana Bat is not present due to the lack of caves. Transient Indiana Bats could potentially find summer roosting habitat within the forested riparian and wetland areas on site. No incidental observations of Indiana Bats were made during the habitat assessment.

Based upon lack of habitat, the Indiana Bat is not expected to be present within the proposed project area. Although the survey includes areas with potential summer roosting and forage habitat; Indiana Bat populations or individuals are not expected to be affected by the proposed project.

RESULTS

Phase 1 (120.0 acres)
Phase 1 is comprised of a mixture of standing timber tracts, livestock pastures, hay fields, and a 3.3 acre wetland. The wetland is a low quality wetland influenced by cattle and grazing. Listed species are not likely to inhabit this wetland due to cattle grazing and traffic.

Phase 2A (88.6 acres)
2A is comprised primarily of clear cut timber, slash and scrub-shrub. This tract lies between Biddle Spring Branch and an unnamed intermittent tributary to Biddle Spring Branch. Both streams will be avoided during mining operations.

Phase 2B (58.2 acres)
Phase 2B is comprised primarily of hay fields and small tracts of standing timber. This tract is situated south of an unnamed intermittent tributary to Biddle Spring Branch and northwest of a pond / wetland system. Streams and wetlands will be avoided during mining operations.

Phase 3 (31.0 acres)
Phase 3 is comprised primarily of livestock pasture and small tracts of standing timber. This area is situated east of a wetland and stream system. The wetland and stream system will be avoided during mining operations.

Phase 4 (51.1 acres)
Phase 4 is comprised primarily of hay fields and standing timber. This tract is situated east of a wetland and stream system and west of a perennial stream. The wetland and stream systems will be avoided during mining operations.

Phase 5 (34.7 acres)
Phase 5 is comprised primarily of hay fields and standing timber. The area is situated west of a system of farm ponds and connecting ephemeral streams. The ponds and ephemeral streams will be avoided during mining operations.

Phase 6A (10.4 acres)
Phase 6A is comprised primarily of crop fields. This tract is situated west of an intermittent stream system and north of a system of farm ponds with adjacent wetlands. Streams, ponds and wetlands near Phase 6A will be avoided during mining operations.

Phase 6B (18.4 acres)
Phase 6B is comprised primarily of hay fields and standing timber. This tract is situated east of an intermittent stream system. The stream system will be avoided during mining operations.

Phase 7 (13.0 acres)
Phase 7 is comprised primarily of crop fields. This tract is situated west of an intermittent stream and wetland system. The intermittent stream and wetland system will be avoided during mining operations.

CONCLUSION

The subject property is located within the Town Creek watershed. Ephemeral, intermittent, and perennial tributaries to Town Creek are located on site and drain primarily in a southerly to easterly direction. Wetlands and constructed farm ponds are associated with many of the tributaries located on site. Suitable habitat for listed mussels is limited and marginally present on site. Suitable habitat for listed fish is limited and marginally present on site. Suitable habitat for listed plants is present on site; however it is limited to stream and wetland areas. Streams located on site will be avoided along with appropriate buffers. The only wetland to be impacted is the 3.3 acre degraded wetland in Phase 1. This wetland is a cattle mire and not likely to provide suitable habitat for listed plant species.

AST is requesting written concurrence of this assessment. A series of maps and site photographs are included for your review and aid. Should you need additional information or have questions, please feel free to contact me at (256) 476-7355 or Mike McConnell at (256) 303-7054.

Sincerely,

Jeff Selby, M.S.
Member / Senior Biologist
AST Environmental

Michael McConnell
Environmental Scientist
AST Environmental

Attachments:
Site Map
Site Photographs

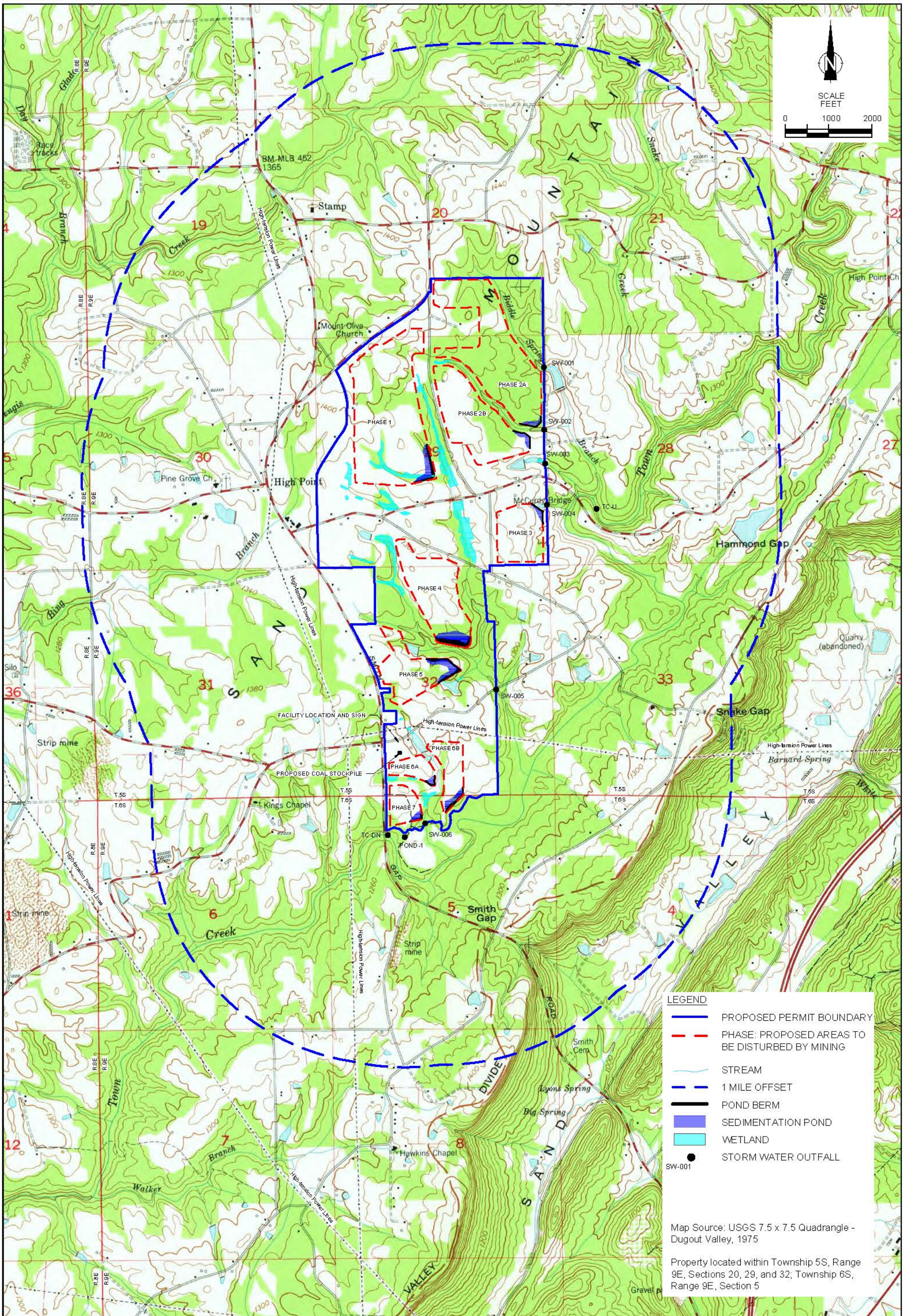
Selected References:

Harvey, Altenbach and Best. 1999. Bats of the Eastern United States. Arkansas Game and Fish Commission.

Mirarchi, Ralph E. 2004. Alabama Wildlife Volume 1 – A Checklist of Vertebrates and Selected Invertebrates: Aquatic Mollusks, Fishes, Amphibians, Reptiles, Birds, and Mammals. University of Alabama Press. Tuscaloosa, AL.

Mirarchi, Garner, Mettee and O'neil. 2004. Alabama Wildlife Volume 2 - Imperiled Aquatic Mollusks and Fishes. University of Alabama Press. Tuscaloosa, AL.

NatureServe Online Encyclopedia of Life
http://www.natureserve.org/explorer/



Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

EARTHCON®

EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

PHASE MAP
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
LDG	RAD	12/30/13	1

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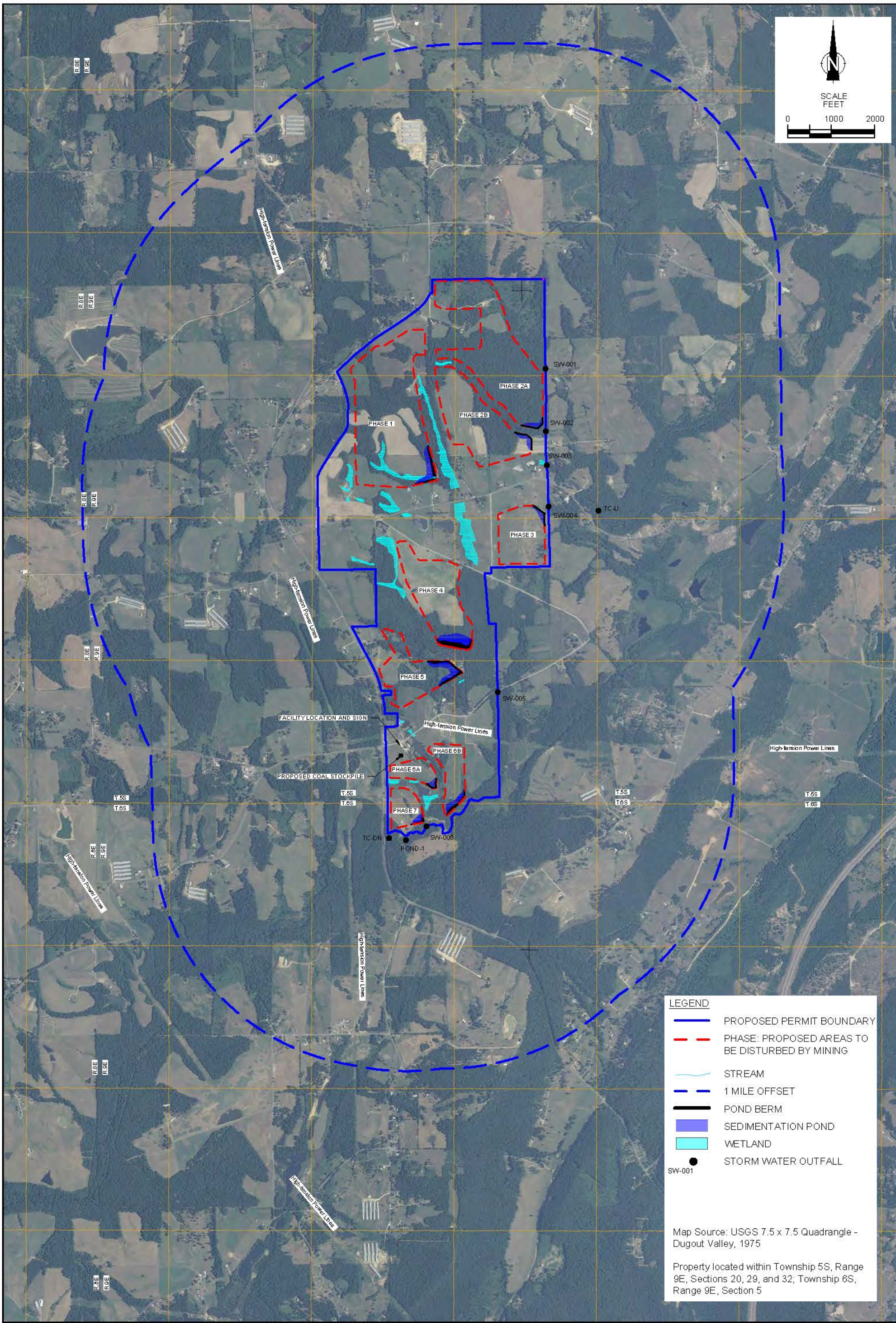

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DRAWN:	CHECKED:	DATE:	FIGURE:
LDG	RAD	12/30/13	1

T:\PROJECT FILES\Ridgeholm\Dekalb County ProjectMaps\CAD\NPDES MAP 20131230 13 PHASE MAP.dwg

PHOTOGRAPH 1

Low quality wetland / cattle mire within Phase 1. Facing northeast near the southern Phase 1 boundary. Taken 7-25-13.

PHOTOGRAPH 2

Upland forest area within Phase 1. Facing northeast near the central portion of the Phase 1 boundary. Taken 7-25-13.

PHOTOGRAPH 3

Upland forest area within Phase 2A. Facing west near the northern portion of the Phase 2A boundary. Taken 9-3-13.

PHOTOGRAPH 4

Upland forest area within Phase 2A. Facing south near the northern portion of the Phase 2A boundary. Taken 9-3-13.

PHOTOGRAPH 5

Upland forest area within Phase 2B. Facing east near the western portion of the Phase 2B boundary. Taken 4-8-13.

PHOTOGRAPH 6

Hay field within Phase 2B. Facing west near the southeastern Phase 2B boundary. Taken 4-8-13.

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Hay field within Phase 2B. Facing northeast near the southeastern Phase 2B boundary. Taken 4-8-13.

PHOTOGRAPH 8

Cattle pasture within Phase 3. Facing west from the western central portion of the Phase 3 boundary. Taken 1-29-13.

PHOTOGRAPH 9

Cattle pasture within Phase 3. Facing south near the western portion of the Phase 3 boundary. Taken 1-29-13.

PHOTOGRAPH 10

Livestock pasture and farm pond within Phase 3. Facing north near the eastern edge of the Phase 3 boundary. Taken 7-25-13.

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Livestock pasture within Phase 3. Facing southwest near the eastern edge of the Phase 3 boundary. Taken 7-25-13.

PHOTOGRAPH 12

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PHOTOGRAPH 13

Pond adjacent to and north of Phase 5. Facing northwest at the northern central portion of the Phase 5 boundary. Taken 3-28-13.

PHOTOGRAPH 14

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Livestock pasture with farm pond and outfall located adjacent to and east of Phase 7. Facing west near the eastern edge of the Phase 7 boundary. Taken 3-26-13.

PHOTOGRAPH 18

Rock outcropping located east of Phase 4. Facing northeast. Taken on 4-8-13.

PHOTOGRAPH 19

Rock outcropping located east of Phase 4. Facing northeast. Taken on 4-8-13.

ATTACHMENT II.B.2-1

University of Alabama Museums
Office of Archaeological Research

May 17, 2013

THE UNIVERSITY OF
ALABAMA
MUSEUMS

Mr. Sam Magruder
RidgeHolm Energy Partners LLC
1830 Fountain Drive, Unit 1303
Reston, VA 20190

OAR PROJECT NUMBER:
AHC TRACKING NUMBER:
ALDOT TRACKTING NUMBER:

Dear Mr. Magruder:

Please find enclosed for your company a copy of our recent report entitled "A Cultural Resources Survey of 1038 Acres near High Point, DeKalb County, Alabama", by Daryll R. Berryman of our staff. Please note that SHPO has 30 days to comment on our findings.

It has been a pleasure to be of service to RidgeHolm Energy Partners LLC. Please feel free to call for further information or services.

Sincerely,

Matthew D. Gage RPA, Director
The University of Alabama
Office of Archaeological Research

MDG:tkw
FILE:2012-13SURVEY.FCL/1

Enclosures: Survey Report
Invoice for Professional Services

13075 Moundville
Archaeological Park
Moundville, Alabama 35474
(205) 371-2266
FAX (205) 371-2494

A CULTURAL RESOURCES SURVEY OF 1038 ACRES NEAR HIGH POINT IN DEKALB COUNTY, ALABAMA

Gene A. Ford
Daryll R. Berryman

PERFORMED FOR:
RidgeHolm Energy LLC
1830 Fountain Drive, Unit 1303
Reston, VA 20190

May 2013

PERFORMED BY:

OFFICE OF ARCHAEOLOGICAL RESEARCH
The University of Alabama
University of Alabama Museums
13075 Mound State Parkway
Moundville, Alabama 35474

University of Alabama Museums
Office of Archaeological Research

THE UNIVERSITY OF
ALABAMA
MUSEUMS

May 15, 2013

A CULTURAL RESOURCES SURVEY OF 1038 ACRES NEAR HIGH POINT IN DEKALB COUNTY, ALABAMA

OAR PROJECT NUMBER: 13-192
AHC TRACKING NUMBER: Not Assigned

PERFORMED FOR: RidgeHolm Energy Partners LLC
1830 Fountain Drive, Unit 1303
Reston, VA 20190
Attn: Mr. Sam Magruder

PERFORMED BY: Daryll R. Berryman, Cultural Resource Assistant
Michael Rasbury, Cultural Resources Assistant
Shane Lollar, Cultural Resources Assistant
The University of Alabama
Office of Archaeological Research
13075 Moundville Archaeological Park
Moundville, Alabama 35474

DATE PERFORMED: April 2-17, 2013

Daryll R. Berryman
Cultural Resources Assistant
Office of Archaeological Research

Matthew D. Gage RPA, Director
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A Cultural Resources Survey of 1038 Acres near High Point, DeKalb County, Alabama

Daryll R. Berryman

Management Summary

The University of Alabama, Office of Archaeological Research (OAR) was contracted by RidgeHolm Energy Partners LLC, Inc. to perform a cultural resources survey for a proposed surface mine located near the community of High Point in DeKalb County, Alabama. The proposed project's area of potential effect is approximately 420.12 ha (1038 acres) in size. Field investigations for the project were undertaken on April 2-17, 2013. Daryll R. Berryman (Cultural Resources Assistant) serves as the project director and Gene A. Ford (Cultural Resources Investigator) assessed the historic structures. Matthew D. Gage RPA, Director of OAR serves as the Principal Investigator. The federal agency responsible for adherence to Section 106 of the National Historic Preservation Act of 1966, as amended 2006, is the Office of Surface Mining Reclamation and Enforcement.

As a result of the cultural resources survey, a total of four archaeological sites were identified, documented, and added to the Alabama State Site File (ASSF) (Table 1). Site 1Dk164 consists of a historic whiskey still site and is recommended as ineligible for listing to the National Register of Historic Places (NRHP) as it is not considered a good example of this type of site. Site 1Dk165 consists of a series of stone piles on a ridge, which has been determined not to be prehistoric in nature, and therefore is recommended as ineligible for the NRHP. Sites 1Dk166 and 1Dk167 are historic house sites, with no standing structures and few artifacts, and thus recommended as ineligible for the NRHP.

In addition, one isolated find was recorded. This included three sherds from a historic ceramic stoneware vessel.

Finally, eleven historic standing structures were documented during the field investigations. They include Historic Architectural Resources (HAR) 1-11,(Figures 21-43). Only HAR 3 is recommended as eligible for listing to the NRHP under Criteria A and C.

It is the opinion of OAR that the proposed project will not effect any significant historic properties if a visual buffer is left in place between the project and HAR 3, and a finding of no properties/no effect is recommended.

Table 1. Summary of Historic Properties Identified**.**

Historic Property	Temporal/Cultural Affiliation or Historic Property Type	Recommendation for Listing to the NRHP (Yes, No, Listed)
1Dk164	Mid-20th Century Whiskey Still	No
1Dk165	Mid-20th Century (?) Series of Stone Piles	No
1Dk166	Early-20th Century Farmstead Site (ca. 1912-1933)	No
1Dk167	Mid-20th Century House Site	No
HAR 1	Manufactured Home, Possible Historic Core	No
HAR 2	Ca. 1920 Farm Complex Bungalow and Shed	No
HAR 3	Ca. 1900 Farm Complex, One Story Cottage, Barn, Shed	Yes, Criterion A and C
HAR 4	Ca. 1900, L-Shaped, One Story, Wood Frame Cottage	No
HAR 5	Ca. 1920, One story, Wood Frame Bungalow	No
HAR 6	Ca. 1945, One Story, Wood Frame Minimal Traditional Cottage	No
HAR 7	Ca. 1945, One Story Bungalow, Garage, Dilapidated Cottage, Shed	No
HAR 8	Ca. 1945 One Story Bungalow, Block Barn, 1990 Garage	No
HAR 9	Ca. 1920 One Story Bungalow	No
HAR 10	Ca. 1945 One Story Minimal Traditional Cottage, Garage, Vehicle Shed	No
HAR 11	Ca. 1945 Wood Frame Storage Shed	No

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A Cultural Resources Survey of 1038 Acres near High Point in DeKalb County, Alabama

Gene A. Ford
Daryll R. Berryman

Introduction

The University of Alabama, Office of Archaeological Research (OAR) was contracted by RidgeHolm Energy Partners, LLC to perform a cultural resources survey for the proposed surface mine, located near the community of High Point in DeKalb County, Alabama. The proposed project's area of potential effect (APE) is approximately 420.12 ha (1,038 acres) in size. Daryll R. Berryman (Cultural Resources Assistant), assisted by Michael Rasbury (Cultural Resources Assistant), Shane Lollar (Cultural Resources Assistant), and Gene A. Ford (Cultural Resources Investigator) assessed the historic structures within the APE. Matthew D. Gage, RPA (Director) conducted the survey during the period April 2 to April 17, 2013 to locate and identify any archaeological sites or historic standing structures. The Principal Investigator for the project is Matthew D. Gage RPA, Director of OAR.

The lead oversight agency for the proposed project is the Office of Surface Mining Reclamation and Enforcement (OSMRE). As such, the project is subject to review under the National Environmental Policy Act and National Historic Preservation Act (NHPA) of 1966 as amended 2006 (16 USC 470) and its implementing regulations (36 CFR 800). RidgeHolm Energy, in conjunction with the Alabama Historical Commission (AHC) and other interested parties, assists the OSMRE in meeting its obligations under Section 106 of the NHPA.

The research design of the cultural resources survey is to locate and identify any archaeological sites or historic standing structures within the survey boundaries, assess their significance, and provide recommendation with regard to guidelines set forth by the National Park Service (NPS) for National Register of Historic Places (NRHP) eligibility criteria. Included in this report is a discussion of the environmental setting of the survey area, a literature search of any previously recorded sites or previously conducted surveys within or near the survey area, a description of field and laboratory methods, the results of the cultural resources survey, and conclusions and recommendations based on the findings of this survey.

Environmental Setting

The location of the survey area can be seen on the 1975, USGS, 7.5', Dugout Valley, AL topographic quadrangle (Figure 1), centered in Section 29 and including the entire section except for portions of the NW ¼, extending north into the SE ¼ of Section 20, and south into Section 32, and the N ½ of Section 5. Sections 29 and 32 portions of the survey area are in T5S, R9E, and Section 5 is in T6S, R9E.

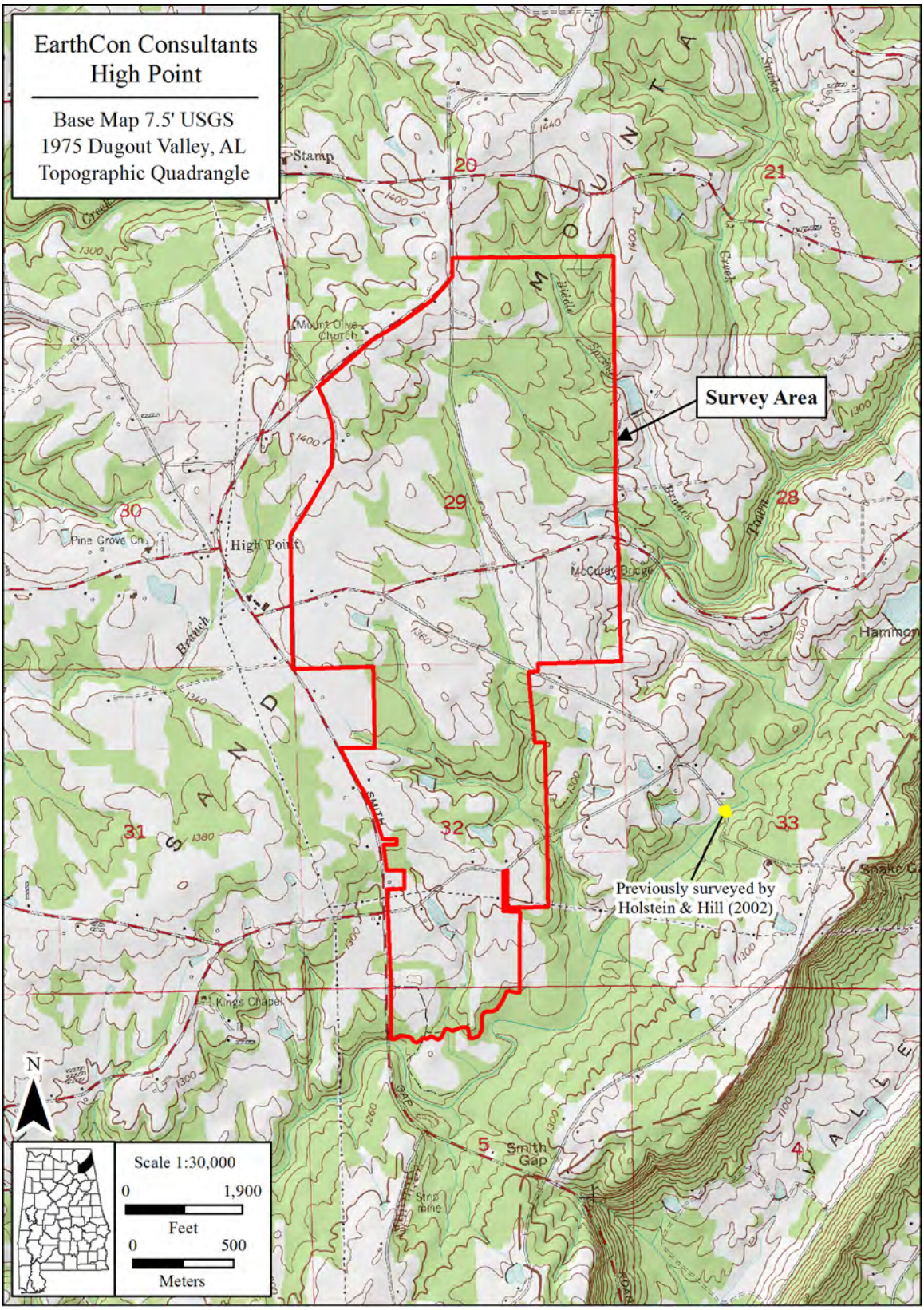

Figure 1. Overview and previous survey.

The APE is an irregularly shaped tract on Sand Mountain near the community of High Point, and consists of moderate to steeply rolling upland dominated by a series of northwest to southeast trending drainages. Elevations range from a peak of 183 m (1,400 ft) AMSL along some of the ridge tops, to a low of 122 m (1,280 ft) AMSL along a drainage in the southern portion. Much of the survey area has been cleared of vegetation and used for cattle pasture and/or hay fields, as well as some other agricultural fields. Wooded areas consist of secondary growth pine and hardwood, although large tracts of linear planted pine are also present. The areas along the drainages are for the most part, still planted in mixed hardwoods interspersed with pines and include oak, hickory, sweet gum, pine, and a few maple and cherry trees. Several of the cultivated hayfields, particularly in the central portion of the survey area, have been allowed to go fallow, and some recently timbered areas had been allowed to grow back unchecked, with thick secondary growth. Most of the hardwoods and pines are immature, but some closest to the stream boundaries are mature, and a few old house sites include very mature trees. Several of the drainages have been dammed up to form ponds.

The survey area lies within the Sand Mountain district of the Cumberland Plateau physiographic section of Alabama. The Sand Mountain district is described as a "submaturely dissected sandstone and shale plateau of moderate relief" (Sapp and Emplaincourt 1975).

The National Cooperative Soil Survey (Soil Survey Staff 2013) of DeKalb County, Alabama shows 26 soil classifications falling into 11 series present within the survey area (Figures 2-4). A brief description of each soil series, along with a representative soil profile, follows.

> *Apison Series:* The Apison series consists of well drained, moderately permeable soils that are moderately deep to soft shale. These soils formed in residuum of interbedded shale, siltstone, and fine-grained sandstone or in a layer of colluvium and residuum. Colluvial and soil creep influences are more pronounced on steep and very steep slopes. They are on the crests, side slopes, foot slopes, and back slopes of uplands. Slopes range from 2 to 75 percent. Near the type location mean annual temperature is 60 degrees F. and mean annual precipitation is 53 inches. Taxonomic Class: Fine-loamy, siliceous, semiactive, thermic Typic Hapludults. Typical Pedon: Apison loam--second-growth forest (Colors are for moist soil unless otherwise stated). Ap--0 to 7 inches; brown (10YR 5/3) loam; moderate medium granular structure; very friable; common fine roots; 3 percent by volume of fragments of sandstone 1/4 to 1 inch in diameter; strongly acid; clear smooth boundary (4 to 9 inches thick). Bt1--7 to 14 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular structure; friable; common fine roots; few faint clay films on faces of peds; 3 percent by volume fragments of sandstone 1/4 to 1 inch in diameter; very strongly acid; clear smooth boundary. Bt2--14 to 22 inches; yellowish brown (10YR 5/4) clay loam; few fine faint light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; 5 percent by volume fragments sandstone 1/4 inch to 1 inch across; very strongly acid; clear smooth boundary. Bt3--22 to 28 inches; yellowish brown (10YR 5/6) clay loam; few medium distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; 10 percent by volume fragments of sandstone 1/4 to 1 inch across; very strongly acid (combined thickness of the Bt horizon is 10 to 40 inches). Cr--28 to 61 inches; soft interlayered shale, siltstone, and fine-grained sandstone; thin seams and coatings of brownish loam in upper 12 inches.

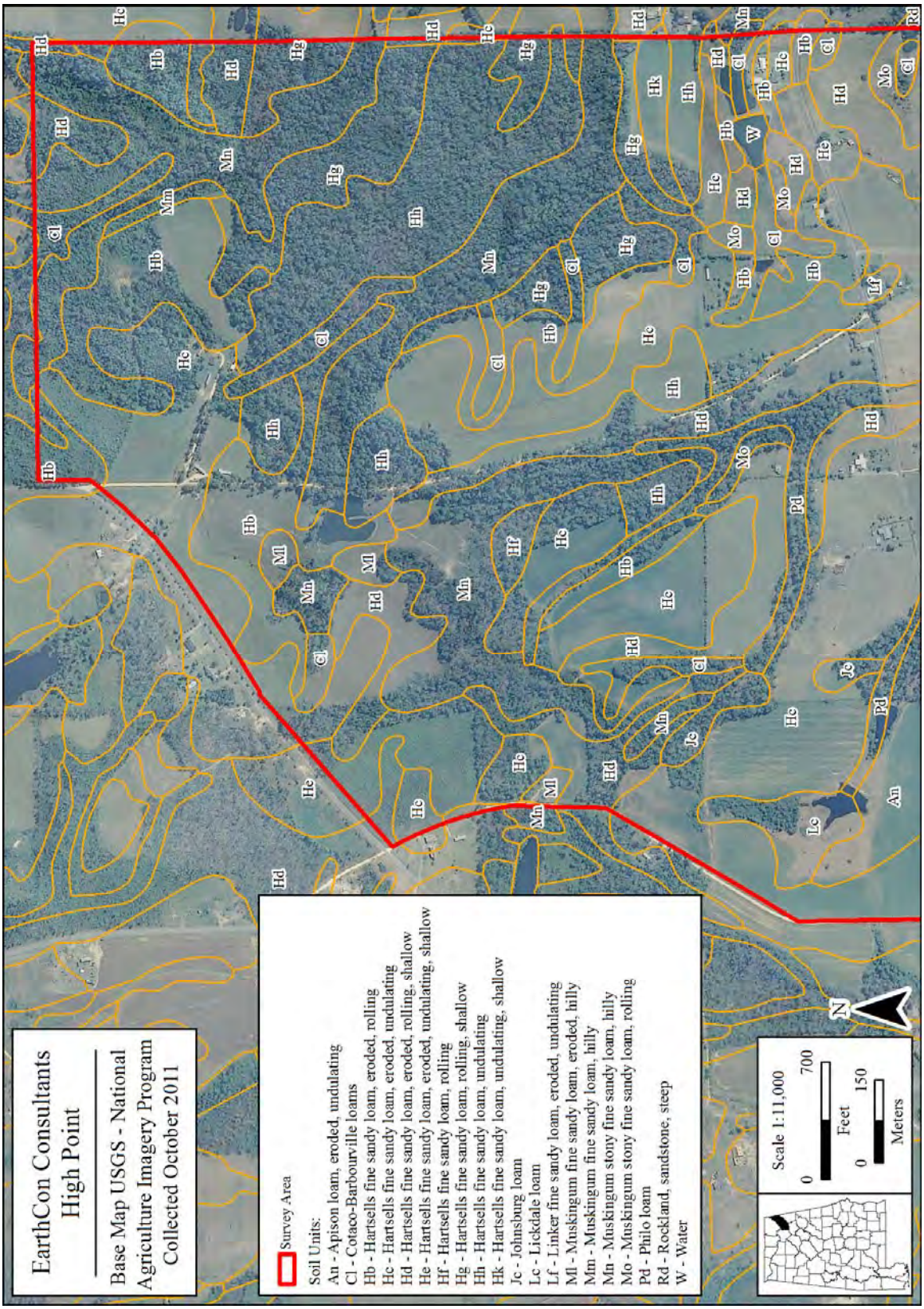

Figure 2. Soil map of northern portion of survey area

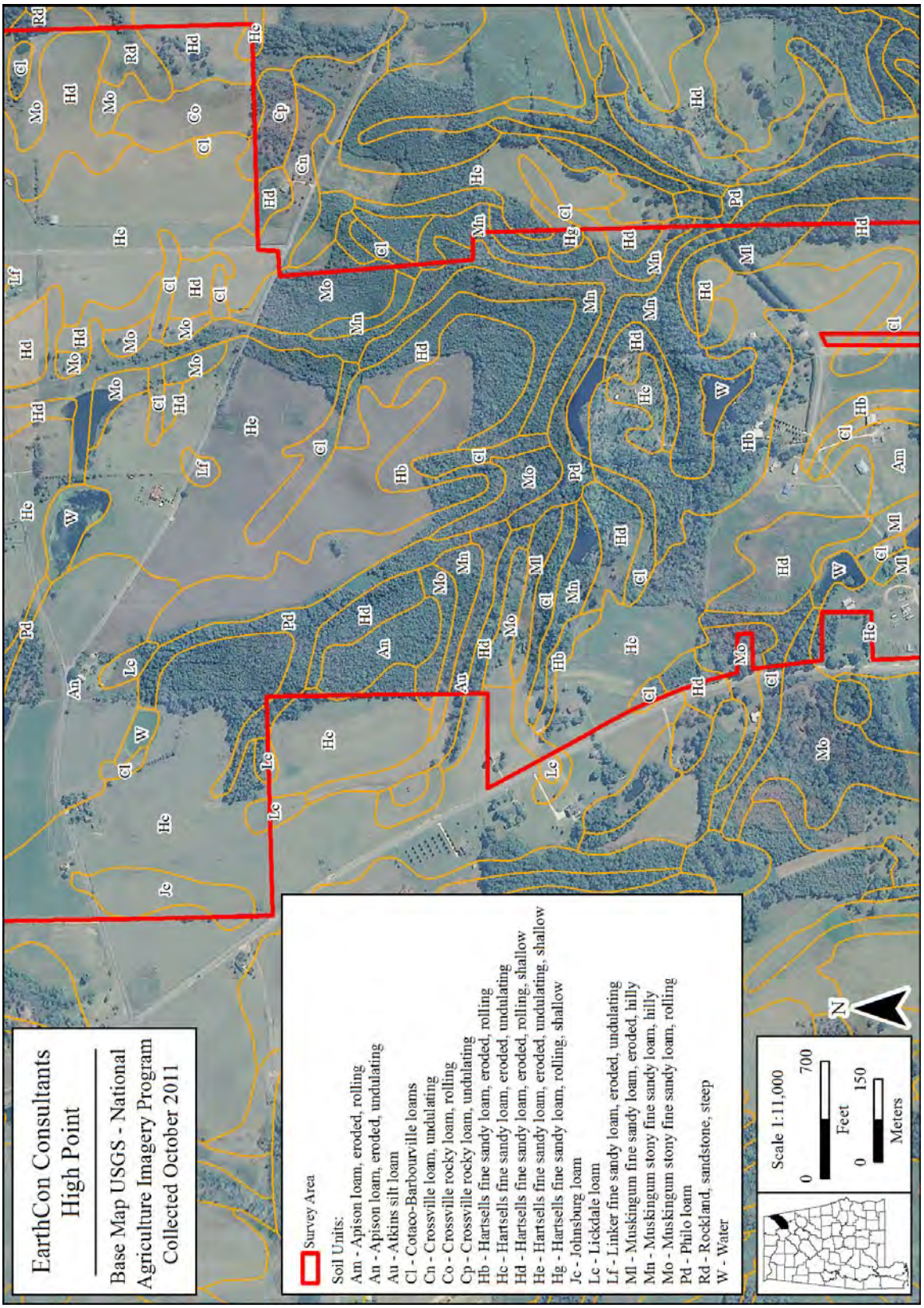

Figure 3. Soil map of central portion of survey area.

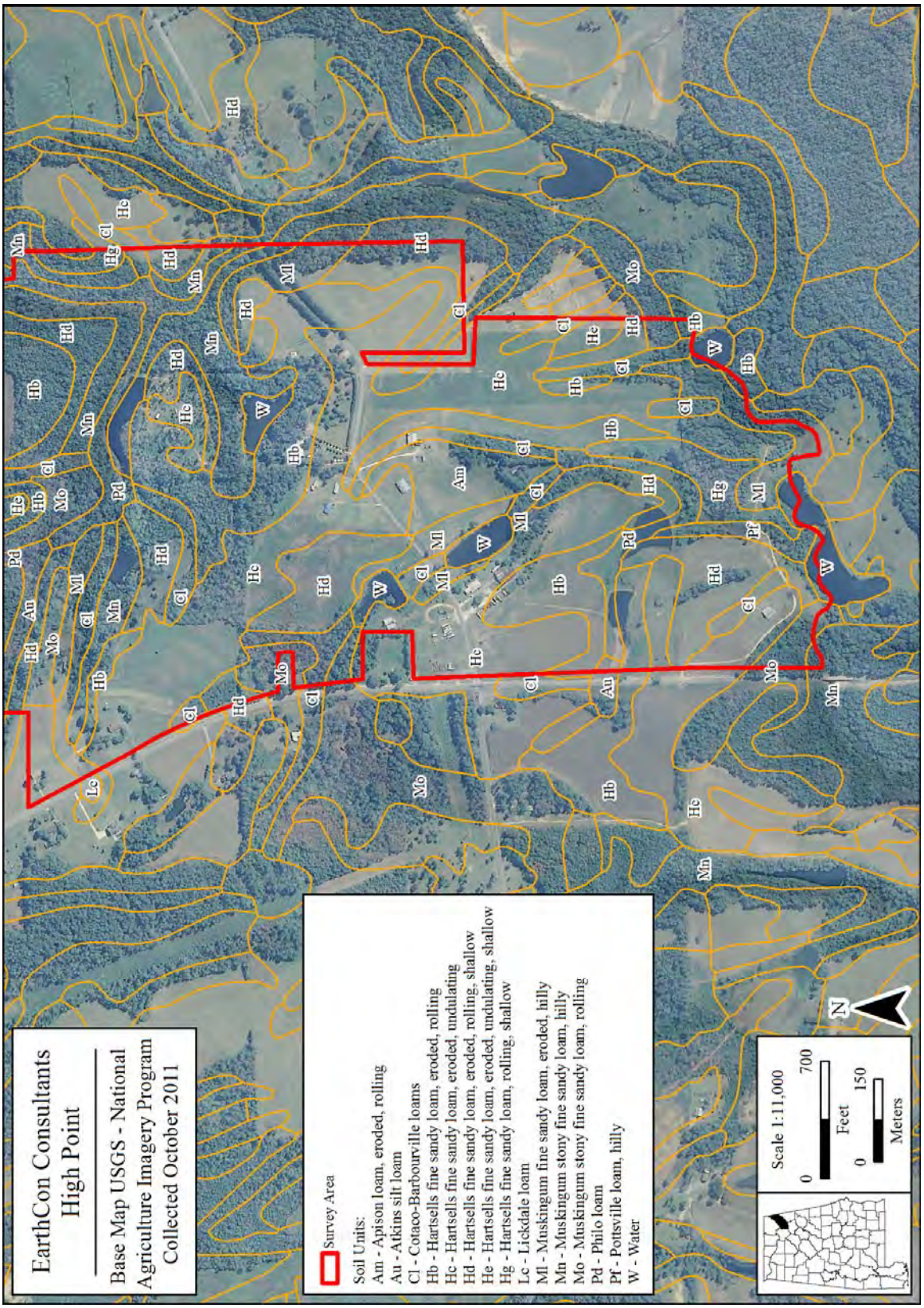

Figure 4. Soil map of southern portion of survey area.

Cotaco Series: The Cotaco series consists of very deep, moderately well or somewhat poorly drained, moderately permeable soils formed in loamy sediments of acid sandstone, siltstone, and shale origin. These soils are on foot slopes, colluvial fans, and low stream terraces. Slopes range from 0 to 20 percent. The average annual temperature is about 55 degrees F, and the average annual precipitation is about 48 inches near the type location. Taxonomic Class: Fine-loamy, mixed, semiactive, mesic Aquic Hapludults Typical Pedon: Cotaco loam--cultivated--on a smooth concave 1 percent slope (Colors are for moist soil). Ap--0 to 10 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; very friable; many fine roots; about 2 percent pebbles; slightly acid; abrupt smooth boundary (5 to 12 inches thick). BA--10 to 16 inches; yellowish brown (10YR 5/4) sandy clay loam; weak medium subangular blocky structure; friable; many fine roots; many fine pores; many faint brown (10YR 5/3) iron depletions on ped faces and common medium prominent strong brown (7.5YR 5/6) iron concentrations throughout; few patchy clay films on peds; about 5 percent pebbles; slightly acid; gradual smooth boundary (0 to 10 inches thick). Bt1--16 to 23 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam; weak medium subangular blocky structure; friable; thin clay films on peds; common medium prominent light brownish gray (2.5Y 6/2) iron depletions and common medium distinct brown (7.5YR 4/4) and yellowish brown (10YR 5/8) iron concentrations throughout; 15 percent sandstone and shale pebbles and thin flat channers; strongly acid; gradual smooth boundary (5 to 25 inches thick). Bt2--23 to 41 inches; grayish brown (2.5Y 5/2) gravelly clay loam; moderate medium subangular blocky structure; friable; thin clay films; many prominent yellowish brown (10YR 5/8) and brown (7.5YR 4/4) iron concentrations throughout; about 30 percent pebbles and dark reddish brown iron and manganese concretions; strongly acid; gradual smooth boundary (0 to 30 inches thick). C1--41 to 46 inches; yellowish brown (10YR 5/4) gravelly clay loam; massive; friable; many medium distinct brown (7.5YR 4/4) iron concentrations and light brownish gray (10YR 6/2) iron depletions throughout; about 40 percent pebbles and iron and manganese concretions; strongly acid; gradual smooth boundary (0 to 20 inches thick). C2--46 to 66 inches; yellowish brown (10YR 5/6) sandy clay loam; massive; slightly sticky; many fine and medium prominent gray (10YR 6/1) iron depletions and brown (7.5YR 4/4) iron concentrations throughout; 5 percent pebbles; strongly acid. The Barbourville series consists of deep and very deep, well drained soils formed in colluvial and/or alluvial material weathered from acid sandstones and shales. Permeability is moderately rapid. These nearly level to strongly sloping soils are on alluvial fans, footslopes, and low stream terraces. Slopes range from 0 to 20 percent.

Barbourville Series: The Barbourville series consists of deep and very deep, well drained soils formed in colluvial and/or alluvial material weathered from acid sandstones and shales. Permeability is moderately rapid. These nearly level to strongly sloping soils are on alluvial fans, footslopes, and low stream terraces. Slopes range from 0 to 20 percent. Taxonomic Class: Fine-loamy, mixed, active, mesic Typic Humudepts. Typical Pedon: Barbourville loam--on a convex 4 percent slope on a cultivated alluvial fan (colors are for moist soil). Ap--0 to 7 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; weak medium granular structure; friable; few fine roots; common fine root channels; 5 percent gravel; strongly acid; clear smooth boundary (0 to 10 inches). A--7 to 16 inches; dark brown (10YR 3/3) loam; brown (10YR 5/3) dry; weak medium granular structure; friable; few fine roots; common fine root channels; 3 percent gravel; strongly acid; clear wavy boundary (3 to 24 inches). BA--16 to 20 inches; dark yellowish brown (10YR 4/4) loam; moderate fine subangular blocky structure; friable; few fine roots; common fine root channels; common distinct dark yellowish brown (10YR 3/4) organic coats on all faces of peds and lining pores and root channels; 3 percent gravel; very strongly acid; gradual smooth boundary (0 to 8 inches). Bw1--20 to 32 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common fine root channels; 3 percent gravel; very strongly acid; gradual wavy boundary. Bw2--32 to 44 inches; dark yellowish brown (10YR 4/4) clay loam; moderate

medium subangular blocky structure; firm; few fine roots; common fine channels; 3 percent gravel; very strongly acid; gradual smooth boundary. Bw3--44 to 62 inches; dark yellowish brown (10YR 4/6) gravelly clay loam; common fine distinct light yellowish brown (10YR 6/4) lithomorphic mottles; weak fine subangular blocky structure; firm; few fine root channels; 20 percent gravel; very strongly acid; gradual smooth boundary (combined thickness of the Bw horizon is 20 to 60 inches). BC--62 to 73 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak medium subangular blocky structure, friable; few fine root channels; 15 percent gravel; very strongly acid; gradual smooth boundary (0 to 20 inches). C--73 to 80 inches; yellowish brown (10YR 5/4) gravelly loam; massive; friable; few fine vesicular pores; 20 percent gravel; very strongly acid (0 to 30 inches).

Hartsells Series: The Hartsells series consists of moderately deep, well drained, moderately permeable soils that formed in loamy residuum weathered from acid sandstone containing thin strata of shale or siltstone. These soils are on nearly level to moderately steep ridges and upper slopes of hills and mountains. Taxonomic Class: Fine-loamy, siliceous, subactive, thermic Typic Hapludults. Typical Pedon: Hartsells fine sandy loam--pasture (Colors are for moist conditions). Ap--0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine roots;10 percent by volume (1/4 inch to 1 inch) angular fragments of sandstone; strongly acid; clear smooth boundary (4 to 8 inches thick). AB--5 to 9 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; 10 percent by volume (1/4 inch to 3 inch) angular fragments of sandstone; strongly acid; clear smooth boundary (4 to 8 inches thick). Bt1--9 to 13 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure; friable; common fine roots; few fine fragments of sandstone; most sand grains coated with clay; very strongly acid; gradual smooth boundary (0 to 6 inches thick). Bt2--13 to 20 inches; yellowish brown (10YR 5/4) sandy clay loam; weak and moderate medium subangular blocky structure; friable; common fine roots; few fine fragments of sandstone; thin continuous clay films on faces of peds; very strongly acid; gradual smooth boundary (4 to 8 inches thick). Bt3--20 to 30 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; thin patchy clay films on faces of peds; 10 percent by volume (1/2 inch to 2 inch) angular fragments of sandstone; very strongly acid; gradual smooth boundary (4 to 10 inches thick). BC--30 to 36 inches; yellowish brown (10YR 5/6) channery sandy loam, texture coarsens with increasing depths; weak medium subangular blocky structure; very friable; 30 percent by volume (1/2 inch to 2 inch) angular fragments of sandstone; sand grains coated with clay; very strongly acid; abrupt boundary (0 to 8 inches thick). R--36 inches; acid sandstone. Eight of the twenty-six original soil types are variations on the Hartsells type, varying only in slope of the land they are found upon.

Johnsburg Series: The Johnsburg series consists of very deep, somewhat poorly drained, soils that formed in loess or silty material and the underlying loamy residuum weathered from interbedded sandstone, siltstone, and shale. These soils are on hills, and have slopes ranging from 0 to 6 percent. Mean annual temperature is 12 degrees C (54 degrees F), and mean annual precipitation is 107 cm (42 inches). Taxonomic Class: Fine-silty, mixed, active, mesic Aquic Fragiudults. Typical Pedon: Johnsburg silt loam on a slope of about 1 percent in an idle field at an elevation of about 216 meters (710 feet) above MSL (Colors are for moist soil unless otherwise stated). Ap--0 to 25 cm (0 to 10 inches); dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; neutral; abrupt smooth boundary (15 to 30 cm or 6 to 12 inches thick). EB--25 to 36 cm (10 to 14 inches); light yellowish brown (2.5Y 6/4) silt loam; weak very thick platy structure parting to weak medium subangular blocky; friable; common fine distinct gray (10YR 6/1) iron depletions in the matrix; very strongly acid; clear smooth boundary (0 to 15 cm or 0 to 6 inches thick). Bt1--36 to 51 cm (14 to 20 inches); pale brown (10YR 6/3) silt loam; moderate medium subangular blocky structure;

friable; few distinct light brownish gray (10YR 6/2) clay films and many distinct light gray (10YR 7/2) clay depletions on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses of oxidized iron and common medium distinct gray (10YR 6/1) iron depletions in the matrix; very strongly acid; clear smooth boundary. Bt2--51 to 61 cm (20 to 24 inches); light yellowish brown (10YR 6/4) silt loam; moderate medium and fine prismatic structure parting to moderate medium and coarse subangular blocky; friable; few faint light brownish gray (10YR 6/2) clay films and common distinct light gray (10YR 7/2) clay depletions on faces of peds and in pores; many medium and coarse distinct light gray (10YR 7/2) iron depletions in the matrix; very strongly acid; clear smooth boundary. Btg--61 to 91 cm (24 to 36 inches); gray (10YR 6/1) silt loam; moderate medium prismatic structure; firm; common faint gray (10YR 5/1) clay films on faces of peds and in pores; many medium prominent irregularly shaped yellowish brown (10YR 5/8) and many medium distinct dark yellowish brown (10YR 4/4) masses of oxidized iron in the matrix; common black (10YR 2/1) iron-manganese concretions; 30 percent brittle; very strongly acid; gradual smooth boundary (Combined thickness of the Bt and Btg horizon is 25 to 76 cm or 10 to 30 inches thick). Btx1--91 to 127 cm (36 to 50 inches); yellowish brown (10YR 5/4) silt loam; moderate very coarse prismatic structure; very firm; common prominent gray (10YR 5/1) clay films and many prominent gray (10YR 6/1) clay depletions on faces of peds; common distinct gray (10YR 6/1) iron depletions in the matrix; 60 percent brittle; very strongly acid; gradual smooth boundary. 2Btx2--127 to 183 cm (50 to 72 inches); brown (10YR 5/3) silt loam; moderate coarse and very coarse prismatic structure parting to weak thick platy; very firm; common prominent gray (10YR 5/1) clay films and common prominent gray (10YR 6/1) clay depletions on faces of peds; 65 percent brittle; strongly acid; gradual smooth boundary (Combined thickness of the Btx horizons is 64 to 102 cm or 25 to 40 inches). 2CB--183 to 229 cm (72 to 90 inches); brown (10YR 5/3) silt loam; massive; firm; few medium distinct gray (10YR 6/1) iron depletions in the matrix; strongly acid; gradual smooth boundary. 2Cr--229 cm (90 inches); moderately cemented siltstone.

Linker Series: Taxonomic Class: Fine-loamy, siliceous, semiactive, thermic Typic Hapludults. Typical Pedon: Linker fine sandy loam, 3 to 8 percent slopes in pasture that had previously been cultivated (Colors are for moist soil unless otherwise indicated). Ap--0 to 10 cm (0 to 4 inches); brown (10YR 5/3), fine sandy loam; weak medium granular structure; very friable; many fine roots; common fine pores; 1 percent (few) fine and medium worm casts; 5 percent 150 to 380 mm flagstones; slightly acid (pH 6.5); clear wavy boundary (10 to 18 cm (4 to 7 inches) thick). Bt1--10 to 23 cm (4 to 9 inches); yellowish red (5YR 4/6), loam; 5 percent fine yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine roots; many medium pores; 1 percent (few) fine and medium worm casts; 5 percent (few) discontinuous clay films on all faces of peds and 5 percent (few) clay films on surfaces along pores and 5 percent (few) clay bridges on surfaces along pores; 5 percent 150 to 380 mm flagstones; moderately acid (pH 5.6); clear wavy boundary (0 to 18 cm (0 to 7 inches) thick). Bt2--23 to 61 cm (9 to 24 inches); yellowish red (5YR 4/6) loam; 5 percent fine faint yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; 30 percent (common) discontinuous clay films on all faces of peds and 15 percent (few) discontinuous clay films on surfaces along pores; 5 percent 150 to 380 mm flagstones; very strongly acid (5.0); clear wavy boundary (30 to 51 cm (12 to 20 inches) thick). Bt3--61 to 89 cm (24 to 35 inches); yellowish red (5YR 4/6), gravelly fine sandy loam; 30 percent medium prominent pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; common fine pores; 5 percent (few) discontinuous clay films on all faces of peds; 15 percent 2 to 64 mm gravels and 5 percent 150 to 380 mm flagstones; very strongly acid (4.8); abrupt wavy boundary (0 to 38 cm (0 to 15 inches) thick). R--89 cm (35 inches); slightly weathered, level bedded, acid sandstone.

Muskingum Series: The Muskingum series consists of moderately deep, well drained, moderately permeable soils formed in residuum weathered from interbedded siltstone, sandstone and shale. Slopes range from 2 to 75 percent. Taxonomic Class: Fine-loamy, mixed, semiactive, mesic Typic Dystrudepts. Typical Pedon: Muskingum channery silt loam -- forested (Colors are for moist soil unless otherwise stated). Oi--1 to 0 inch; loose, undecomposed hardwood leaf litter; very strongly acid; abrupt wavy boundary (0 to 2 inches thick). A--0 to 4 inches; dark grayish brown (10YR 4/2) channery silt loam; moderate medium granular structure; very friable; common fine and medium roots; 20 percent siltstone channers; very strongly acid; clear smooth boundary (1 to 5 inches thick). Bw1--4 to 12 inches; yellowish brown (10YR 5/6) channery silt loam; moderate medium subangular blocky structure; friable; common fine and medium roots; 15 percent siltstone channers; very strongly acid; clear smooth boundary. Bw2--12 to 24 inches; yellowish brown (10YR 5/6) channery silt loam; moderate medium subangular blocky structure; friable; common fine to coarse roots; 25 percent siltstone channers; very strongly acid; clear smooth boundary (Thickness of the Bw horizon ranges from 10 to 25 inches). C--24 to 30 inches; yellowish brown (10YR 5/4) very channery loam; massive; friable; few medium and fine roots; 35 percent siltstone fragments 0.1 inch to 6 inches long; very strongly acid; abrupt smooth boundary. R--30 inches; olive sandstone. Four of the original soil types are slight variations of the Muskingum type.

Philo Series: The Philo series consists of very deep, moderately well drained soils on flood plains. They formed in recent alluvium derived mainly from sandstone and shale. Permeability is moderate to moderately rapid. Slope ranges from 0 to 6 percent. The mean annual precipitation is about 43 inches and the mean annual temperature is about 52 degrees F. Taxonomic Class: Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts. Typical Pedon: Philo silt loam - cultivated (Colors are for moist soils unless otherwise stated). Ap--0 to 6 inches, brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; strongly acid; abrupt smooth boundary (5 to 10 inches thick). Bw1--6 to 16 inches, dark yellowish brown (10YR 4/4) silt loam; moderate fine granular structure; friable; strongly acid; gradual smooth boundary. Bw2--16 to 22 inches, brown (10YR 5/3) silt loam weak very fine subangular blocky structure; friable to firm; few fine distinct dark brown to brown (7.5YR 4/4) iron concentrations and gray (10YR 5/1) iron depletions; strongly acid; clear smooth boundary (Combined thickness of the Bw is 9 to 40 inches). C1--22 to 32 inches, gray (10YR 5/1) silt loam, massive; friable; common distinct strong brown (7.5YR 5/8) iron concentrations; common black concretions; strongly acid; clear smooth boundary (0 to 12 inches thick). C2--32 to 42 inches, variegated gray (10YR 5/1) and strong brown (7.5YR 5/8) loam; massive; firm; strongly acid; clear smooth boundary (0 to 12 inches thick). 2C3--42 to 60 inches, stratified sand and gravel.

Atkins Series: The Atkins series consists of very deep, poorly drained soils formed in acid alluvium washed from upland soils that formed in shale and sandstone. Permeability is slow to moderate. Slope ranges from 0 to 3 percent. Mean annual precipitation is about 46 inches and the mean annual air temperature is about 54 degrees F. Taxonomic Class: Fine-loamy, mixed, active, acid, mesic Fluvaquentic Endoaquepts. Typical Pedon: Atkins loam, wooded (Colors are for moist soil). Oi--0 to 1 inches; slightly decomposed loose hardwood leaf litter. Oe--1 to 1.5 inches; Moderately decomposed organic matter. A--1.5 to 5 inches; dark grayish brown (10YR 4/2) loam with few fine strong brown (7.5YR 5/6) iron stains along root channels and lining pores; weak fine and medium granular structure; very friable; many very fine to coarse roots; very strongly acid; clear wavy boundary (1 to 8 inches thick). AB--5 to 8 inches; dark grayish brown (10YR 4/2) loam with few fine strong brown (7.5YR 5/6) iron stains along root channels and lining pores; weak fine subangular blocky structure; friable; common very fine to coarse roots; very strongly acid; clear wavy boundary (0 to 6 inches thick). Bg1--8 to 14 inches; grayish brown (10YR 5/2) loam with few fine and medium strong brown (7.5YR 5/6) and strong brown (7.5YR

5/8) iron stains in the matrix and on ped faces; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary. Bg2--14 to 26 inches; grayish brown (2.5Y 5/2) loam with common fine and medium strong brown (7.5YR 5/6) and strong brown (7.5YR 5/8) iron stains in the matrix and on ped faces; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual wavy boundary (Combined thickness of the Bg horizons is 12 to 34 inches). BCg--26 to 38 inches; grayish brown (2.5Y 5/2) silty clay loam with common fine and medium strong brown (7.5YR 5/6) and strong brown (7.5YR 5/8) iron stains in the matrix and on ped faces, and common fine black (7.5YR 2.5/1) soft iron-manganese masses in the matrix; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary (0 to 18 inches thick). Cg1--38 to 47 inches; grayish brown (2.5Y 5/2) clay loam with many fine and medium strong brown (7.5YR 5/6) and strong brown (7.5YR 5/8) iron stains in the matrix; massive; friable; strongly acid; gradual wavy boundary. Cg2--47 to 66 inches; gray (2.5Y 5/1) clay loam with many fine and medium strong brown (7.5YR 5/6) and strong brown (7.5YR 5/8) iron stains in the matrix; massive; friable; strongly acid.

Crossville Series: The Crossville series consists of moderately deep, well drained soils on mountain tops weathered from loamy residuum. Slopes range from 2 to 20 percent. Taxonomic Class: Fine-loamy, siliceous, semiactive, mesic Humic Dystrudepts. Typical Pedon: Crossville loam--on a 5 percent convex slope in pasture (Colors are for moist soil unless otherwise stated). Ap--0 to 7 inches; dark brown (10YR 3/3) loam; brown (10YR 5/3) dry; moderate medium granular structure; very friable; many fine roots; 1 percent gravel; strongly acid; abrupt wavy boundary (1 to 9 inches thick). Ba--7 to 11 inches; dark yellowish brown (10YR 4/4) loam; moderate very fine subangular blocky structure; friable; common fine roots; 1 percent gravel; strongly acid; gradual wavy boundary (0 to 7 inches thick). Bw--11 to 24 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine roots; 1 percent gravel; very strongly acid; abrupt wavy boundary (7 to 12 inches thick). Cr--24 to 37 inches; weakly cemented; very strongly acid; sandstone bedrock (0 to 5 inches thick). R--37 inches; hard sandstone bedrock. Three of the original soil types are Crossville Series.

Lickdale Series: The Lickdale series consists of deep, very poorly drained soils. Saturated hydraulic conductivity is low or very low. These soils are forming in residuum from acid sandstones and shales, with some local alluvium in places. Mean annual soil temperature is about 54 degrees F. and mean annual precipitation is about 42 inches. Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, active, acid, mesic Humic Endoaquepts. Typical Pedon: Lickdale silt loam -- cultivated (Colors are for moist soils). Ap--0-10--Black (10YR 2/1) silt loam; weak fine granular structure; friable, slightly sticky and slightly plastic; many roots; medium acid (limed); abrupt smooth boundary (6 to 12 inches thick). B21g--10-20 --Dark grayish brown (10YR 4/2) silty clay loam, with common fine distinct mottles of yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4); weak medium blocky and subangular blocky structure; firm, sticky and plastic; many roots in upper portion; strongly acid; clear wavy boundary (7 to 15 inches thick). B22g--20-32 --Gray (10YR 5/1) sandy clay loam, with common medium distinct mottles of yellowish red (5YR 5/6); moderate coarse blocky and subangular blocky structure; firm, sticky and plastic; a few roots in upper portion; some irregular inclusions of loose sandy material; very strongly acid; abrupt wavy boundary (7 to 13 inches thick). IICg--32-46 --Light brownish gray (10YR 6/2) loamy coarse sand; single grain; loose; no roots; very strongly acid; clear irregular boundary (12 to 32 inches thick). R-- 46 --Gray to pale brown weathered sandstone.

Literature and Document Search

For prior archaeological surveys conducted in the general area, the Alabama Cultural Resources Online Database, housed at OAR and consisting of the National Archaeological Database Bibliography, the Alabama State Site File (ASSF) (OAR 2013), and the Alabama Phase I Surveys Website (OAR 2012) were reviewed. One Phase I survey was conducted in close proximity to the present survey area (Figure 1). The survey was associated with the proposed replacement of a bridge on DeKalb County Road 885, and was performed by Holstein and Hill in 2002. The survey resulted in no new archaelological sites being identified or added to the Alabama State Site File, and identified no historic standing structures or isolated finds (Holstein and Hill 2002). The ASSF shows no previously sites located within one mile of the survey area.

The *National Register of Historic Places* (NPS 2012) and related supplements, including the *Alabama Tapestry of Historic Places* (AHC 1978) and the Alabama Register of Landmarks and Heritage (AHC 2012), list no eligible properties within or near the survey area. The 1975, USGS, 7.5', topographic quadrangle map for Dugout Valley shows 14 structures within the survey boundaries and the 1937 Alabama Highway Map of DeKalb County indicated 11 structures within the survey area. These locations were all investigated during the field work, resulting in the identification of Sites 1Dk166 and 1Dk167 as well as HARs 1-11. *Cemetery Locations by County* (Remington 2008) lists no historic cemeteries located within close proximity to or within the survey area. Finally, the National Archaeological Database Bibliography, housed at OAR, was searched and all listed reports within the appropriate township and range were inspected.

Field Methods

Field investigations consisted of a pedestrian walkover of the proposed project area employing visual inspection of exposed ground surface and subsurface testing. Per AHC guidelines, all shovel tests had a minimum diameter of 30 cm and were excavated to recognizable, culturally sterile subsoil. All excavated soil was screened through 6.35 mm (0.25 in) hardware cloth in an effort to recover cultural materials. Soil profiles were recorded for each shovel test noting soil colors, textures, and depths of soil texture/color changes and horizon boundaries. All shovel test locations were documented using global positioning systems units rated for sub-decimeter accuracy. A total of 256 shovel tests were excavated in the course of this survey. The amount of sloping terrain, coupled with the extensive impact from prior silviculture, agriculture, and pond construction has greatly reduced or even negated the potential for many areas of the tract to contain intact subsurface or even surficial evidence of prior aboriginal or historic occupation. Extensive terraforming has been undertaken within many portions of the APE. Agricultural terracing and artificial impoundments are ubiquitous. Photographic documentation was undertaken to provide evidence of the varying environments and disposition of the proposed project area. These photographs (Figures 8-19) are keyed to the topographic maps (Figures 5-7) showing their location and direction of capture.

Where exposed ground surface was present, initial investigations consisted of visual inspection. The locations included bare soil exposures along natural slopes, drainages, road cutbanks, road surfaces, and erosional surfaces. Where visibility was limited, shovel tests were excavated at 30 m intervals. Such areas were limited in extent and consisted of landforms with relatively level settings (areas of less than 15 percent slope) and terraces adjacent to intermittent and permanent water courses. The 30 m interval subsurface testing method was also limited to those settings exhibiting an absence of disturbance from prior terrace forming activities where subsequent erosion has removed near surface soil horizons. Lower probability areas were sampled at greater intervals ranging from 60 m to 100 m and included gently sloped and disturbed settings. Slopes greater than 15 percent were visually inspected. Shovel test intervals in these areas exceeded the 60 m spacing and in some cases shovel testing was curtailed altogether due to the lack of intact near surface soil horizons.

Laboratory Methods and Collection Curation

All cultural materials recovered during the project were transported to the David L. DeJarnette Laboratory at Moundville Archaeological Park in Moundville, Alabama for processing and analysis. Laboratory analysis followed accepted standard procedures involving washing of all recovered materials, sorting by artifact class, and tabulation of all artifacts. During the analysis process, artifacts were placed into archival bags with permanent provenience information and prepared for permanent curation.

All artifacts, photographs, field notes, maps, and documentation pertinent to the survey will be curated at the Erskine Ramsay Archaeological Repository located at Moundville Archaeological Park. This repository meets Department of the Interior curation standards as defined under 36 CFR Part 79 and required by Chapter 460-X-9 of the Administrative Code of Alabama. A letter of agreement for curation, as required by the AHC, has been included as Appendix A.

Results

As a result of the field investigations of the APE, a total of four archaeological sites, one isolated find, and eleven historic architectural resources (HARs) were identified and documented. These include Sites 1Dk164, 1Dk165, 1Dk166, and 1Dk167, as well as HARs 1-11. A description of each follows.

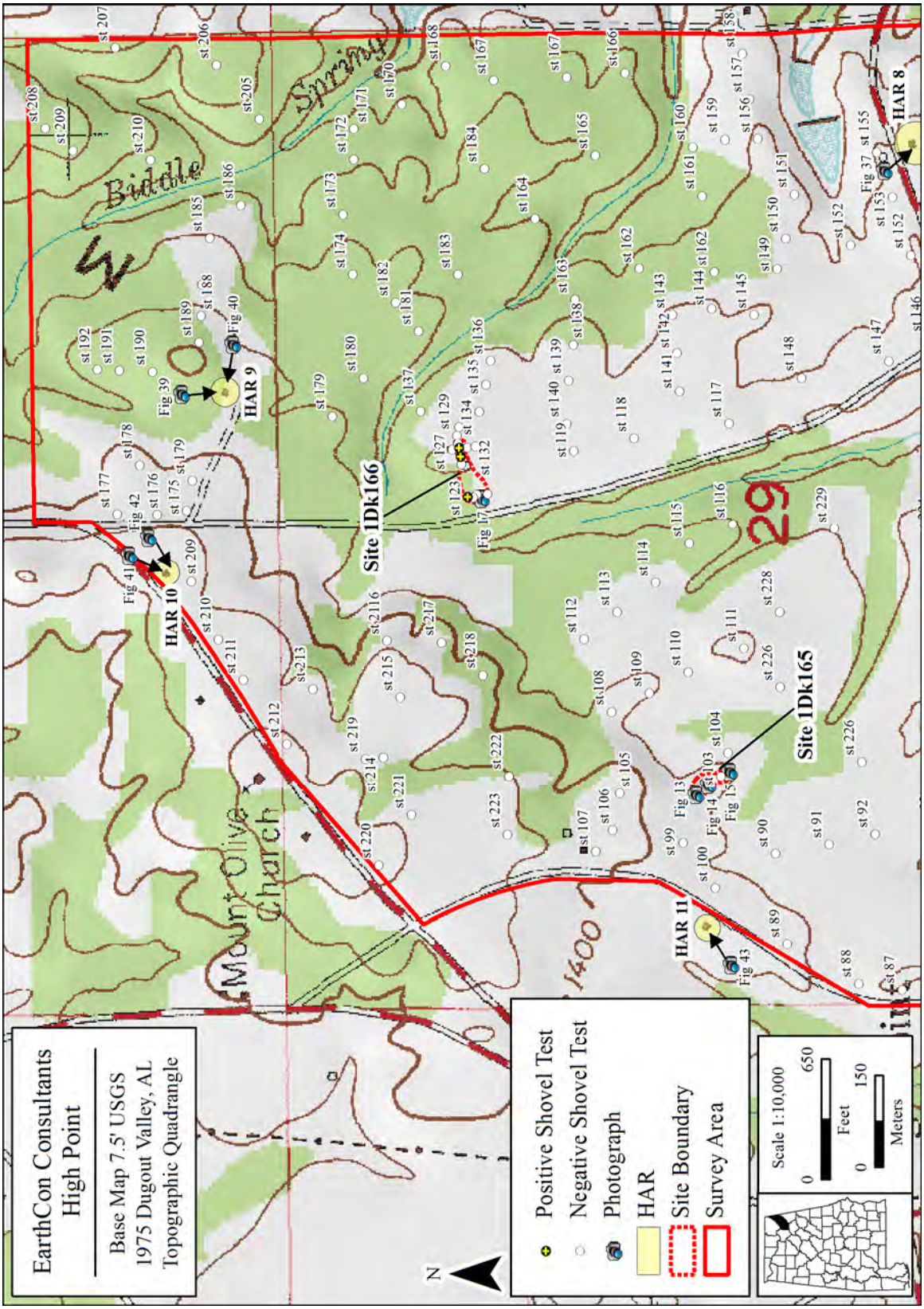

Figure 5. Historic properties, shovel tests, and photograph locations. Northern portion of APE.

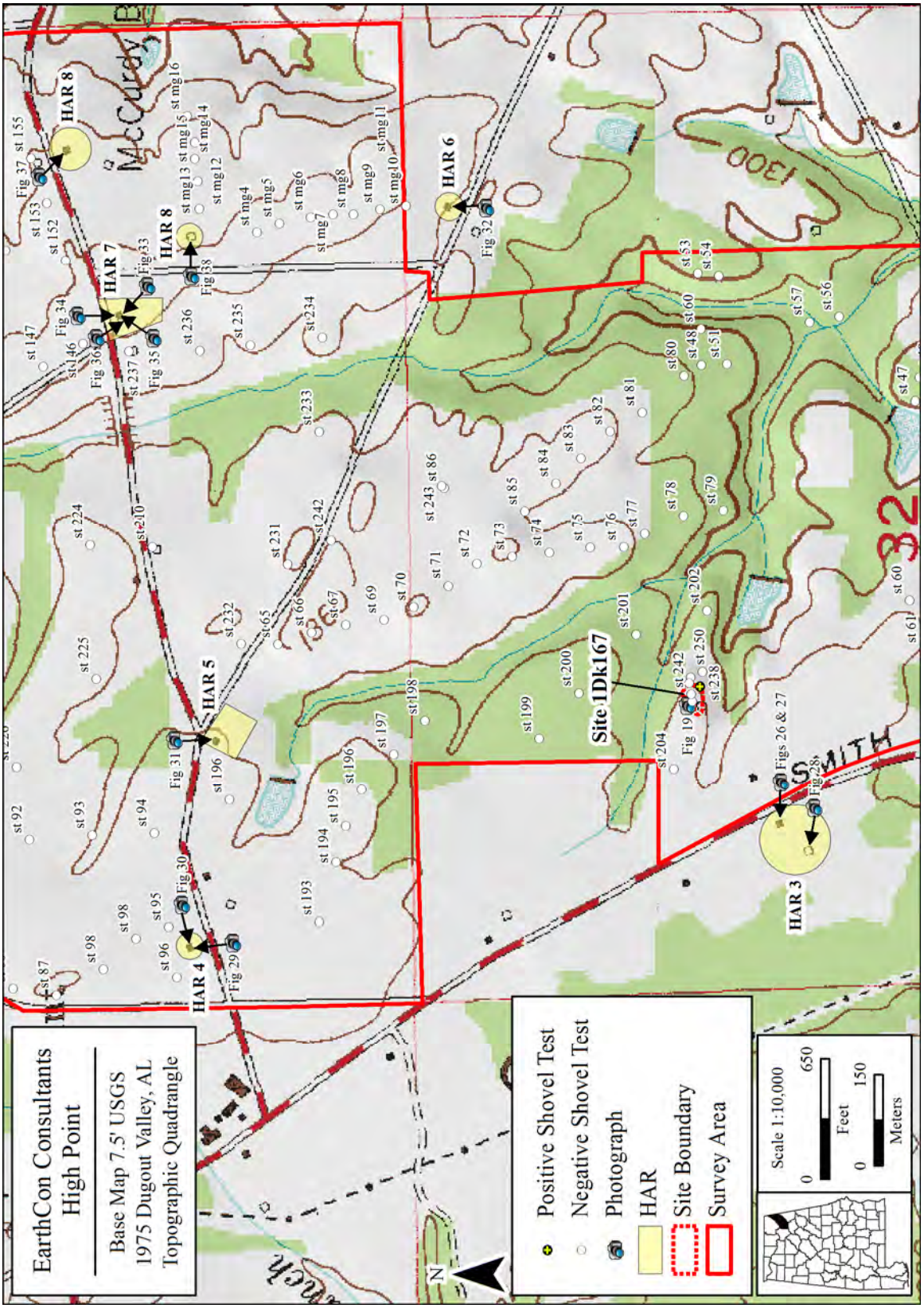

Figure 6. Historic properties, shovel tests, and photograph locations. Central portion of APE.

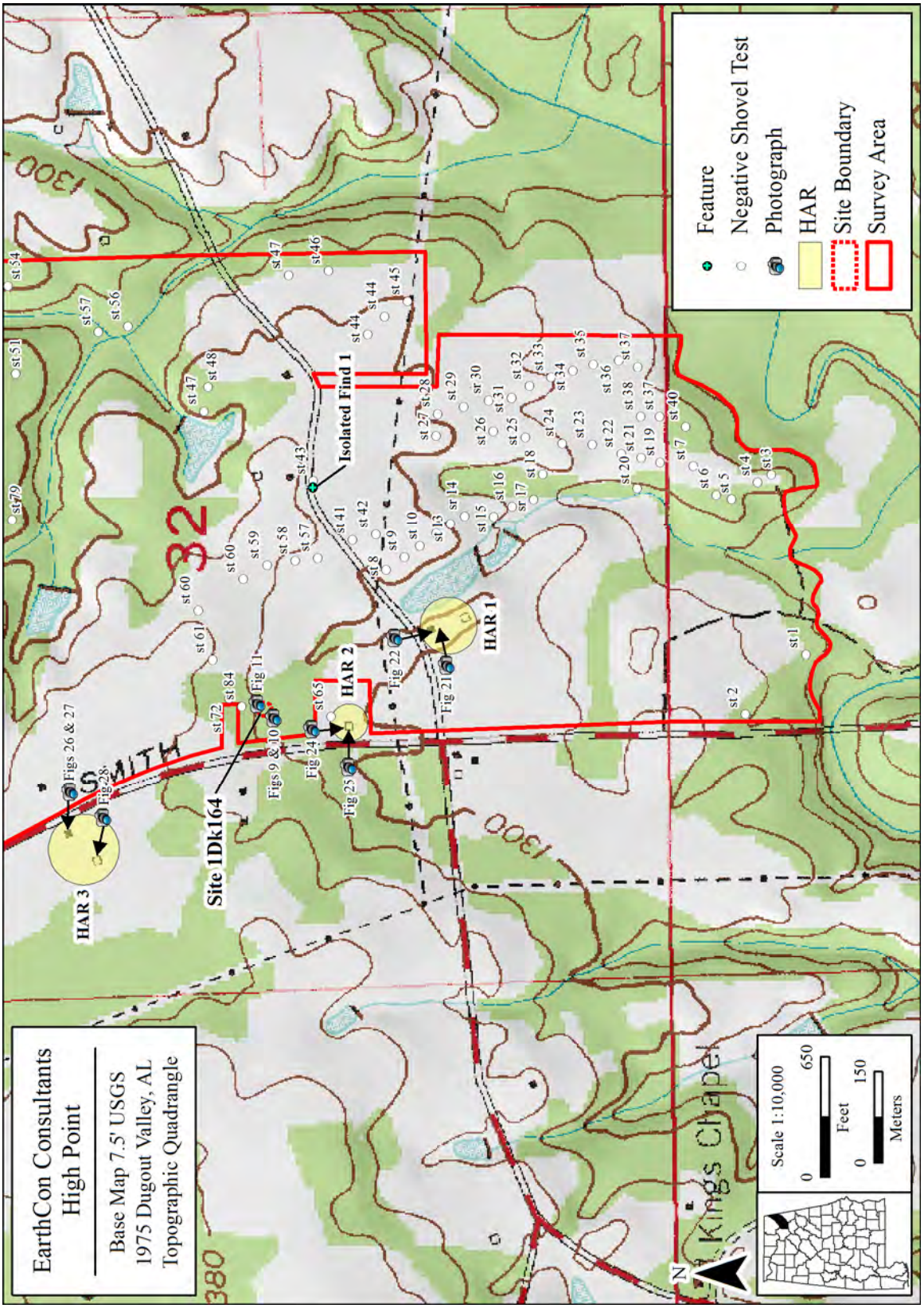

Figure 7. Historic properties, shovel tests, and photograph locations. Southern portion of APE.

Site 1Dk164

Topographic Map: 7.5' Dugout Valley, AL
Zone: 16 *Easting*: 617541 *Northing*: 3824487
Township: 5S *Range*: 9E
Section: 32 NW¼ NE¼ SW¼
Elevation: 1300 ft AMSL
Site Size: 15 m by 15 m
Surface Area: 225 sq m
Maximum Depth of Recovery: 0 cm
Ground Cover: Unimproved Forest
Degree of Disturbance: 90%
NRHP Status: Recommended Ineligible
Natural Setting: Upland Crest
Soil Type: Cotaco Barbourville
Soil Texture: Loam
Nearest Water Source: First Order Stream
Distance to Water: 600 m West

Comments: Site 1Dk164 consists of the remains of a whiskey still situated approximately 60 m east of Smith Gap Road, on the west flank of a small, elevated ridgeline (Figures 7-8). The area is occupied by mixed hardwood forest of oak, cherry, and hickory with an understory of privet. A house lies approximately 80 m to the north and another (HAR 2) lies 120 m to the south. A recently logged area lies 30 m to the east. The still remains consist of a roughly rectangular distribution of sandstone boulders that measure 2.6 m northwest to southeast by 3.2 m southwest to northeast (Figure 9). Two galvanized wash tubs and an enamelware pot are present (Figures 10-11). A trash concentration lies on the east side and includes tin syrup containers, glass jars, stoneware (including a large crock with blue annular rings and Corningware).

The site represents a mid-twentieth century whiskey still, but is not considered a good example of the site type.

Investigative Methods: Surface Collection-Shovel Testing

Materials Recovered:
Surface Collection

Group	Category	Subcategory	Remarks	Ct.
Ceramic	Stoneware	Salt Glazed	Blue annular rings	1

Temporal/Cultural Affiliation: Mid-Twentieth Century (circa 1930s to 1980s)

Evaluation/Recommendations: Given the relatively recent age of the materials encountered and the disposition of the still remains, the site is recommended ineligible for listing to the NRHP.

Site 1Dk165

Topographic Map: 7.5' Dugout Valley, AL
Zone: 16 *Easting*: 617398 *Northing*: 3826336
Township: 5S *Range*: 9E
Section: 29 SE¼ SW¼ NW¼
Elevation: 1380 ft AMSL
Site Size: 70 m by 40 m
Surface Area: 2800 sq m
Maximum Depth of Recovery: 0 cm
Ground Cover: Unimproved Forest
Degree of Disturbance: 0%
NRHP Status: Recommended Ineligible
Natural Setting: Upland Crest
Soil Type: Johnsburg
Soil Texture: Sandy Loam
Nearest Water Source: First Order Stream
Distance to Water: 500 m East

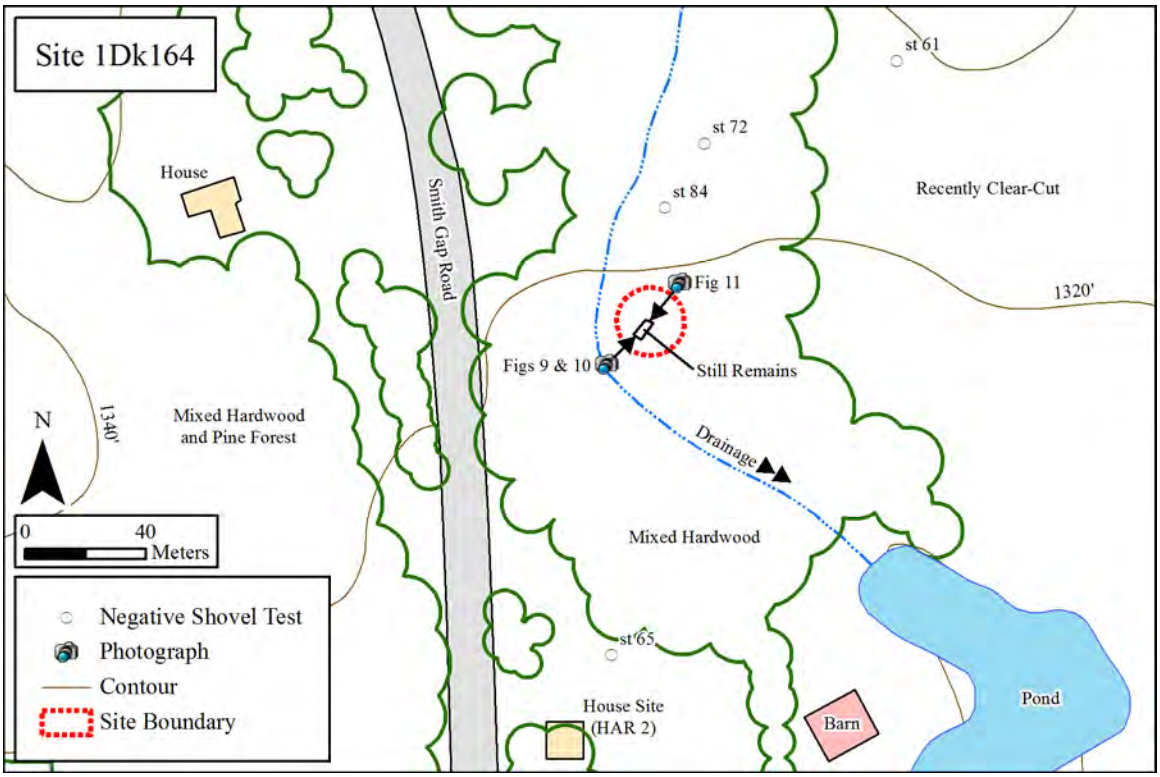

Figure 8. Site 1Dk164 sketch map.

Comments: Site 1Dk165 consists of a series of stone piles located on the center of a ridgeline situated approximately 750 m east of DeKalb County Road 595 (Figures 5, 12). The 1975, 7.5', Dugout Valley, AL topographic quadrangle depicts the area as a cleared agricultural field. The area is currently occupied by immature pine trees, mixed with hardwoods, particularly oak and sweet gum. A cultivated hay field surrounds the ridge on three sides, excepting along a northwest direction in which the woods continue on past an unimproved road. There are at least nine distinct piles of stone, mostly sandstone boulders. The individual piles range from half a meter in diameter to 1.5 meters (Figures 13-15). Three separate shovel tests produced no artifacts, and only 5-10 cm of soil.

The site likely represents a mid-twentieth century clearing of the agricultural fields which surround it, based on the lack of artifact recovery, the immature age of the ground cover, and the absence of topsoil, along with a personal communication with the current landowner. Mr. Charles McCurdy states that landowners put the stones there, "Not Indians" (Ronald McCurdy, personal communications, May 13, 2013). It is, therefore recommended ineligible for listing to the NRHP.

Investigative Methods: Surface Collection-Shovel Testing

Materials Recovered: None

Temporal/Cultural Affiliation: Mid-Twentieth Century (circa 1930s-1970s)

Evaluation/Recommendations: Given the relatively recent age of the surrounding ground cover, the proximity to the agricultural fields and the unimproved road, the lack of artifacts recovered and topsoil present, as well as personal communication with the landowner, the site is the result of historic clearing of agricultural fields, and thus recommended ineligible for listing to the NRHP.

Figure 9. Site 1Dk164 overview. View to northeast.

Figure 10. Site 1Dk164, enamel pot. View to northeast.

Figure 11. Site 1Dk164, galvanized wash tub. View to southwest.

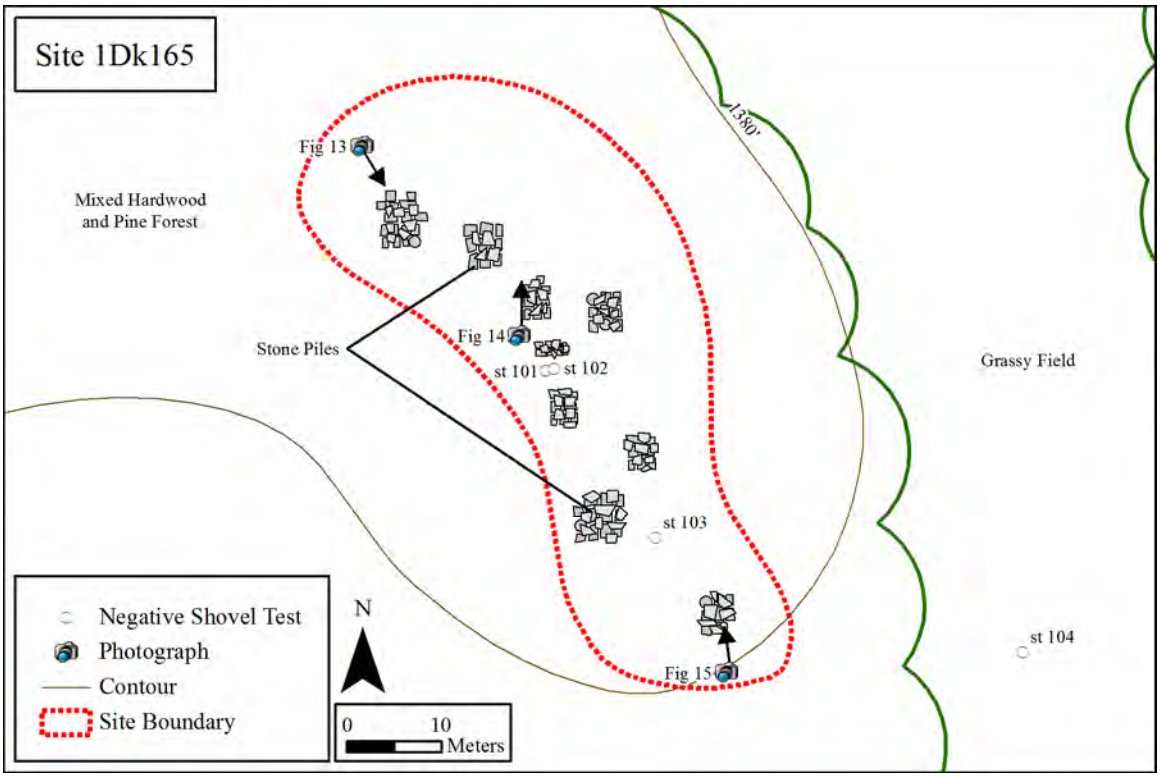

Figure 12. Site 1Dk165 sketch map.

Figure 13. Site 1Dk165. Stone piles in former agricultural field. View to southeast.

Figure 14. Site 1Dk165, Stone Pile 7. View to north.

Figure 15. Site 1Dk165, Stone Pile 1. View to north.

Site 1Dk166

Topographic Map: 7.5' Dugout Valley, AL
Township: 5S *Range*: 9E
Elevation: 1360 ft AMSL
Surface Area: 2320 sq m
Ground Cover: Unimproved Forest
NRHP Status: Recommended Ineligible
Soil Type: Hartsells
Nearest Water Source: First Order Stream

Zone: 16 *Easting*: 617907 *Northing*: 3826735
Section: 29 SW¼ NW¼ NE¼
Site Size: 80 m by 40 m
Maximum Depth of Recovery: 27 cm
Degree of Disturbance: 90%
Natural Setting: Upland Crest
Soil Texture: Fine Sandy Loam
Distance to Water: 160 m North

Comments: Site 1Dk166 consists of the remains of a historic house site and farm complex situated approximately 50 m east of an unmarked and unimproved road connecting DeKalb County Road 600 and DeKalb County Road 179, on the north flank of a small upland plateau (Figures 5, 16). The area is occupied by immature pine forest mixed with hardwoods of oak, cherry, and hickory. The areas south and east of the site are cultivated hay fields. The site remains consist of a modern, rectangular, concrete block well house with metal piping, and is marked by two large mature oak trees (Figure 17). Modern trash is mixed in with historic artifacts on the surface.

The site represents an early twentieth century house and farm site, but is not considered a good example of the site type, as there are no remaining standing structures and only three shovel tests produced any artifacts.

Investigative Methods: Surface Collection-Shovel Testing

Materials Recovered:

Surface Collection

Group	Category	Subcategory	Remarks	Ct.
Glass	Bottle	Clear	Complete, Seam, Embossed: *Union Bottling Company Chattanooga, Tennessee*	1

Shovel Test 123

Group	Category	Subcategory	Remarks	Ct.
Ceramic	Stoneware	Clay Slip	Handle	1
Ceramic	Whiteware	Plain	Body	2
Ceramic	Whiteware	Plain	Rim	3
Ceramic	Whiteware	Green Transfer Print	Body	1
Ceramic	Whiteware	Red Transfer Print	Body	1
Glass	Bottle	Clear	Body	15
Glass	Bottle	Amethyst	Body	2
Glass	Bottle	Milk	Handle	1
Metal	Ferrous	Bottle Cap	Rusted	1
Metal	Ferrous	Alloy	Faucet Handle	1
Metal	Brass	Shotgun Shell		2
Metal	Brass	Bullet	Small Caliber	1

Shovel Test 125

Group	Category	Subcategory	Remarks	Ct.
Ceramic	Whiteware	Plain	Rim	2

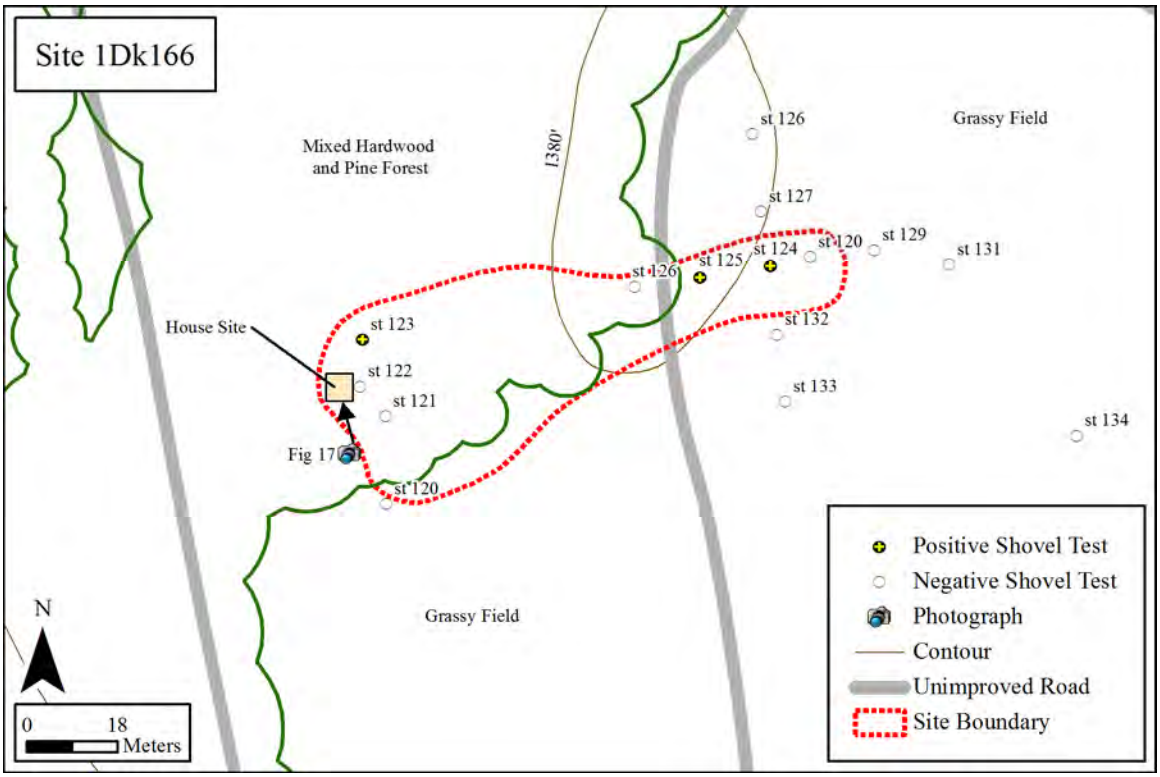

Figure 16. Site 1Dk166 sketch map.

Figure 17. Site 1Dk166 cinder block well house. View to south.

Shovel Test 124

Group	Category	Subcategory	Remarks	Ct.
Ceramic	Whiteware	Plain	Rim	1

Temporal/Cultural Affiliation: Early-Late Twentieth Century (circa 1900s-1980s)

Evaluation/Recommendations: Given the relatively recent age of the materials encountered and the absence of standing structures, the site is recommended ineligible for listing to the NRHP.

Isolated Find 1

Group	Category	Subcategory	Remarks	Ct.
Ceramic	Stoneware	Clay Slip	Rim	1
Ceramic	Stoneware	Clay Slip	Body	2

Temporal/Cultural Affiliation: Early-Late Twentieth Century (circa 1900s-1980s)

Evaluation/Recommendations: Given the absence of other cultural materials and context, the isolated find is not considered for NRHP eligibility.

Site 1Dk167

Topographic Map: 7.5' Dugout Valley, AL
Zone: 16 *Easting*: 617906 *Northing*: 3824487
Township: 5S *Range*: 9E
Section: 32 NW¼ SE¼ NW¼
Elevation: 1340 ft AMSL
Site Size: 30 m by 25 m
Surface Area: 450 sq m
Maximum Depth of Recovery: 0 cm
Ground Cover: Unimproved Forest
Degree of Disturbance: 99%
NRHP Status: Recommended Ineligible
Natural Setting: Upland Crest
Soil Type: Muskingum
Soil Texture: Fine Sandy Loam
Nearest Water Source: First Order Stream
Distance to Water: 100 m North

Comments: Site 1Dk167 consists of the remains of a historic house site situated approximately 800 m east of Smith Gap Road, on the south flank of a small, elevated ridgeline (Figure 6, 18). The area is occupied by mixed hardwood forest of oak, cherry, and hickory with an understory of privet. A modern wood and tin storage building sits 30 m southwest of the site. The site remains consist of a subsurface distribution of artifacts marked by a mature cedar tree, and bulb flowers. Only one shovel test produced historic artifacts.

The site represents a mid-twentieth century house site. There are no remaining standing structures and artifact recovery was scarce. The site location appears as an outbuilding on the 1975, USGS, 7.5' Dugout Valley, AL topographic quadrangle.

Investigative Methods: No Surface Collection-Shovel Testing

Materials Recovered:
Surface Collection

Group	Category	Subcategory	Remarks	Ct.
Metal	Ferrous	Nail	Rusted, Undetermined	3
Ceramic	Whiteware	Plain	Rim	3

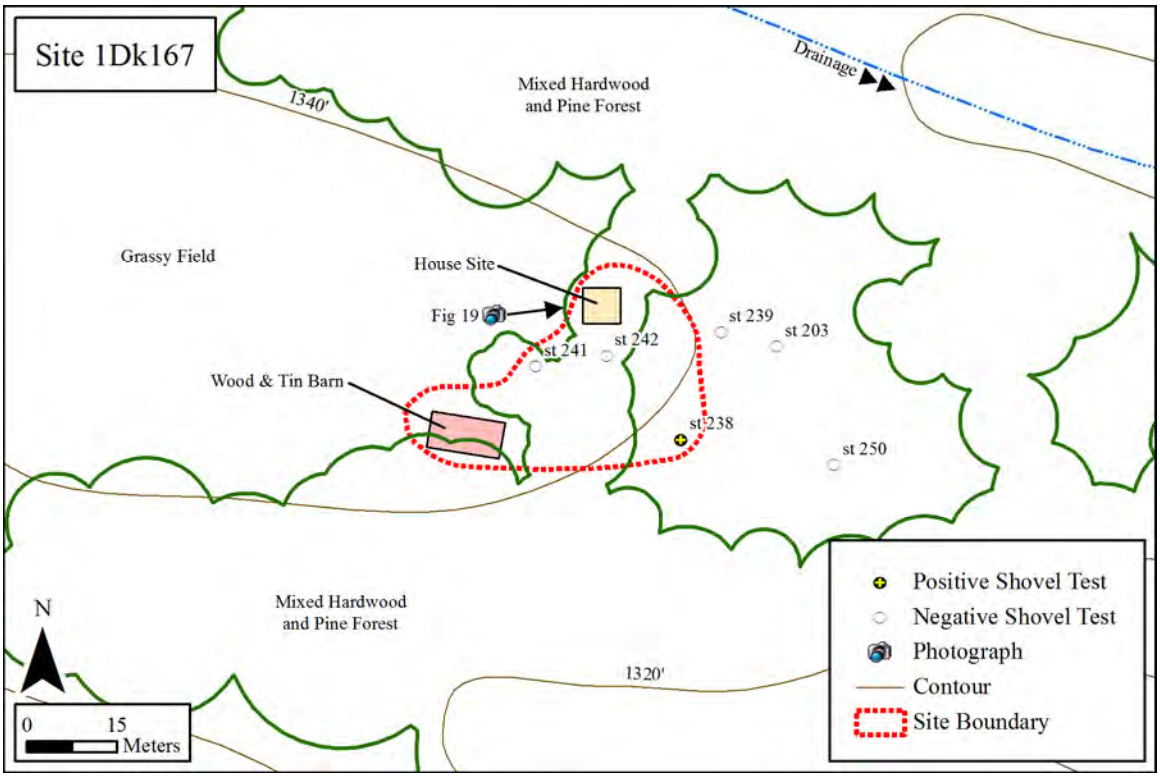

Figure 18. Site 1Dk167 sketch map.

Figure 19. Site 1Dk167 wooded area and farming implements at Site 1Dk167. View to east.

Group	Category	Subcategory	Remarks	Ct.
Glass	Bottle	Clear	Body	2
Brick				1
Ceramic	Whiteware	Plain	Base	1

Temporal/Cultural Affiliation: Mid-Twentieth Century (circa 1930s to 1980s)

Evaluation/Recommendations: Given the relatively recent age of the materials encountered and the sparse artifact recovery, as well as the lack of standing structures, the site is recommended ineligible for listing to the NRHP

Historic Architectural Resources

Gene A. Ford

Eleven HARs were identified in the APE (Figure 20). The eleven HARs represent rural typologies. HARs 1, 4, 5, 6, and 9 are classified as historic farm houses. These HARS were all once part of historic farmsteads; however, the associated historic domestic complexes have either been entirely eliminated or have been replaced with complexes featuring outbuildings of recent construction and design. In terms of residential architecture, HAR 1 is classified as a manufactured home; HARs 5 and 9 as bungalows; HAR 4 as an L-shaped cottage; and HAR 6 as a minimal traditional cottage. HARs 7 and 8 also have bungalows at the core of their domestic complexes. HARs 2, 3, 7, 8, 10, and 11 are classified as historic farmsteads. With the exception of HAR 11, which only has one shed on the property, the historic farms feature a farm house and a score of outbuildings, such as a barn and sheds.

Of the eleven HARs, only HAR 3 meets the eligibility criteria for listing in the NRHP based on Criterion C in the area of architecture and Criterion A in the area of agriculture. The other ten HARs do not meet the eligibility criteria for listing in the NRHP due to integrity issues. Architectural descriptions and NRHP eligibility evaluations of identified HARs follow.

HAR 1

Location: 1975, USGS, 7.5’, Dugout Valley, AL Quadrangle. High Point. 78 County Road 389

Name: Unnamed Dwelling.

Description: Circa 1980, one story, wood frame manufactured dwelling with a side gable roof of metal, plywood veneer siding, off center single leaf doors, one with single light, 6/6 double hung sash windows, wrap around porch with metal roof, wood posts, open rail balustrade, wood floor, rear porch, block piers (Figures 21-22).

The dwelling is reported to have a historic core. A review of the 1958, DeKalb County Soil Map shows a building on this site (United States Department of Agriculture 1958); consequently, it is possible that the current dwelling incorporates a historic core within its footprint. No one has confirmed this report as fact, though. Furthermore, no one is able to provide information on the construction era and materials of the core. The present design of the

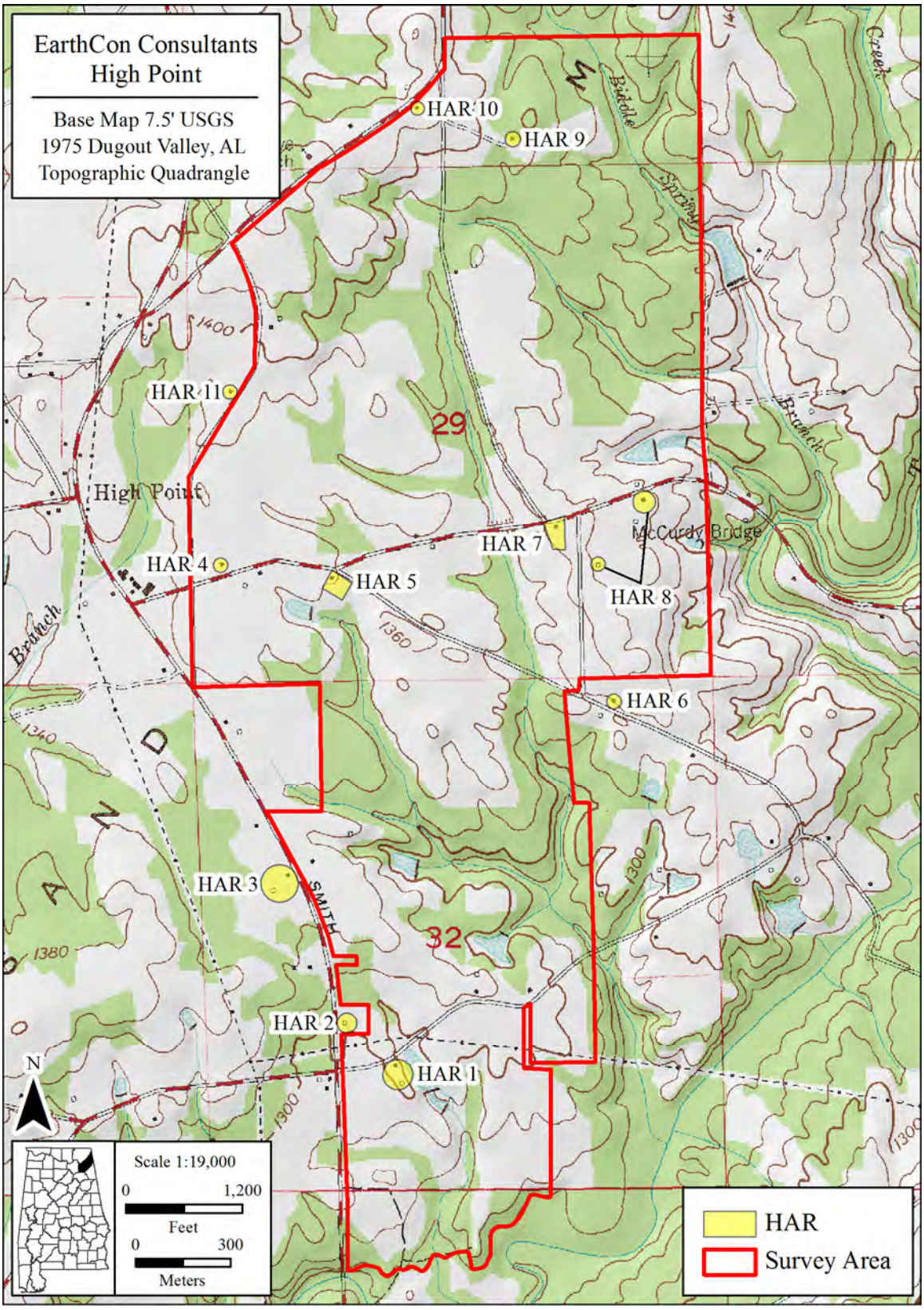

Figure 20. HAR locations within the survey area.

Figure 21. HAR 1, manufactured home. View east.

Figure 22. HAR 1, manufactured home. View south.

dwelling does not provide any clues as to what is concealed beneath the plywood cladding. A wrap around metal apron at the base of the dwelling does not permit any examination of the wall framing and foundation. Based on physical examination, the dwelling looks like a manufactured home.

Evaluation/Recommendation: HAR 1 does not meet the eligibility criteria for listing in the NRHP. If the dwelling is historic, it does not retain integrity in terms of design, workmanship, and materials. The footprint, roofing, siding, fenestration pattern and materials, porch, and piers of this dwelling are of recent design and construction.

HAR 2

Location: 1975, USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 3914 County Road 85

Name: Unnamed Farm Complex.

Description: Circa 1920, farm complex with one story, wood frame bungalow with a front gable roof of asphalt shingles, gable with louvered vent, exposed rafter tails, two interior chimneys, bricktex siding, central single leaf door with single light, flanking pairs of 6/6 double hung sash windows, partial width porch with gable roof, wood posts, wood floor, rear porch, brick pier foundation; circa 1920, wood frame shed with gable roof of metal, vertical weatherboard siding, door opening (door missing), side sheds (Figures 23-25).

Evaluation/Recommendation: HAR 2 does not meet the eligibility criteria for listing in the NRHP. The farm complex does not retain integrity in terms of design, workmanship, materials, and setting. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm is not intact. The domestic complex is missing key components, such as a historic barn, multiple sheds, a well house, a smoke house, and other structures that were integral to the daily operation of the farm in the first half of the twentieth century. With respect to architecture, the second potential area of significance, the two remaining historic buildings of the farm retain integrity, but not significance. The identified farm house and shed are not good examples of their respective genres. Quite basic in design, the bungalow lacks the characteristics that set the best rural examples apart from others. This bungalow does not have triangular knee braces, timberwork, Craftsman lights, decorative stone or masonry work, and porch supports consisting of posts on piers or rough log columns. The shed is also not exemplary in design or construction.

HAR 3

Location: 1975, USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 4125 County Road 85

Name: Unnamed Farm Complex.

Description: Circa 1900, farm complex with one story, wood frame central hall cottage with a side gable roof of metal, exterior stone chimney, bricktex over weatherboard siding, central single leaf door with four lights and three panels, flanking pairs of 6/6 double hung sash windows, full width porch with engaged roof, wood posts on stone piers, low stone closed rail balustrade, rear ell addition with gambrel roof, stone pier foundation; circa 1920, transverse passage barn with gable roof of metal, weatherboard siding, hayloft, transverse passage, side sheds; circa 1900, dilapidated shed with gable roof of metal and weatherboard siding (Figures 26-28).

Figure 23. HAR 2, bungalow. View east.

Figure 24. HAR 2, bungalow. View south.

Figure 25. HAR 2, shed. View east.

Figure 26. HAR 3, central hall cottage. View west.

Figure 27. HAR 3, HAR 3, central hall cottage. View west.

Figure 28. HAR 3, barn. View west.

Evaluation/Recommendation: The identified farm complex meets the eligibility criteria for listing in the NRHP based on Criterion C in the area of architecture and Criterion A in the area of agriculture. The complex as a whole and the individual buildings retain integrity. Although the roof of the farm house is of recent vintage, it is in character with historic roofs in the area. The house retains its original siding (albeit somewhat concealed beneath tarpaper), fenestration pattern and materials, footprint, and porch. The domestic complex contains a substantial barn and a shed. With its transverse passage, hayloft, and integrated sheds, the barn is one of the best examples of agricultural architecture in the vicinity. In addition to the built environment, the fields historically associated with this farm are intact and still used for agricultural production. The identified farmstead represents a good example of a small-scale, early twentieth-century farm in DeKalb County.

HAR 4

Location: 1975, USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 225 County Road 85

Name: Unnamed Farm House.

Description: Circa 1900, L shaped, one story, wood frame cottage with a cross gable roof of metal, bricktex over vertical weatherboard siding, central single leaf door with six panels, flanking 1/1 double hung sash windows, full width porch with engaged roof, wood posts, concrete slab floor, rear ell addition with gable roof, concrete block foundation (Figures 29, 30).

Evaluation/Recommendation: HAR 4 does not meet the eligibility criteria for listing in the NRHP. The farm house, the only building on the property, does not retain integrity in terms of design, workmanship, and materials. The rebuilt porch is of recent construction. The present porch supports and concrete block foundation do not replicate the original materials and design. The present fenestration pattern and materials of the façade are likely not original. Many of the original 4/4 double hung sash windows have been replaced with 1/1 and 6/6 double hung sashes.

HAR 5

Location: 1975, USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 12 County Road 487

Name: Unnamed Farm House.

Description: Circa 1920, one story, wood frame bungalow with a front gable roof of asphalt shingles, vinyl siding, central single leaf door with six lights and three panels, vinyl clad 6/6 double hung sash window, partial width porch with gable roof, decorative iron supports on brick piers, concrete slab floor (Figure 31).

Evaluation/Recommendation: The identified farm house does not meet the eligibility criteria for listing in the NRHP. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm is not intact. The bungalow is the only historic building left in the domestic complex. The historic barns, sheds, and other structures have all been replaced with recently constructed outbuildings. With respect to architecture, the second potential area of significance, the bungalow does not retain integrity in terms of design, workmanship, and materials. Vinyl siding and aluminum porch rails do not

Figure 29. HAR 4, L-shaped cottage. View northwest.

Figure 30. HAR 4, L-shaped cottage. View southwest.

Figure 31. HAR 5, bungalow. View south.

represent acceptable replacement materials for the original weatherboards, porch supports, and balustrade. Vinyl and aluminum do not accord with the preference for using natural materials, such as brick, stone, and wood, in Craftsman architecture.

HAR 6

Location: 1975, USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 12 County Road 487

Name: Unnamed Farm House.

Description: Circa 1945, one story, wood frame minimal traditional cottage with side gable roof of metal, exposed rafters, asbestos shingle siding, off center single leaf veneer door, vinyl clad double hung sash windows, partial width porch with gable roof, wood posts, concrete slab floor, rock faced concrete block foundation (Figure 32).

Evaluation/Recommendation: HAR 6 does not meet the eligibility criteria for listing in the NRHP. The minimal traditional cottage, the only building on the property, does not retain integrity. The façade windows and doors are not original to the cottage. These alterations are minor, however. Ultimately, the minimal traditional cottage does not possess architectural significance. It is a very basic example. It lacks the stylistic articulation of better examples in the area. Other more detailed minimal traditional cottages feature custom masonry and wood work, steeply pitched roofs and vestibules, and more complex porch compositions in reference to Tudor Revival and Craftsman architecture; and stylistic embellishments, such as pedimented dormers, door surrounds consisting of pediments and pilasters, and porches featuring signature Classical columns.

Figure 32. HAR 6, minimal traditional cottage. View north.

HAR 7

Location: USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 935 County Road 114

Name: Unnamed Farm Complex.

Description: Circa 1920, residential complex with one story, wood frame bungalow with a cross gable roof of asphalt shingles, vinyl siding, exterior stone chimney, off center single leaf door, 2/2 and 6/6 double hung sash windows, partial width porch with gable roof, wood posts on stone piers, concrete slab floor; circa 1920, wood frame garage with gable roof of metal, weatherboard siding, side addition; circa 1920, dilapidated cottage with side gable roof of metal, concrete block chimney, metal and weatherboard siding, off center single leaf door with four lights and three panels, 6/6 double hung sash windows, concrete block chimney; circa 1920, shed or smokehouse turned circa 1945, two story residence constructed of stone and rock faced concrete block with front gable roof of asphalt shingles, exposed rafters, off center single leaf door, 1/1 and 2/2 double hung sash windows (Figures 33-36).

Evaluation/Recommendation: HAR 7 does not meet the eligibility criteria for listing in the NRHP. The farm complex does not retain integrity in terms of design, workmanship, materials, and setting. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm is not intact. The domestic complex is missing key components, such as a historic barn, a well house, and other structures that were integral to the daily operation of the farm in the first half of the twentieth century. The functions of remaining buildings and outbuildings in the complex have been altered, such as the conversion of a cottage to a storage shed and a shed or smokehouse to a residence. With respect to architecture, the second potential area of significance, the buildings do not retain historic

Figure 33. HAR 7, bungalow. View northwest.

Figure 34. HAR 7, garage. View north.

Figure 35. HAR 7, cottage turned shed. View northeast.

Figure 36. HAR 7, shed turned dwelling. View south.

integrity. The bungalow has vinyl siding and 2/2 double hung sash windows. These replacement parts do not replicate the design and materials of the original siding and windows. The two story residence represents a substantial change in function, design, and materials. The one story cottage has also undergone a transformation from a residence to a storage shed.

HAR 8

Location: USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 1092 County Road 114

Name: Unnamed Farm Complex.

Description: Circa 1945, farm complex with one story, wood frame bungalow with a cross gable roof of asphalt shingles, asbestos shingle siding, brick interior chimney, off center single leaf door with four lights and three panels, 6/1, 6/2, and 4/1 double hung sash windows, partial width porch with gable roof, wood posts on rock faced concrete block piers, concrete slab floor, concrete block foundation; circa 1990 wood frame garage with gable roof of asphalt shingles, vinyl siding, side addition, overhead door; circa 1945, concrete block barn with gambrel roof of metal, hayloft, large wall openings on the west and east sides (Figures 37, 38).

Evaluation/Recommendation: The identified farm complex does not meet the eligibility criteria for listing in the NRHP. The farm complex retains historic integrity; however, it does not possess significance. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm does not compare to other farmsteads in the vicinity. The domestic complex of HAR 8 does not contain the full complement of outbuildings, such as a smoke house, animal pens, vehicle sheds, and other structures integral to the daily operation of the farm, as other historic farms in the area. The bungalow does not possess architectural significance. It lacks the stylistic articulation of better examples in the area. Other more detailed bungalows feature custom masonry and wood work, complex roof forms, Craftsman lights and doors, and signature porches featuring exposed wood work, tapered posts on piers, or masonry clad columns, and Craftsman designed balustrades. The barn is also not as good an example of agricultural architecture as others. The HAR 3 barn is a case in point. It is more substantial in terms of construction and components than the HAR 8 barn. It features integrated sheds and wood frame construction in addition to a hayloft and transverse passage.

HAR 9

Location: USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 872 County Road 880

Name: Unnamed Farm Complex.

Description: Circa 1920, one story, wood frame bungalow with a front gable roof of metal, weatherboard siding, interior stone chimney, central single leaf door with six panels, windows are covered by a door, a cabinet, and empty snack machine, partial width porch with gable roof, wood posts, wood porch floor, stone piers (Figures 39-40).

Evaluation/Recommendation: HAR 9 does not meet the eligibility criteria for listing in the NRHP. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm is not intact. The bungalow is the only historic

Figure 37. HAR 8, bungalow. View southeast.

Figure 38. HAR 8, barn. View east.

Figure 39. HAR 9, bungalow. View south.

Figure 40. HAR 9, bungalow. View east.

building left in the domestic complex. The historic barns, sheds, and other structures have all been replaced with recently constructed outbuildings. The bungalow does not possess architectural significance. It is a very basic example. It lacks the stylistic articulation of better examples in the area. Other more detailed bungalows feature custom masonry and wood work, complex roof forms, Craftsman lights and doors, and signature porches featuring exposed wood work, tapered posts on piers, or masonry clad columns, and Craftsman designed balustrades.

HAR 10

Location: USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 1137 County Road 676

Name: Unnamed Farm Complex.

Description: Circa 1945, farm complex with one story, wood frame minimal traditional cottage with a side gable roof of asphalt shingles, vinyl siding, central fifteen light single leaf door, vinyl clad 6/6 double hung sash windows, partial width porch with gable roof, vinyl clad Tuscan columns, concrete slab floor, concrete block foundation, wing addition; circa 1945, wood frame garage or shed turned recent cottage with gable roof of metal, board and batten siding, full width screened porch with metal shed roof, wood posts, side addition; circa 1945, wood frame vehicle shed with gable roof of metal, weatherboard siding, swinging doors, side sheds (Figures 41-42).

Evaluation/Recommendation: The identified farm complex does not meet the eligibility criteria for listing in the NRHP. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm does not compare to other farmsteads in the vicinity. The domestic complex of HAR 10 does not contain the full complement of outbuildings, such as a smoke house, a barn, animal pens, vehicle sheds, and other structures integral to the daily operation of the farm, as other historic farms in the area. The minimal traditional cottage does not retain architectural integrity. Vinyl exterior, window, and column cladding does not replicate the design and materials of the original weatherboards, window treatments, and columns.

HAR 11

Location: USGS, 7.5', Dugout Valley, AL Quadrangle. High Point. 1137 County Road 676

Name: Unnamed Farm Outbuilding.

Description: Circa 1945, wood frame storage shed with gable roof of metal, gable with opening, weatherboard siding, single leaf door, raised floor, flanking sheds, block piers (Figure 43).

Evaluation/Recommendation: HAR 11 does not meet the eligibility criteria for listing in the NRHP. With respect to agricultural history, one of the two potential areas of significance, the built environment of this historic farm does not retain integrity. The identified shed is the only remaining building on the property. The associated farm house and other outbuildings are no longer extant. With respect to architecture, the second area of potential significance, the shed does not possess significance. The shed is not exemplary in design or construction. It is like many others in the area, including the shed associated with HAR 2.

Figure 41. HAR 10, minimal traditional cottage and workshop. View south.

Figure 42. HAR 10, vehicle shed. View south.

Figure 43. HAR 11, shed. View northwest.

Survey Interpretation and Evaluation

The University of Alabama, Office of Archaeological Research (OAR) was contracted by Ridge-Holm Energy, LLC to conduct a cultural resources survey for a proposed surface mine located near the community of High Point in DeKalb County, Alabama. As stated in the introduction, the cultural resources survey focused on locating and identifying any archaeological sites or historic standing structures within the proposed project boundaries, assessing their significance, and providing recommendations with regard to guidelines set forth by the NPS for NRHP eligibility criteria.

As a result of these investigations, four archaeological sites, 1Dk164, 1Dk165, 1Dk166 and 1Dk167, were discovered within the APE. Additionally, eleven HARs were recorded in or just outside the proposed project area boundaries.

As a whole, the survey area has been heavily modified by agriculture, silviculture, pond construction, terracing, and subsequent severe erosion. This greatly reduced the potential for any intact archeological sites. The four historic archaeological sites included one mid-twentieth century whiskey still site, two twentieth century historic house sites, and one series of stone piles on a ridge. None are recommended eligible for listing to the NRHP. Eleven historic architectural resources were also documented as the result of this survey, as well as one isolated find. No prehistoric artifacts were recovered or sites recorded. A major tributary of the Tennessee River runs to

the east and south of the survey area, and acting on personal communication with a landowner, a prehistoric rock shelter was located and visited on this stream (Town Creek), and the site was added to the Alabama State Site File (1Dk163). It was not investigated or included in this report due to its being outside of the APE, but this may help to explain the absence of prehistoric occupation inside the APE. With such features being prolific in nearby drainages, the poorly drained soils of much of the upland and absence of perennial water sources, prehistoric occupation of the APE may have been considered undesirable.

Recommendations

During the course of this survey, four new archaeological sites, Site 1Dk164, 1Dk165, 1Dk166, and 1Dk167 were discovered within the APE. None of the sites are considered eligible for inclusion to the NRHP. This determination is based on a low research potential due to deep soil disturbances, lack of any intact structural features, and sparse artifact recovery. Eleven Historic Architectural Resources were identified, but only one, HAR 3, was recommended as eligible for the National Register of Historic Places, using Criteria A and C. HAR 3 is outside the area of direct impact, and therefore would only be effected visually by the proposed project. The existing vegetation buffer along Smith Gap Road protects HAR 3 from visual impact and should be retained. A finding of no properties is recommended, as long as a visual buffer is left intact between the HAR 3 and the proposed undertaking.

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APPENDIX A

University of Alabama Museums
Office of Archaeological Research

THE UNIVERSITY OF
ALABAMA
MUSEUMS

October 31, 2012

Matthew D. Gage, Director
Office of Archaeological Research
University of Alabama Museums
13075 Mound State Parkway
Moundville, AL 35474

Dear Matt:

This letter is to confirm our agreement to provide curation services for all the materials generated by this project. As you know, we are recognized by a variety of Federal agencies as a repository meeting the standards in 36 CFR Part 79 and have formal agreements to provide curation under these guidelines to agencies such as the National Park Service, U.S. Fish and Wildlife Service, U.S. Soil Conservation Service, U.S. Army Corps of Engineers, Tennessee Valley Authority, National Forest Service, etc.

We appreciate having the opportunity to assist you with curation services in the past and look forward to working with you in the future.

Sincerely,

Eugene Futato

Eugene M. Futato RPA
Deputy Director

13075 Moundville
Archaeological Park
Moundville, Alabama 35474
(205) 371-2766
fax (205) 371-2791

APPENDIX B

Site: DK164 Retrieve Site

Site Name: TEMP 1

Location and Size

Easting: 617541 Northing: 3824487 Elevation: 1300

Township: 05S Range: 09E Section: 32

NW 1/4 of NE 1/4 of SW 1/4

Major Axis: 3 Minor Axis: 2 Max Depth: 0

Preservation Information

Preservation State: LOGGING

Immediate Destruction Pending: Y Looting/Vandalism: N % Destroyed: 90

National Register Status: NO?

Archaeological Information

Level of Investigation: RECONNAISSANCE

Excavation Status: SURFACE COLLECTIC

Topographic Association: UPLAND CRES

Physiographic District: SAND

Physiographic Section: CUMBERLAND

Nearest Water Source: FIRST

Direction To: SE Distance To: 300 At Confluence: N

Drainage Basin: TENNESSEE

Ground Cover: UNIMPROVED

Soil Type: null

Soil Texture Class: null

County Soil Survey: null

Degree of Disturbance: UPPER

Characteristics

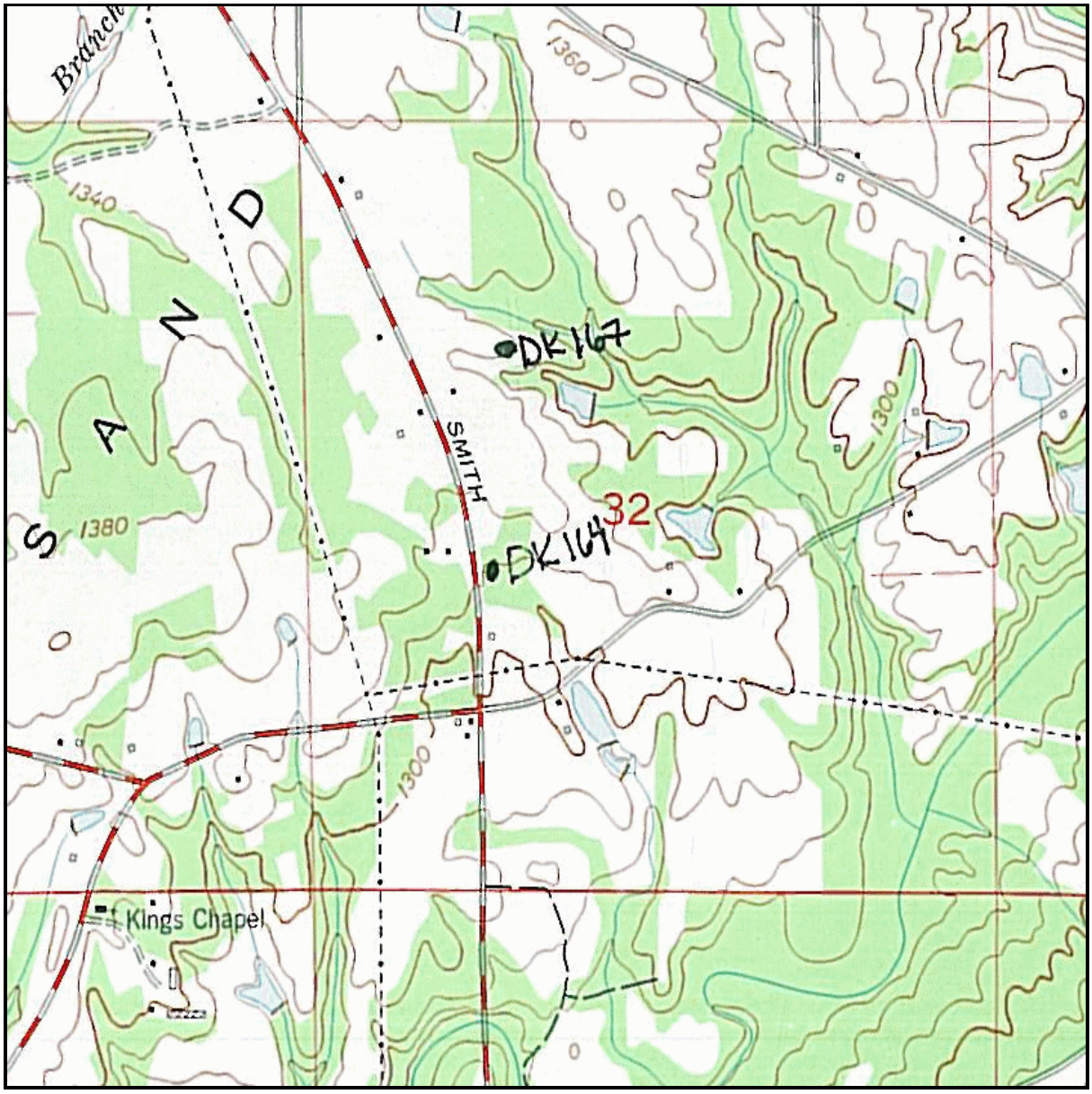
- ☐ Human Remains
- ☐ Features
- ☐ Petroglyph/Pictrograph
- ☐ Rockshelter
- ☐ Cave
- ☐ Artifact Scatter
- ☐ Midden
- ☐ Shell Midden
- ☐ Single Earthen Mound
- ☐ Multiple Earthen Mound
- ☐ Stone Mound(s)
- ☐ Weir
- ☐ Quarry
- ☐ Standing Historic Structure
- ☐ Historic Structure Site
- ☐ Historic Cemetery
- ☑ Still
- ☐ Mill
- ☐ Engineering
- ☐ Other

Components

SITE HAS SOME REMAINS OF METAL AND ENAMEL POTS, A SANDSTONE BOX AROUND IT, AND TRASH PILED ON IT.

Comments

ONLY ONE STONEWARE SHERD COLLECTED, SIT IS A MID 19TH CENTURY WHISKEY STILL, BUT NOT A GOOD EXAMPLE.



USGS 7.5' Topographic Map: DUGOUT VALLEY

Record Type: ☐ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☐ Verified ☑ New

Form Completion: ☐ Final ☐ Map Search ☐ Literature Search

Sponsor Type: ACA Sponsored By: University of Alabama

Recorder Type: ACA Recorded By: University of West Alab

Date Submitted: 2013-04-23 Date Revised: 2013-04-23

Top of Page

Site: DK165 Retrieve Site

Site Name: TEMP 2

Location and Size

Easting:	617399	Northing:	3826336	Elevation:	1380
Township:	05S	Range:	09E	Section:	29
	SE	1/4 of	SW	1/4 of	NW 1/4
Major Axis:	0	Minor Axis:	0	Max Depth:	0

Preservation Information

Preservation State: LOGGING

Immediate Destruction Pending: Y Looting/Vandalism: N % Destroyed: 0

National Register Status: ----

Archaeological Information

Level of Investigation: RECONNAISSANCE

Excavation Status: NO COLLECTION

Topographic Association: UPLAND CRES

Physiographic District: SAND

Physiographic Section: CUMBERLAND

Nearest Water Source: FIRST

Direction To: E Distance To: 500 At Confluence: N

Drainage Basin: TENNESSEE

Ground Cover: CULTIVATION

Soil Type: null

Soil Texture Class: null

County Soil Survey: null

Degree of Disturbance: UNDISTURBED

Characteristics

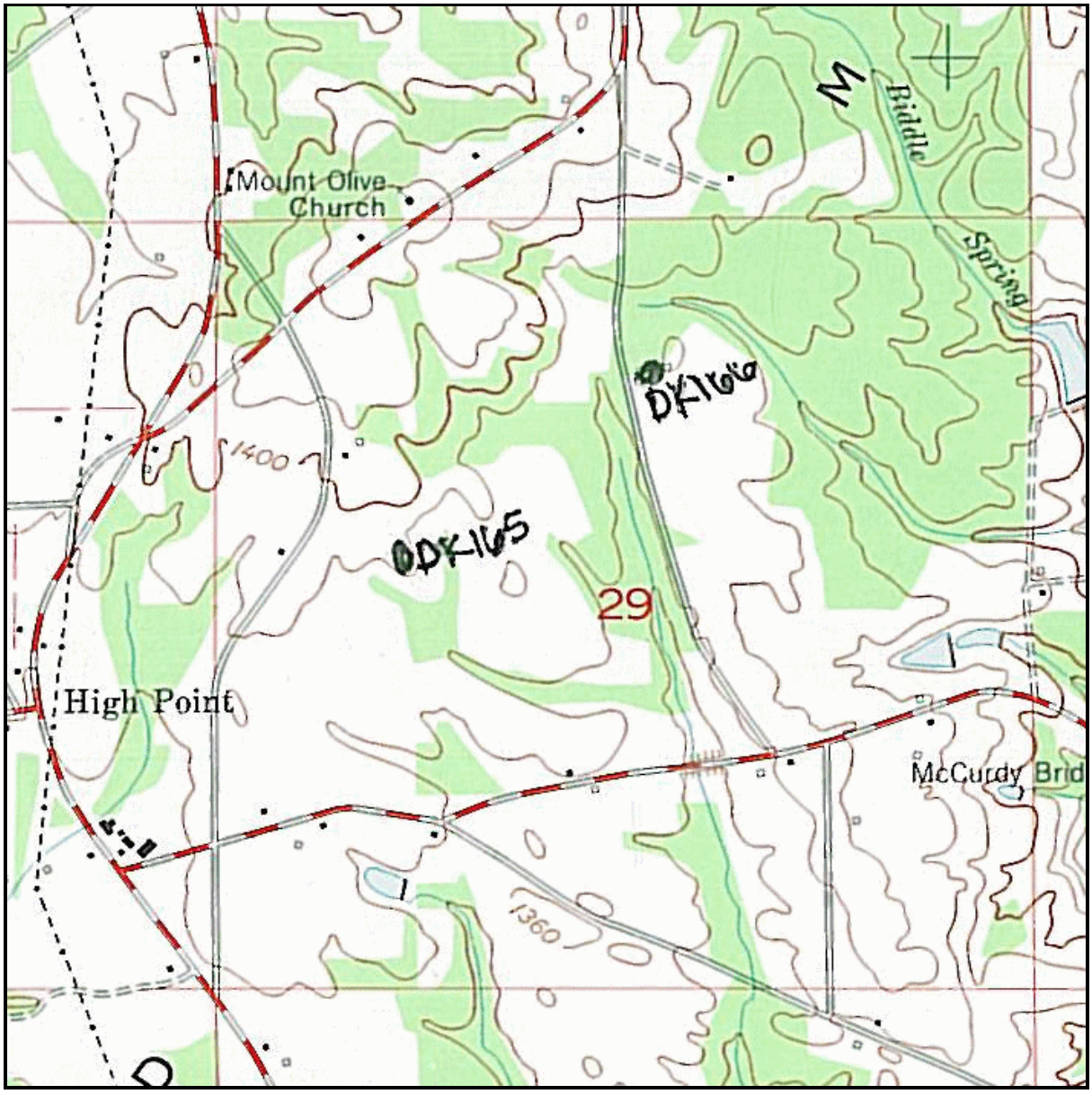
- [ ] Human Remains
- [ ] Features
- [ ] Petroglyph/Pictrograph
- [ ] Rockshelter
- [ ] Cave
- [ ] Artifact Scatter
- [ ] Midden
- [ ] Shell Midden
- [ ] Single Earthen Mound
- [ ] Multiple Earthen Mound
- [x] Stone Mound(s)
- [ ] Weir
- [ ] Quarry
- [ ] Standing Historic Structure
- [ ] Historic Structure Site
- [ ] Historic Cemetery
- [ ] Still
- [ ] Mill
- [ ] Engineering
- [ ] Other

Components

9 STONE MOUNDS

Comments

9 STONE MOUNDS ALONG A RIDGE PLANTED IN PINE, SURROUNDED BY HAYFIELDS. PROBABLY HISTORIC CLEARING OF FIELD FOR AGRICULTURE, BUT MUST BE CONSIDERED UNDETERMINED.



USGS 7.5' Topographic Map: DUGOUT VALLEY

Record Type: ☐ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☐ Verified ☑ New

Form Completion: ☐ Final ☐ Map Search ☐ Literature Search

Sponsor Type: ACA Sponsored By: University of Alabama

Recorder Type: ACA Recorded By: University of Alabama

Date Submitted: 2013-04-23 Date Revised: 2013-04-23

Top of Page

Site: DK166 Retrieve Site

Site Name: TEMP 3

Location and Size

Easting: 617905 Northing: 3826374 Elevation: 1360

Township: 05S Range: 09E Section: 29

SW 1/4 of NW 1/4 of NE 1/4

Major Axis: 0 Minor Axis: 0 Max Depth: 0

Preservation Information

Preservation State: CULTIVATION

Immediate Destruction Pending: Y Looting/Vandalism: N % Destroyed: 90

National Register Status: NO

Archaeological Information

Level of Investigation: RECONNAISSANCE

Excavation Status: SURFACE & SHOVEL

Topographic Association: UPLAND CRES

Physiographic District: SAND

Physiographic Section: CUMBERLAND

Nearest Water Source: FIRST

Direction To: N Distance To: 151 At Confluence: N

Drainage Basin: TENNESSEE

Ground Cover: CULTIVATION

Soil Type: HARTSELLS

Soil Texture Class: FINE SANDY LOAM

County Soil Survey: null

Degree of Disturbance: DEEP

Characteristics

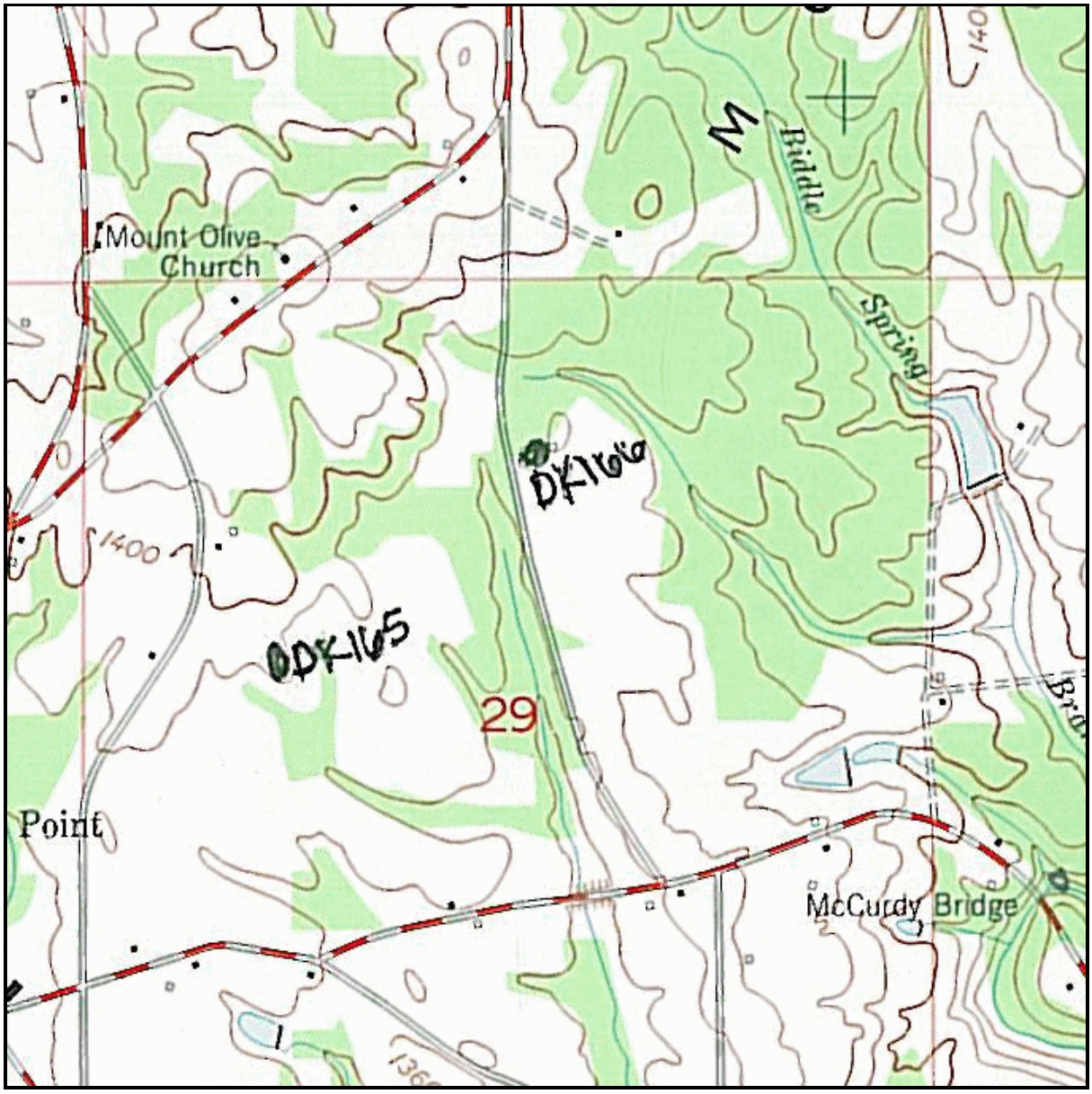
- [ ] Human Remains
- [ ] Features
- [ ] Petroglyph/Pictrograph
- [ ] Rockshelter
- [ ] Cave
- [ ] Artifact Scatter
- [ ] Midden
- [ ] Shell Midden
- [ ] Single Earthen Mound
- [ ] Multiple Earthen Mound
- [ ] Stone Mound(s)
- [ ] Weir
- [ ] Quarry
- [ ] Standing Historic Structure
- [x] Historic Structure Site
- [ ] Historic Cemetery
- [ ] Still
- [ ] Mill
- [ ] Engineering
- [ ] Other

Components

null

Comments

HOUSE, BARN ARE ON TOPO, ALSO EXISTING WELL HOUSE, HISTORIC CERAMIC, GLASS AND METAL RECOVERED IN SEVERAL SHOVEL TESTS, NOT ELIGIBLE



USGS 7.5' Topographic Map: DUGOUT VALLEY

Record Type: ☐ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☐ Verified ☑ New

Form Completion: ☐ Final ☐ Map Search ☐ Literature Search

Sponsor Type: ACA Sponsored By: University of Alabama

Recorder Type: ACA Recorded By: University of Alabama

Date Submitted: 2013-04-23 Date Revised: 2013-04-23

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Site: DK167 Retrieve Site

Site Name: TEMP 4

Location and Size

Easting:	617564	Northing:	3824947	Elevation:	1340
Township:	05N	Range:	09E	Section:	32
	?	1/4 of	?	1/4 of	? 1/4
Major Axis:	20	Minor Axis:	20	Max Depth:	15

Preservation Information

Preservation State: CONSTRUCTION

Immediate Destruction Pending: Y Looting/Vandalism: N % Destroyed: 90

National Register Status: ----

Archaeological Information

Level of Investigation: RECONNAISSANCE

Excavation Status: SURFACE & SHOVEL

Topographic Association: UPLAND CRES

Physiographic District: SAND

Physiographic Section: CUMBERLAND

Nearest Water Source: FIRST

Direction To: N Distance To: 200 At Confluence: N

Drainage Basin: TENNESSEE

Ground Cover: DEVELOPED

Soil Type: MUSKINGUM

Soil Texture Class: FINE SANDY LOAM

County Soil Survey: null

Degree of Disturbance: DEEP

Characteristics

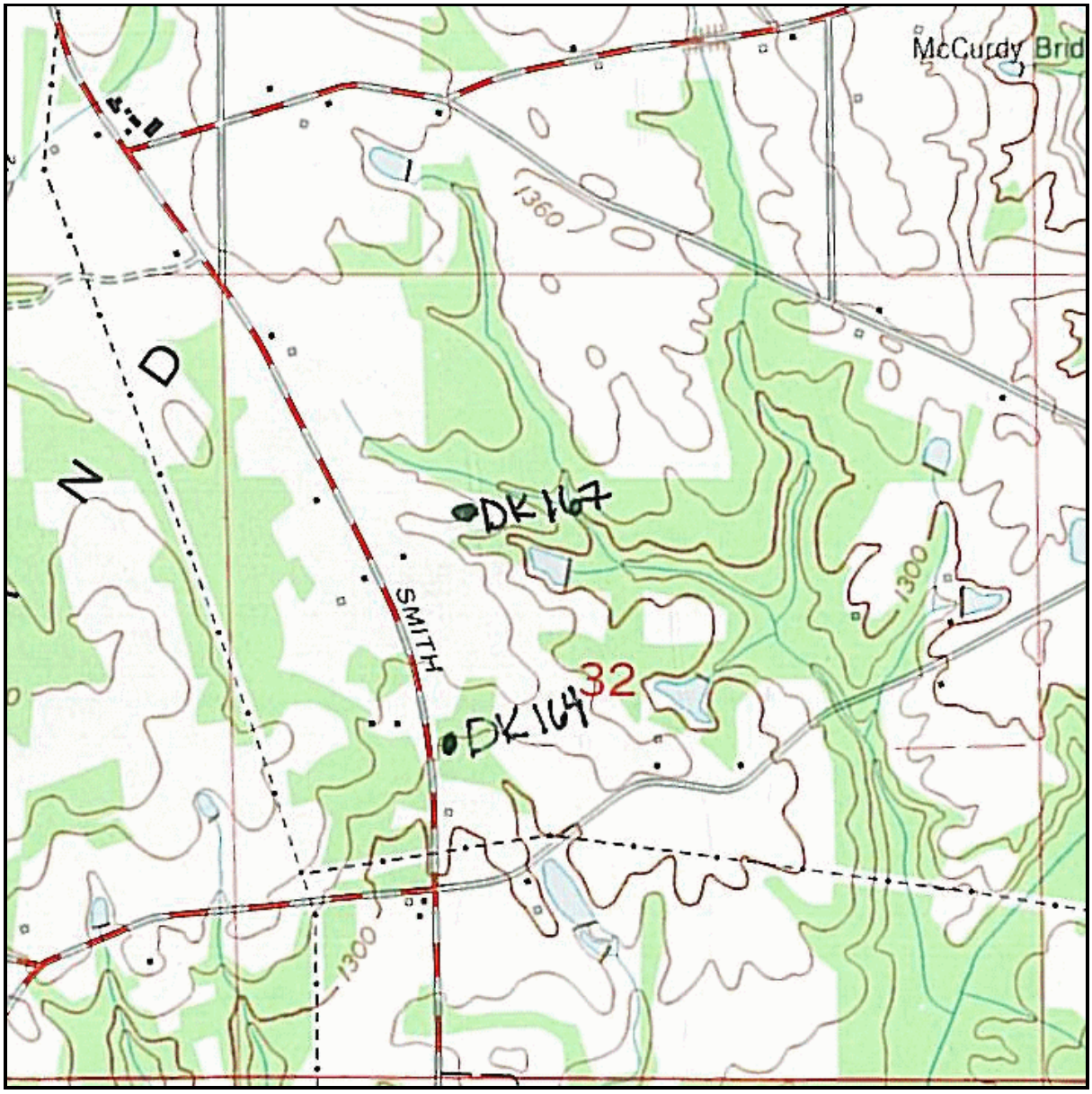
- [ ] Human Remains
- [ ] Features
- [ ] Petroglyph/Pictrograph
- [ ] Rockshelter
- [ ] Cave
- [ ] Artifact Scatter
- [ ] Midden
- [ ] Shell Midden
- [ ] Single Earthen Mound
- [ ] Multiple Earthen Mound
- [ ] Stone Mound(s)
- [ ] Weir
- [ ] Quarry
- [ ] Standing Historic Structure
- [x] Historic Structure Site
- [ ] Historic Cemetery
- [ ] Still
- [ ] Mill
- [ ] Engineering
- [ ] Other

Components

null

Comments

HISTORIC HOUSE SITE WITH STANDING OUTBUILDING, HISTORIC CERAMIC AND GLASS AND METAL RECOVERED IN ONE POSITIVE SHOVEL TEST, NOT ELIGIBLE



USGS 7.5' Topographic Map: DUGOUT VALLEY

Record Type: ☐ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☐ Verified ☑ New

Form Completion: ☐ Final ☐ Map Search ☐ Literature Search

Sponsor Type: ACA Sponsored By: University of Alabama

Recorder Type: ACA Recorded By: University of Alabama

Date Submitted: 2013-04-23 Date Revised: 2013-04-23

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ATTACHMENT II.B.2-2

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

FRANK W. WHITE
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

July 3, 2013

Sam Magruder
PidgeHolm Energy Partners, LLC
1830 Fountain Drive, Unit 1303
Reston, Virginia 20190

Re: AHC 13-0957
Cultural Resource Assessment
Proposed Surface Mine Near High Point
DeKalb County, Alabama

Dear Mr. Magruder:

Upon review of the cultural resource assessment conducted by the Office of Archaeological Research, we have determined that we agree with the author's findings. A buffer should be preserved between the mine activities and HAR 3, the farm complex, to reduce the visual impact of the mine. We also agree that none of the archaeological sites located are eligible for the National Register of Historic Places and no further archaeological investigations are warranted. Therefore, with the inclusion of a proper buffer for HAR 3, we can concur with this project.

We appreciate your continued efforts on this project. Should you have any questions, please contact Greg Rhinehart at (334) 230-2662 or by e-mail Greg.Rhinehart@preserveala.org. Please have the AHC tracking number referenced above available and include it with any correspondence.

Truly yours,

Frank W. White
State Historic Preservation Officer

FWW/RJG/GCR/gcr

ATTACHMENT II.E.1

GEOLOGY

ATTACHMENT II.E.1

GEOLOGY (Section 880x-8e)

The proposed John Poe Mine Permit area is located in the Plateau coal field of DeKalb County in northeastern Alabama. The permit area is located on the east-central side of Sand Mountain in Section 5 of Township 6 South, Range 9 East, and Sections 20, 21, 29, and 32 of Township 5 South, Range 9 East.

Regional Geology

The Permit Area is located in the Cumberland Plateau physiographic province. Regional geology is summarized from Pashin (2005) and Kopaska-Merkel (2008). Bedrock in the area comprises a thick sequence of Paleozoic sedimentary rocks. The basal Paleozoic unit is a Cambrian siliciclastic unit. Cambro-Ordovician sediments are largely represented by carbonates, reflecting stable margin depositional environments. Crustal uplift and erosion related to Appalachian tectonic processes is recorded in Middle Ordovician to Lower Mississippian rocks as the proportion of clastic sedimentary rocks increases, reflecting erosion of the developing Appalachian orogen.

Mississippian and Pennsylvanian rocks include limestones and easterly-derived clastic sedimentary rocks that suggest deposition in a prograding deltaic environment across the carbonate shelf, with clastic sources indicating erosion of the assembling Appalachian imbricated terraces. Economic coal deposits in Alabama formed as organic accumulations in these prograding deltaic or fan deposits.

The southern portion of the Cumberland Plateau is characterized by gently folded or flat-lying beds on the edge of the Appalachian foreland fold and thrust belt. Paleozoic sequences are imbricated by reverse-slip (thrust) faults. Anticlines generally occur in the allochthonous sequence and were formed in response to ramps of the basal thrust faults. Axial surfaces of folds in the generally strike northeast-southwest, parallel to regional trends. Regional folds are generally plunging to the southwest, and regional dip of beds is about 20 to 30 feet per mile to the south.

Valleys in the province, such as Wills, Sequatchie, and Murphree, are located in the folded and faulted northeast-trending anticlines. In the valleys, resistant upper Paleozoic beds were removed through erosion, exposing less resistant carbonates and shales in the lower Paleozoic section. The less resistant beds form the floors of the anticlinal valleys.

Lookout, Sand, and Blount Mountains are shallow synclines. Sandstone beds in the Pennsylvanian Pottsville Formation formed erosion-resistant caps that produced plateaus, mesas, and mountains in the synclinal areas that preserved the upper Paleozoic section.

Strata in the synclinal areas are generally flat-lying. However, broad open folds with northeast and northwest trending axes are present, and produce as much as 40 feet of elevation change in beds over a 0.5-mile distance.

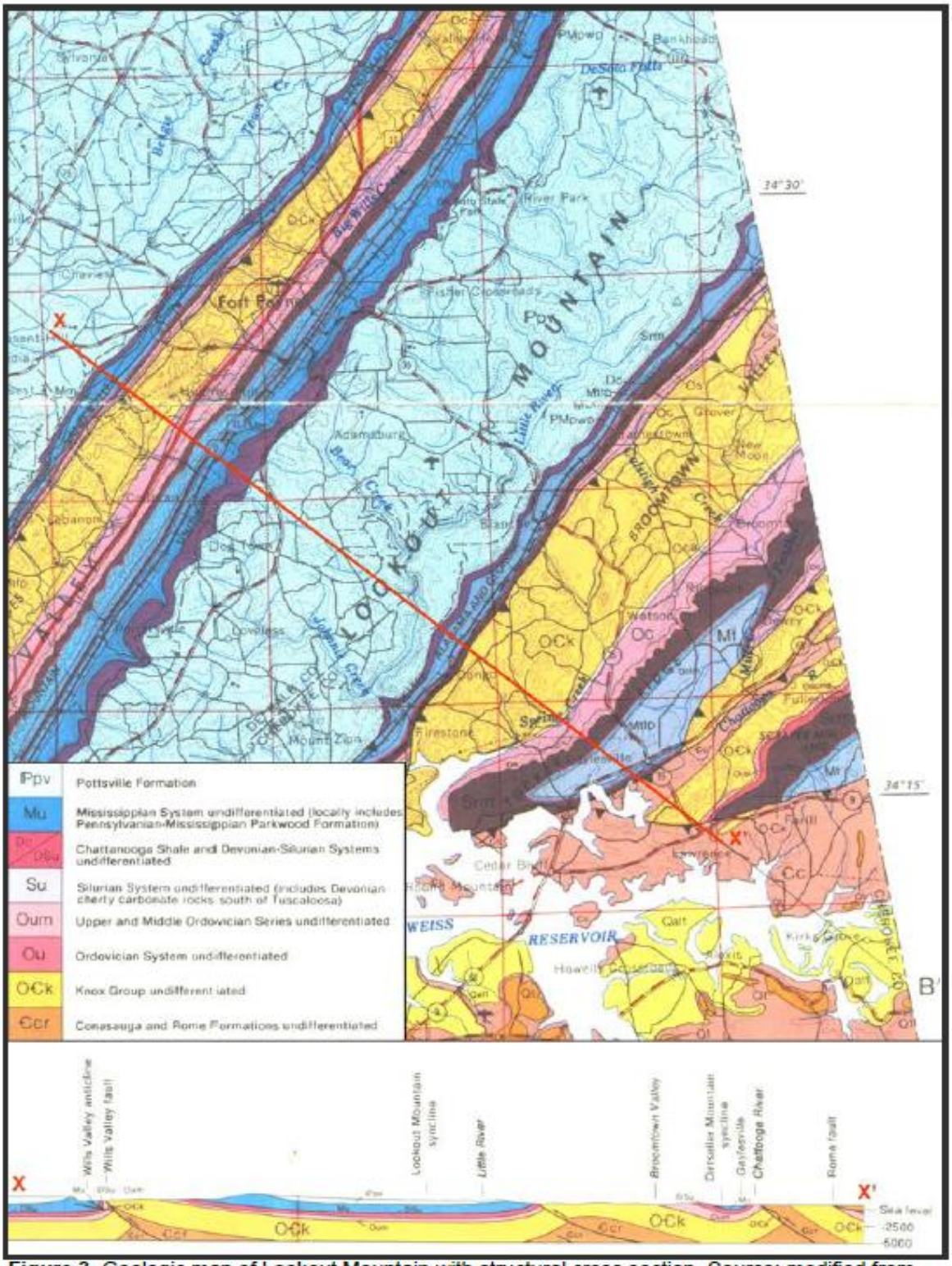


Figure 3. Geologic map of Lookout Mountain with structural cross section. Source: modified from (Szabo *et al.* 1988).

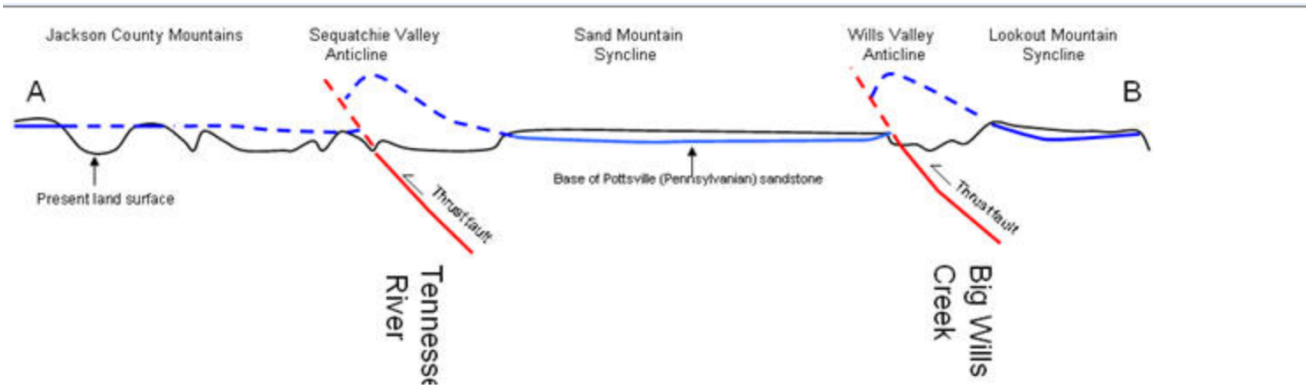


Figure CD3. Topographic profile 1 (see Figure CG3 for location) showing the major geologic structures in the Cumberland Plateau. The blue line shows the base of the Pottsville Formation, the most resistant rock in the area. The blue and red broken lines show the approximate location of the Pottsville and the thrust faults before erosion has reduced the surface to the black solid line.

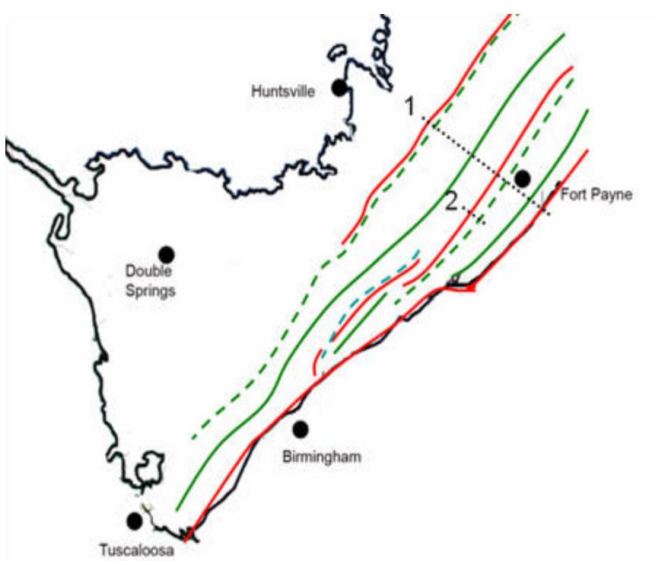


Figure CG3. Map showing the trace of major thrust faults (red), anticlines (green broken) and synclines (green solid) in the Cumberland Plateau. 1 and 2: locations of topographic profiles.

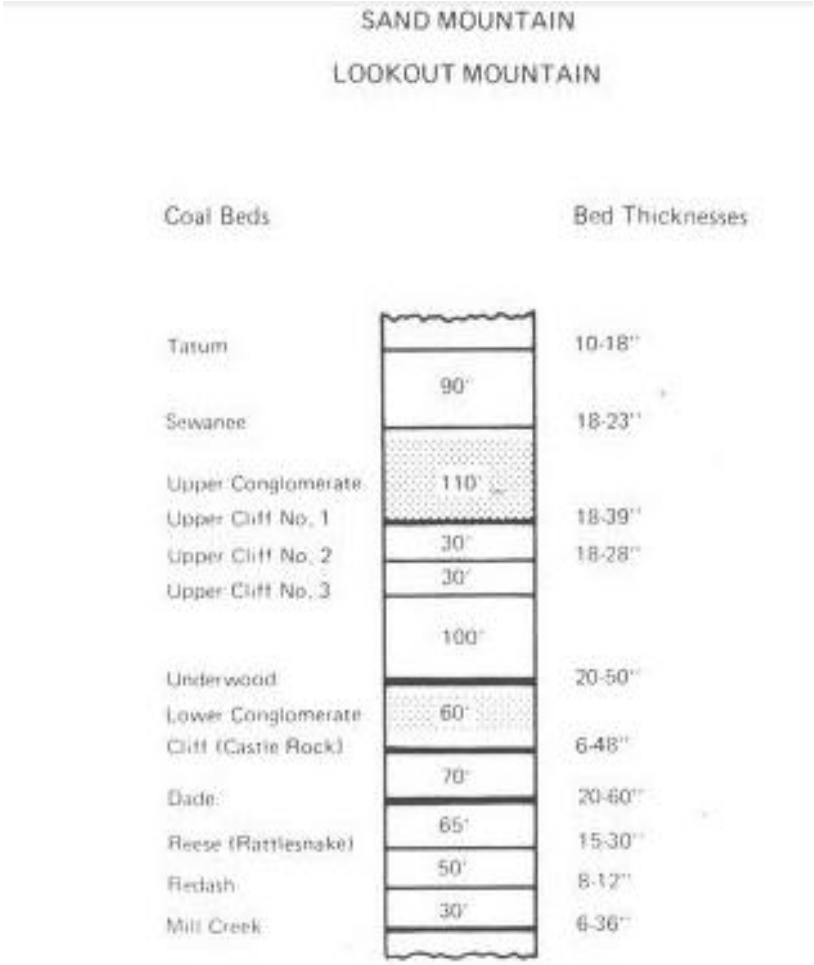
Economic Geology

The geology of the coal sequences is largely summarized from Culbertson (1964). Two coal-bearing formations have been exploited in the Plateau coal field. The Pottsville Formation is the stratigraphically highest unit preserved in the Plateau coal field. The Pottsville Formation is an Early to Middle Pennsylvanian sequence of interbedded sandstone, shale, and coal beds. Maximum thickness of the Pottsville in the Plateau field is 800 feet. Stratigraphically underlying the Pottsville Formation is the Early Pennsylvanian (?) Parkwood Formation, which consists of alternating beds of greenish-gray to gray shales, siltstone, thin fine-grained sandstone beds, and a few thin lenticular coal beds. The Parkwood Formation has an average thickness of 50 feet.

Two conglomeratic units form conspicuous marker units in the Pottsville. The “upper conglomerate”, a conglomerate and conglomeratic sandstone, averages about 60 feet thick. A six-inch to ten-foot zone at or near the base of the conglomerate contains numerous angular shale inclusions. The shale-containing zone normally weathers to a conspicuous vesicular rock that is useful for stratigraphic correlation. The “lower conglomerate”, ranging from 20 to 100 feet thick, grades laterally into a massive, thick-bedded coarse-grained sandstone.

Sandstone units, up to 130 feet thick, interlayered with shale beds 10 to 50 feet thick are located between the “upper conglomerate” and the “lower conglomerate.” These sandstones and shales exhibit high lateral variability and range from 100 to 250 feet thick.

Detailed information on the coal stratigraphy of the Plateau coal field is limited, and stratigraphic correlation of the coal seams in the area is complicated by facies changes, erosion, folding, and faulting. Traditionally, five persistent coal beds have been recognized: the Upper Cliff 1, the Upper Cliff 2, the Lower Cliff, the Underwood, and the Cliff or Castle Rock. It is not clear whether these beds represent distinct laterally continuous beds or represent groups of discontinuous or lenticular beds that are located in roughly similar stratigraphic positions.



The Upper Cliff 1 bed lies directly under the upper conglomerate, and the Upper Cliff 2 bed lies roughly 30 feet below that. A coal bed occurs locally a few feet above the lower conglomerate on Sand Mountain and is called the Underwood bed. Directly underlying the lower conglomerate of the Pottsville formation is the Cliff coal bed, which has also been referred to as the Castle Rock coal bed in historical reports. Thickness of the Cliff bed ranges from a few inches up to four feet, averaging about 18 inches.

Geology of the Permit Area

A series of borings were performed by EarthCon Consultants, Inc using air- hammer drill methods. A Boring Location Map (Figure II.E.1-A-1) and boring logs prepared for this permit are presented in Appendix II.E.1-A. Soils are generally one to ten feet thick in the Permit Area. Surface soils in upland and slope areas are generally clayey sand (Unified Soil Classification System group symbol SC) to silty loam (Unified Soil Classification System group symbol ML, NRCS, 2013).

The upper portion of the bedrock is typically moderately to deeply weathered. The uppermost bedrock unit encountered in exploratory borings is sandstone, which is locally conglomeratic and locally cross-bedded. Bedrock exposure in the Permit Area primarily consists of sandstone beds. Strike of the sandstone varies between N20E to N70W. Dips are generally shallow, with a general dip southwest. The surficial sandstones in most of the Permit Area are interpreted to be the Upper Conglomerate Unit. Overburden consists of a sequence of sandstone, siltstone, shale and clays. Logging of the exploratory borings did not identify sections of the overburden that would likely be a source of increased alkalinity or that are likely to produce acidic leachates

A sequence of sandy siltstone, shale to sandy shale, and sandstone underlies the upper sandstone unit and contains the Upper Cliff coal seams. The Upper Cliff seams in the Permit Area are laterally discontinuous and vary in thickness. In some areas, one or two shale partings occur within individual coal beds.

The deepest coal seam to be mined is the Underwood seam, which lies above a sandstone bed interpreted as the Lower Conglomerate Unit.

Geologic cross-sections have been prepared from the exploratory borings and are presented as Figures II.E.1-B-1 through II.E.1-B-3 in Appendix II.E.1-B. Strata are nearly flat to gently dipping to the northwest and southwest.

In the Fabius area, approximately 12 miles northwest of the Permit Area, beds dip steeply along the western margin of Sand Mountain, but become more flat-lying, with broad open folds and cross folds.

Faults have not been mapped in detail in the area. Bedding plane and high-angle faults formed in response to thrusting and attendant folding. High-angle faults in other mines in the area locally disrupt coal seams. Based on available data, some high-angle faults are inferred to be located within the Permit Area.

Strata in the Permit Area generally strike northwest and dip southwest. The measured attitudes, along with local topography, suggest that area may be on the limb of a cross-fold.

REFERENCES

Bossong, C.R., 1989, Geohydrology and susceptibility of major aquifers to surface contamination in Alabama: Area 2, U.S. Geological Survey Water-Resources Investigations Report, 88-4177, 22 pp.

Culbertson, W.C., 1964, Geology and Coal Resources of the Coal-Bearing Rocks of Alabama, U.S. Geological Survey Bulletin 1182-B, 79 pp.

Kopaska-Merkel, D.C., S.D. Lewis, and J.D. Moore, 2008, Hydrogeology and Vulnerability to Contamination of Major Aquifers in Alabama: Area 2, Geological Survey of Alabama, Circular 199 F, 61 pp.

NRCS, 2013, DeKalb County, Alabama, Soil Survey, US Department of Agriculture Natural Resource Conservation Service Web Soil Survey, online soil survey data, http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

Pashin, J., 2005, Pottsville Stratigraphy and the Union Chapel Lagerstatte, *in* Buta, R.J., Rindsberg, A.K., and Kopaska-Merkel, D.C., editors, *Pennsylvanian Footprints in the Black Warrior Basin of Alabama,* Alabama Paleontological Society Monograph Number 1, p. 39-58.

Stricklin, V.E., 1989, Geohydrology and susceptibility of major aquifers to surface contamination in Alabama: Area 3, U.S. Geological Survey Water-Resources Investigations Report, 88-4120, 17 pp.

Geology Certification Statement:

The Geology sections of this permit application were prepared by Joseph McKinney, who is a licensed by the State of Alabama as a Professional Geologist. I certify that the information in this section is correct and accurate to the best of my knowledge and belief.

EarthCon Consultants, Inc.

7/11/14

Joseph McKinney, P.G.
Alabama PG No. 1359

Date

I, Gary R. Horwitch, P.E., a Registered Professional Engineer in the State of Alabama, hereby certify that the information, contained in the Geology sections of this permit application was prepared by EarthCon Consultants, Inc., under my direct supervision, and that the information in this section is correct and accurate to the best of my knowledge and belief.

EarthCon Consultants, Inc.

7-11-14

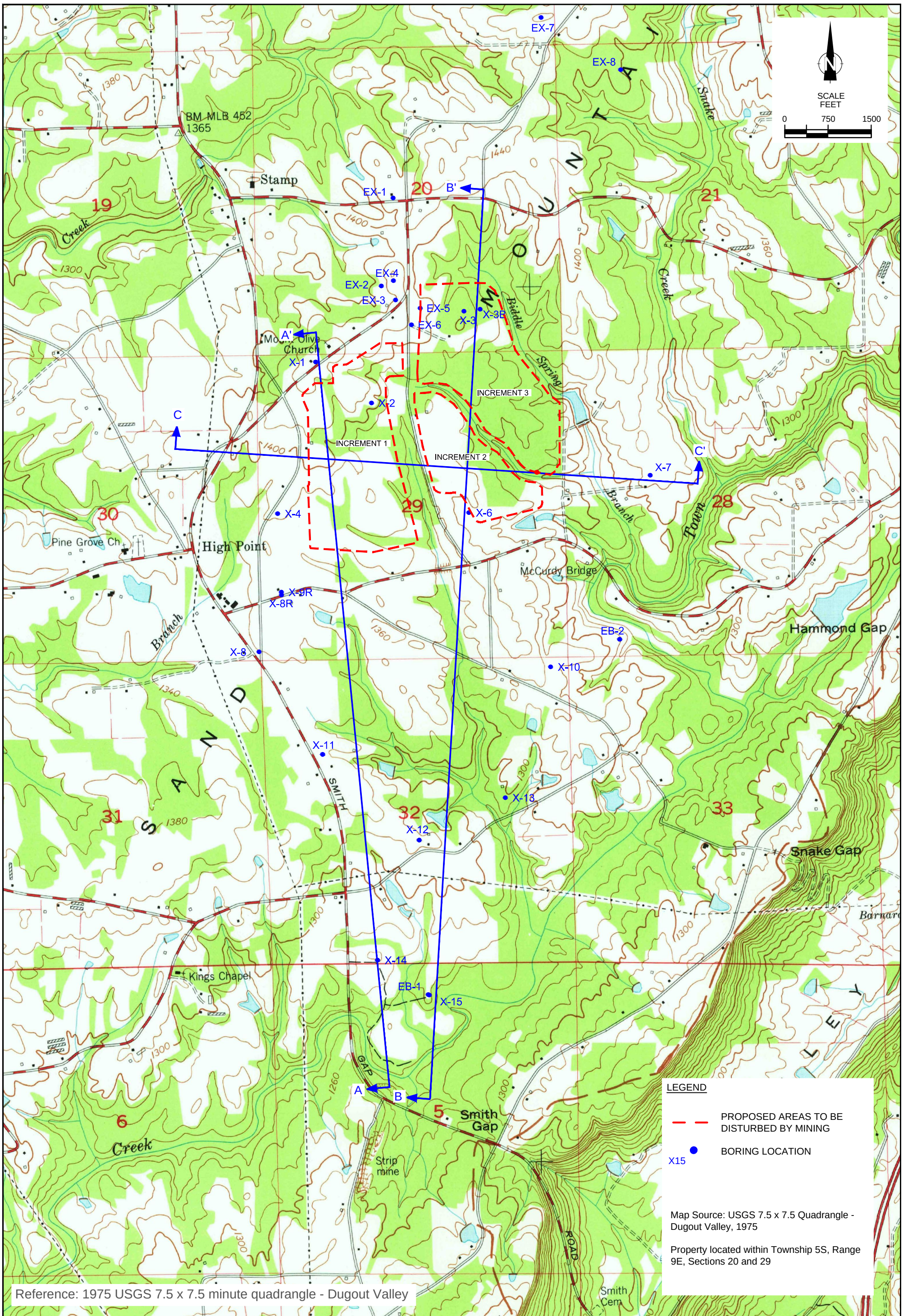
Gary R. Horwitch, P.E.
Alabama PE No. 32845-PE

Date

ALABAMA LICENSED No. 32845-PE PROFESSIONAL ENGINEER GARY RUSSELL HORWITCH

7-11-14

APPENDIX II.E.1-A



Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

EARTHCON®

EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

BORING LOCATION AND CROSS SECTION MAP
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
LDG	RAD	12/31/13	II.E.1-A-1

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\122713 Boring Locations and Sections.dwg, 11x17 MOD, 6/17/2014 11:13:57 AM

BORING NUMBER EB-1

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 66.5 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST J. McKinney DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1260.00

LONGITUDE 85°42'52.96"W LATITUDE 34°32'59.45"N

LOCATION MAP

Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					SAND no sampling
					SANDSTONE weathered, no sampling
5					
					CLAY - gray, carbonaceous
		42%			COAL - 9,6" seam (recovered 4")
10					CLAY - gray, carbonaceous
15					
					SHALE - interlaminated with sandstone, fissile
20					
					COAL - approximately 2" seam with no recovery
					SHALE - interlaminated with sandstone, fissile
25					26' thin clay layer
30					
35					
40					
45					

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
45					SHALE - Shale to siltstone, competent, with some fissile layers
50					
55					
60		23%			COAL - 26.4" seam with 6" recovery
					SHALE - Shale to siltstone, competent
65					
					Termination of Boring
70					
75					
80					
85					
90					
95					
100					

COMMENTS

BORING # EB-1

FACILITY NAME Ridgeholm

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER EB-2

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 85.4 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

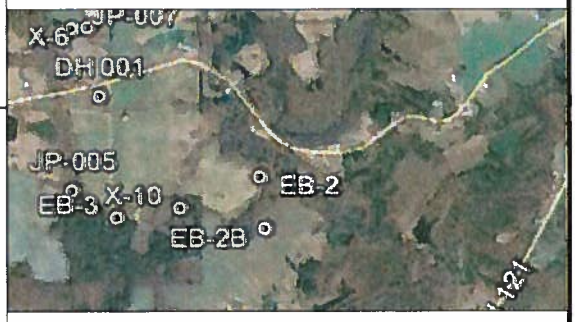
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST J. McKinney DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1286.00

LONGITUDE 85°42'12.16"W LATITUDE 34°34'0.02"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					SAND
					SANDSTONE
5					
10					10-20' near vertical fracture
15					
20					
25					
30					CLAY - carbonaceous
					COAL - 6" seam, no recovery, with clay to coaly clay to 32'
					SHALE - interlaminated with siltstone, fissile
35					
40					
45					COAL - no recovery

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
45					SHALE - interlaminated sandstone grading to siltstone. Some thin fissile layers, vertical fractures
50					
55					
60					
65					
70					
75		73%			COAL - 13.2" seam with pyrite, 9.6" recovery
					SHALE to siltstone
80					
					COAL - 2.4" seam, no recovery
					SHALE to siltstone.
85					Termination of Boring.
90					
95					
100					

BORING # EB-2

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-1

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 89.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

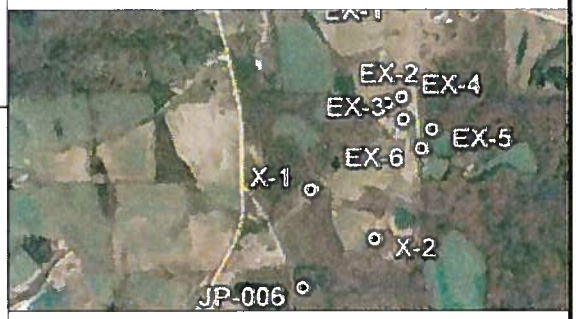
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1447.00

LONGITUDE 85°43'14.51"W LATITUDE 34°34'48.40"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					SAND no sampling	0
					SANDSTONE - yellow, slightly weathered	
5						5
10						10
15						15
20						20
25						25
					29' - 3" weathered shale 29.25-52' Sandstone - white, very hard	
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, very hard continued	45
50						50
					SHALE - gray, weathered to hard	
55						55
60					COAL - 36" seam	60
					SHALE - gray	
65						65
70						70
75				WL	75' water first encountered	75
80						80
85						85
90					Termination of Boring.	90
95						95
100						100

BORING # X-1

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-2

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 150.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

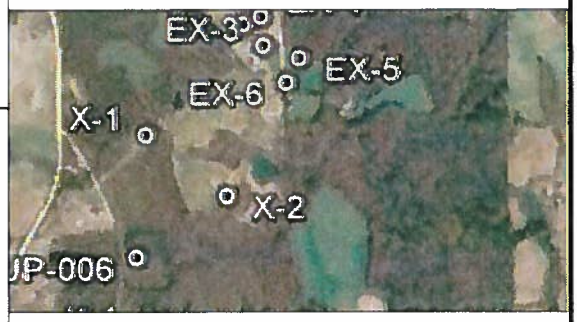
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1410.00

LONGITUDE 85°43'03.03"W LATITUDE 34°34'41.23"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					SAND no sampling
5					SANDSTONE - yellow to red, weathered
10					
15					
					SHALE - gray, weathered
20					
25					
					COAL - 24" seam
					SHALE - gray, weathered
30					
35					
40					
45					44-59' Shale - gray, hard

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SHALE - gray, hard continued	45
50						50
55						55
60					SANDSTONE - white, hard	60
65						65
70						70
75				WL	75' water first encountered	75
					COAL - 12" seam	
					SANDSTONE - white	
80						80
85						85
					COAL - 10" seam	
					SANDSTONE - white	
90						90
95						95
100						100

BORING # X-2

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON℠

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					COAL - 12" seam	100
					SANDSTONE- white	
105						105
110						110
115						115
120						120
125						125
130						130
					COAL - 8" seam	
					SANDSTONE - white	
135						135
140						140
145						145
150					Termination of Boring.	150
155						155

BORING # X-2

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-4

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 150 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

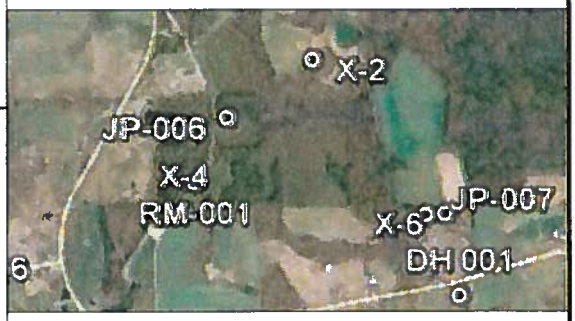
DRILLING CO. _____ DRILLING METHOD Hammer

GEOLOGIST T. Ahern DATE DRILLED 3/6/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1383.00

LONGITUDE 85°43'22.87"W LATITUDE 34°34'22.43"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND - reddish brown with low plasticity (SC)
5					SANDSTONE - reddish brown to yellow, weathered
10					
15					
20					SHALE - gray, weathered
					SANDSTONE - reddish brown, weathered
					SHALE - gray, weathered to hard
25					
30					
					SANDSTONE - white, hard
35					
40					
45					

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard continued	45
50						50
55						55
60						60
65						65
70						70
					SHALE - gray, weathered	
75					SANDSTONE - white, hard	75
80						80
					SHALE - gray, weathered	
					SANDSTONE - white, hard	
85						85
90						90
95						95
					SHALE - gray, weathered	
					SANDSTONE - white, hard	
100						100

BORING # X-4

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					SANDSTONE - white, hard continued	100
105					SHALE - gray, weathered	105
					SANDSTONE - white, hard	
					SHALE - gray, weathered	
110					SANDSTONE - white, hard	110
					SHALE - gray, weathered	
115						115
120						120
125						125
130						130
135				WL	SANDSTONE - white, hard	135
140						140
145						145
150					Termination of Boring	150
155						155

BORING # X-4

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-6

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 177.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

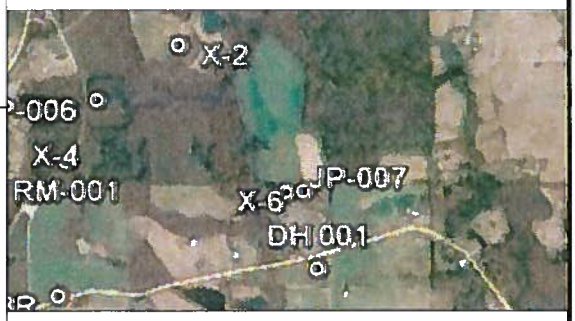
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1357.00

LONGITUDE 85°42'43.15"W LATITUDE 34°34'22.15"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					SAND - no sampling	0
					SANDSTONE - yellow, slightly weathered	
5						5
10					11-76' SANDSTONE - white, hard	10
15						15
20						20
25						25
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
45					SANDSTONE - white, hard continued
50					
55					
60					
65					
70					
75					
					COAL - 36" seam
80					79-126' Unknown - to much water filling hole to collect samples
85					
90				WL	90' water first encountered
95					
100					

COMMENTS

BORING # X-6

FACILITY NAME Ridgeholm

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					79-126' Unknown - to much water filling hole to collect samples, continued	100
105						105
110						110
115						115
120						120
125						125
					COAL - 8" seam	
					SHALE - gray, weathered	
130						130
135						135
					COAL - 12" seam	
					SHALE - weathered to hard	
140						140
145						145
150						150
155						155

BORING # X-6

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
155					SHALE - weathered to hard continued	155
160						160
165						165
					COAL - 18" seam	
					SHALE - weathered to hard	
170						170
					COAL - 10" seam	
175					SHALE - weathered to hard	175
					Termination of Boring.	
180						180
185						185
190						190
195						195
200						200
205						205
210						210

BORING # X-6

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-8

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 105 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

DRILLING CO. _____ DRILLING METHOD Hammer

GEOLOGIST T. Ahern DATE DRILLED 3/13/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1361.00

LONGITUDE 85°43'27.14"W LATITUDE 34°33'58.74"N

LOCATION MAP

Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFICATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity	0
					SANDSTONE - yellow to white, weathered to hard	
5						5
10						10
15						15
20						20
25				WL		25
30						30
35						35
					COAL - 3" seam	
					SANDSTONE - white, hard	
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard continued	45
50						50
55						55
60						60
65						65
70						70
75						75
80						80
85						85
90						90
95				WL		95
100						100

BORING # X-8

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON℠

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					SANDSTONE - white, hard continued	100
105					Termination of Boring	105
110						110
115						115
120						120
125						125
130						130
135						135
140						140
145						145
150						150
155						155

BORING # X-8

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-8R

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 75 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

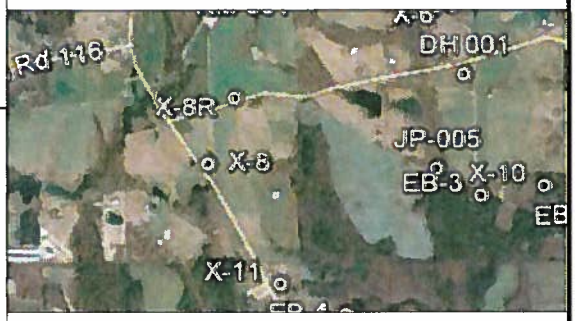
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED 3/15/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1369.00

LONGITUDE 85°43'22.28"W LATITUDE 34°34'08.47"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity	0
					SANDSTONE - reddish brown to yellow, very weathered to weathered	
5						5
10						10
15						15
20						20
25						25
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
45					SANDSTONE - white, hard
50					
					SHALE - gray, weathered
					SANDSTONE - white, hard
55					SHALE - gray, weathered
					SANDSTONE - white, hard
60					
					SHALE - gray, weathered
					SANDSTONE - white, hard
65					
70					
75					Termination of Boring
80					
85					
90					
95					
100					

COMMENTS

BORING # X-8R

FACILITY NAME Ridgeholm

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-10

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 170 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

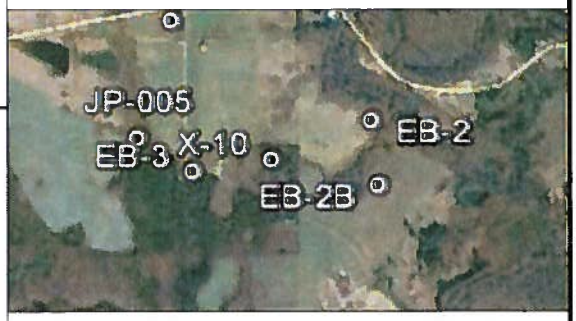
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST J. McKinney DATE DRILLED 3/7/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1336.00

LONGITUDE 85°42'26.59"W LATITUDE 34°33'55.46"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity (SC)	0
					SANDSTONE - yellow to white	
5						5
10						10
15						15
20				WL		20
25						25
30						30
					COAL - 2" seam	
					SHALE - gray, weathered to hard	
35						35
40						40
					SANDSTONE - white, hard	
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard continued	45
50						50
55					COAL - 2" seam	55
					SANDSTONE - white, hard	
60						60
65						65
70						70
75						75
80						80
85						85
90						90
					COAL - 2" seam	
					SHALE - gray, weathered	
					COAL - 24" seam	
95						95
					SHALE - gray, weathered to hard	
100						100

BORING # X-10

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					SHALE - gray, weathered to hard	100
105					COAL - 3" seam SHALE - gray, weathered to hard	105
110						110
115						115
120						120
125						125
130						130
135						135
140					COAL - 6" seam SHALE - gray, weathered to hard	140
145						145
150						150
155						155

BORING # X-10

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON℠

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
155					SHALE - gray, weathered to hard continued	155
160						160
165					COAL - 24" seam	165
					SHALE - gray, weathered to hard	
					SANDSTONE - white, hard	
170					Termination of Boring	170
175						175
180						180
185						185
190						190
195						195
200						200
205						205
210						210

BORING # X-10

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-11

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 200 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

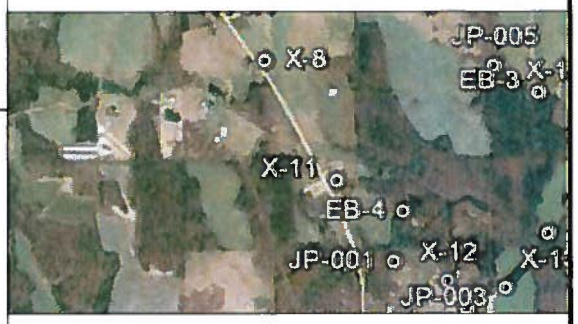
DRILLING CO. _____ DRILLING METHOD Hammer & Rotary

GEOLOGIST T. Ahern DATE DRILLED 2/5/2013 - 2/7/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1344.00

LONGITUDE 85°43'14.21"W LATITUDE 34°33'40.98"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					SANDSTONE - yellow to white	0
5						5
10						10
15						15
20						20
25						25
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - yellow to white continued	45
50						50
					COAL - 4" seam	
					SHALE	
55						55
60						60
65						65
70						70
75					COAL - 4" seam	75
					SHALE	
80						80
85						85
90						90
95						95
100						100

BORING # X-11

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					SHALE - continued	100
105					COAL - 12" seam	105
					SHALE	
110						110
					COAL - 12" seam	
					SHALE	
115						115
					COAL - 12" seam	
					SHALE	
120						120
125						125
130						130
135						135
					COAL - 18" seam	
					SHALE	
140						140
					COAL - 30" seam	
145						145
					SHALE	
150						150
155						155

COMMENTS

BORING # X-11

FACILITY NAME Ridgeholm

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
155					SHALE - continued	155
160						160
165						165
170						170
175						175
180						180
185						185
190						190
					COAL - 2" seam SHALE	
195						195
200					Termination of Boring	200
205						205
210						210

BORING # X-11

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-12

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 115.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

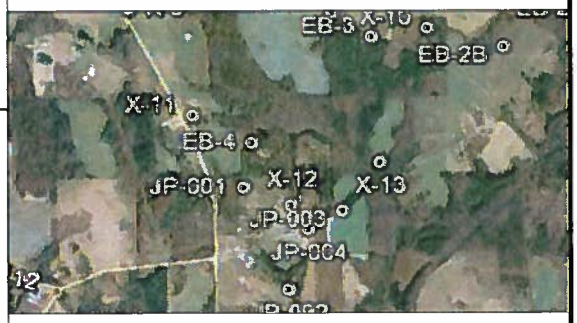
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1322.00

LONGITUDE 85°42'54.41"W LATITUDE 34°33'26.61"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND - reddish brown, low plasticity
					SANDSTONE - yellow
5					
10					
					SHALE - gray w/ soft clay
15					
20					
25					
30					
35					SANDSTONE - white, hard
40					
45					

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard continued	45
50						50
55						55
60						60
65						65
70						70
75						75
80						80
85						85
					COAL - 4" seam	
					SHALE - weathered to hard	
90						90
95						95
100						100

BORING # X-12

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
100					SHALE - weathered to hard continued
105					COAL - 6" seam SHALE - gray
110					
115					Termination of Boring.
120					
125					
130					
135					
140					
145					
150					
155					

COMMENTS

BORING # X-12

FACILITY NAME Ridgeholm

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-13

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 150 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1294.00

LONGITUDE 85°42'36.38"W LATITUDE 34°33'33.10"N

LOCATION MAP

Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity	0
					SANDSTONE - reddish brown to yellow, very weathered to weathered	
5						5
					white, hard	
10						10
15						15
20						20
25						25
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard continued	45
50				WL	COAL - 18" seam	50
					SHALE - gray, weathered to hard	
55						55
60						60
					COAL - 12" seam	
					SHALE - gray, weathered to hard	
65						65
70						70
75						75
80						80
85						85
90						90
95						95
100						100

BORING # X-13

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					COAL - 28" seam	100
					SHALE - gray, weathered to hard	
105						105
110						110
115						115
120						120
					COAL - 16" seam	
					SHALE - gray, weathered to hard	
125						125
130						130
135						135
140						140
145						145
150					Termination of Boring	150
155						155

BORING # X-13

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-14

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 111.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

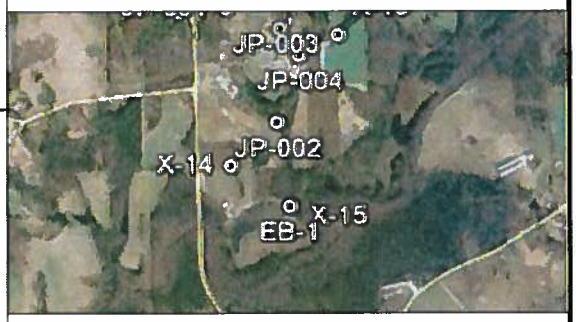
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1275.00

LONGITUDE 85°43'04.47"W LATITUDE 34°33'05.49"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity	0
					SANDSTONE - yellow, lots of fracturing	
5						5
10						10
					SANDSTONE - harder, white, fracturing	
15						15
20						20
25						25
30						30
35						35
					COAL - 3" seam	
					SANDSTONE - white, hard	
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
45					SANDSTONE - white, hard continued
					COAL - 12" seam
50					SHALE - gray
55					
60					
					COAL - 12" seam
				WL	SHALE - gray 63' water first encountered
65					
70					
75					
80					
85					
90					
95					COAL - 26" seam
					SHALE - gray, weathered
100					

BORING # X-14

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					SHALE - gray, weathered continued	100
105						105
110					COAL - 12" seam	110
					Termination of Boring.	
115						115
120						120
125						125
130						130
135						135
140						140
145						145
150						150
155						155

BORING # X-14

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER X-15

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 92 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

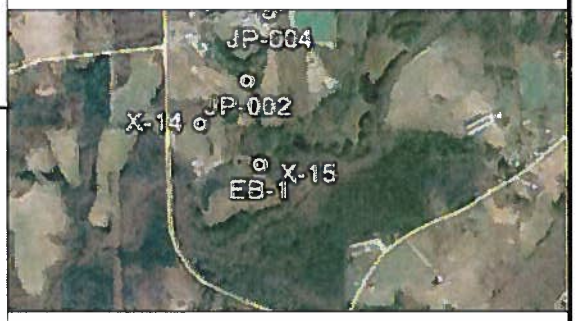
DRILLING CO. _____ DRILLING METHOD Hammer

GEOLOGIST T. Ahern DATE DRILLED 3/13/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1263.00

LONGITUDE 85°42'52.74"W LATITUDE 34°32'59.38"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					SANDSTONE - yellow to reddish brown, weathered	0
5						5
					SHALE - gray, weathered to hard	
10						10
15						15
20						20
25						25
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SHALE - gray, weathered to hard continued	45
50						50
55						55
				WL	COAL - 4" seam	
					SHALE - gray, weathered	
					COAL- 18" seam	
60					SHALE - gray, weathered to hard	60
65					SANDSTONE - white, hard	65
70						70
					SHALE - gray, weathered	
75						75
					COAL - 18" seam	
					SHALE - gray, weathered to hard	
80						80
					SANDSTONE - white, hard	
85						85
90						90
					Termination of Boring	
95						95
100						100

BORING # X-15

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER EX-1

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 57 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

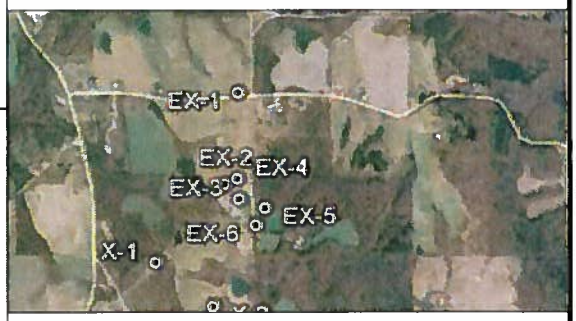
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED 3/4/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1410.00

LONGITUDE 85°42'57.96"W LATITUDE 34°35'16.39"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity	0
					SANDSTONE - yellow to reddish brown, weathered	
5						5
10						10
15						15
20						20
25						25
					SHALE - gray, weathered to hard	
30						30
35				WL		35
					SANDSTONE - white, hard	
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SHALE - gray, weathered to hard	45
50					SANDSTONE - white, hard	50
55						55
					Termination of Boring	
60						60
65						65
70						70
75						75
80						80
85						85
90						90
95						95
100						100

BORING # EX-1

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER EX-2

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 50.0 ft BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

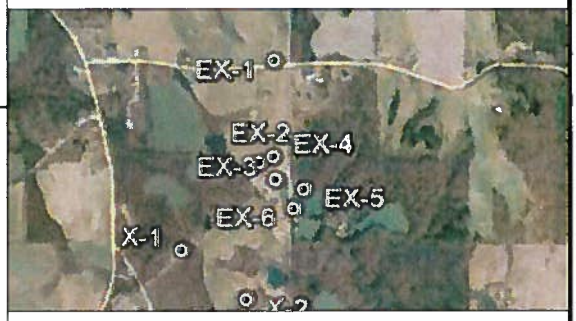
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED 3/4/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) _____

LONGITUDE 85°43'0.66"W LATITUDE 34°35'01.31"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity	0
5						5
10					SANDSTONE - yellowish to brown, weathered	10
15						15
					SHALE - gray, weathered to hard	
20						20
					SANDSTONE - white, hard	
					SHALE - gray, weathered	
25						25
					SANDSTONE - white, hard	
30						30
35						35
40						40
45						

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard continued	45
50					Termination of Boring	50
55						55
60						60
65						65
70						70
75						75
80						80
85						85
90						90
95						95
100						100

COMMENTS

BORING # EX-2

FACILITY NAME Ridgeholm

EARTHCON℠

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER EX-3

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 41.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

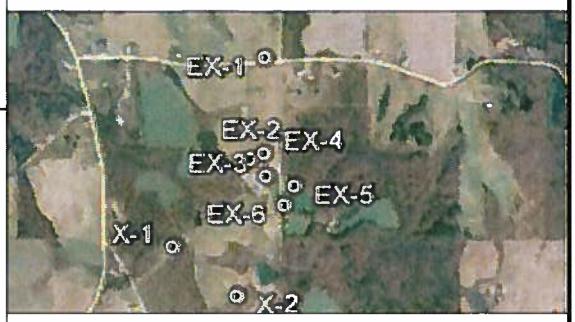
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED _____

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1421.00

LONGITUDE 85°42'57.75"W LATITUDE 34°34'58.86"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND - reddish brown, low plasticity
5					
					SANDSTONE - reddish brown to yellow, very weathered
10					
15					SHALE - gray, very weathered
					COAL - 24" seam
					SHALE - gray, weathered
20					SANDSTONE - white, hard
25					
					SHALE - gray, weathered
					SANDSTONE - white, hard
					SHALE - gray, weathered
					SANDSTONE - white, hard
30					SHALE - gray, weathered
35					
					COAL - 1" seam
					SANDSTONE - white, hard
40					SHALE - gray, weathered
					SANDSTONE - white, hard
					Termination of Boring
45					

BORING NUMBER EX-4

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 30.0 ft BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

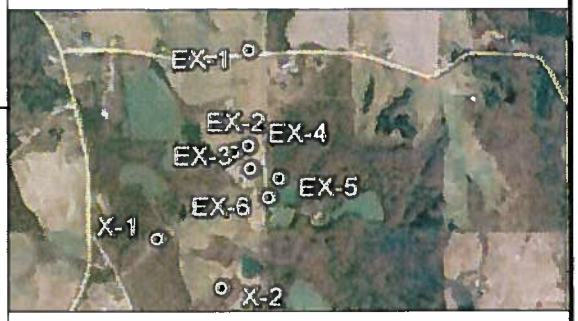
DRILLING CO. _____ DRILLING METHOD Rotary

GEOLOGIST T. Ahern DATE DRILLED 3/5/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1439.00

LONGITUDE 85°42'58.13"W LATITUDE 34°35'02.19"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND - reddish brown, low plasticity
5					
10					SANDSTONE - reddish brown to yellow, very weathered
15					
20					
25					COAL - 30" seam
					SHALE - gray, weathered
30					Termination of Boring
35					
40					
45					

BORING NUMBER EX-5

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 40.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

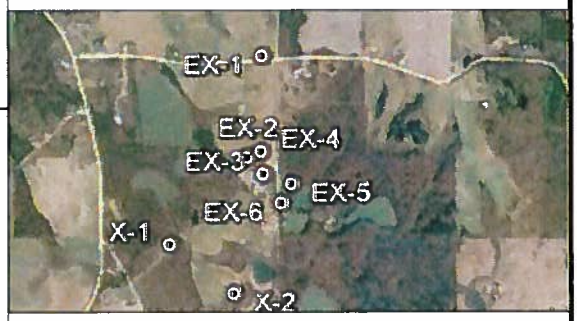
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED 3/5/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1405.00

LONGITUDE 85°42'52.65"W LATITUDE 34°34'57.4"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
0					CLAYEY SAND - reddish brown, low plasticity (SC)	0
5						5
					SANDSTONE - yellow to reddish brown, weathered	
10						10
15					white, hard	15
20					SHALE - gray, weathered	20
					SANDSTONE - yellow, weathered	
25				WL	white, hard	25
					SHALE - gray , weathered	
					SANDSTONE - white, hard	
30					SHALE - gray, weathered	30
					SANDSTONE - white, hard	
35						35
40					Termination of Boring	40
45						

BORING NUMBER EX-6

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 20.0 ft BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

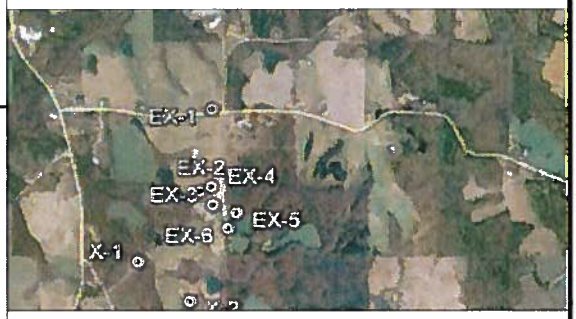
DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED 3/5/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1419.00

LONGITUDE 85°42'54.5"W LATITUDE 34°34'54.57"N

LOCATION MAP



Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND - reddish brown, SC
5					SANDSTONE - yellow to reddish brown, very weathered to weathered
10					
14					COAL - 2" seam
15					SHALE - gray, weathered
17					COAL - 24" seam
19					SHALE - gray, weathered
20					Termination of Boring
25					
30					
35					
40					
45					

BORING NUMBER EX-7

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 175.0 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

DRILLING CO. _____ DRILLING METHOD Hammer

GEOLOGIST T. Ahern DATE DRILLED 3/14/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1463.00

LONGITUDE 85°42'26.67"W LATITUDE 34°35'47.04"N

LOCATION MAP

Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND- reddish brown, low plasticity
					SANDSTONE - reddish brown to yellow to white, very weathered to hard
5					
10					
15					
20					
25					
30					
35					
					SHALE - gray, weathered
					SANDSTONE - white w/ occasional layers of reddish brown weathered
40					
45					

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, hard w/ occasional layers of reddish brown weathered	45
50						50
55						55
60						60
					SHALE - gray, weathered	
					SANDSTONE - white, hard	
65						65
					SHALE - gray, weathered	
					SANDSTONE - white, hard	
70						70
75						75
80						80
85						85
					SHALE - gray, weathered	
					SANDSTONE - white, hard	
					SHALE - gray, weathered	
90						90
95						95
100						100

COMMENTS

BORING # EX-7

FACILITY NAME Ridgeholm

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
100					SHALE - gray, weathered continued	100
105						105
110					SANDSTONE - white, hard	110
115					SHALE - gray, weathered	115
120					SANDSTONE - white, hard	120
					SHALE - gray, weathered to hard	
125				WL		125
130						130
135						135
140						140
145						145
150						150
155						155

COMMENTS

BORING # EX-7

FACILITY NAME Ridgeholm

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
155					SHALE - gray, weathered to hard continued	155
160						160
165						165
170						170
					SANDSTONE - white, hard	
175					Termination of Boring	175
180						180
185						185
190						190
195						195
200						200
205						205
210						210

BORING # EX-7

FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

BORING NUMBER EX-8

FACILITY NAME Ridgeholm Energy, Dekalb County, Alabama LOCATION Dekalb County, Alabama

TOTAL DEPTH (ft) 60 ft. BOREHOLE DIA. (in) 6.25

CASING DIA. (in) _____ TYPE _____ SCREEN LENGTH (ft) _____ SLOT SIZE (in) _____

DRILLING CO. _____ DRILLING METHOD _____

GEOLOGIST T. Ahern DATE DRILLED 3/14/2013

TOP OF CASING ELEV. (ft MSL) _____ GROUND SURFACE ELEV. (ft MSL) 1404.00

LONGITUDE 85°42'10.25"W LATITUDE 34°35'37.86"N

LOCATION MAP

Clay Sandstone Sand Shale Coal

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS
0					CLAYEY SAND - reddish brown, low plasticity
5					
					SANDSTONE - reddish brown or yellow, very weathered to weathered
10					
15					
20					
25					
30					
35					white, very hard
40					
45					

DEPTH (feet)	TYPE	% RECOVERY	LITHOLOGIC LOG	SOIL CLASSIFI-CATION	LITHOLOGIC DESCRIPTION/ COMMENTS	DEPTH (feet)
45					SANDSTONE - white, very hard continued	45
50						50
55						55
60					Termination of Boring	60
65						65
70						70
75						75
80						80
85						85
90						90
95						95
100						100

BORING # EX-8

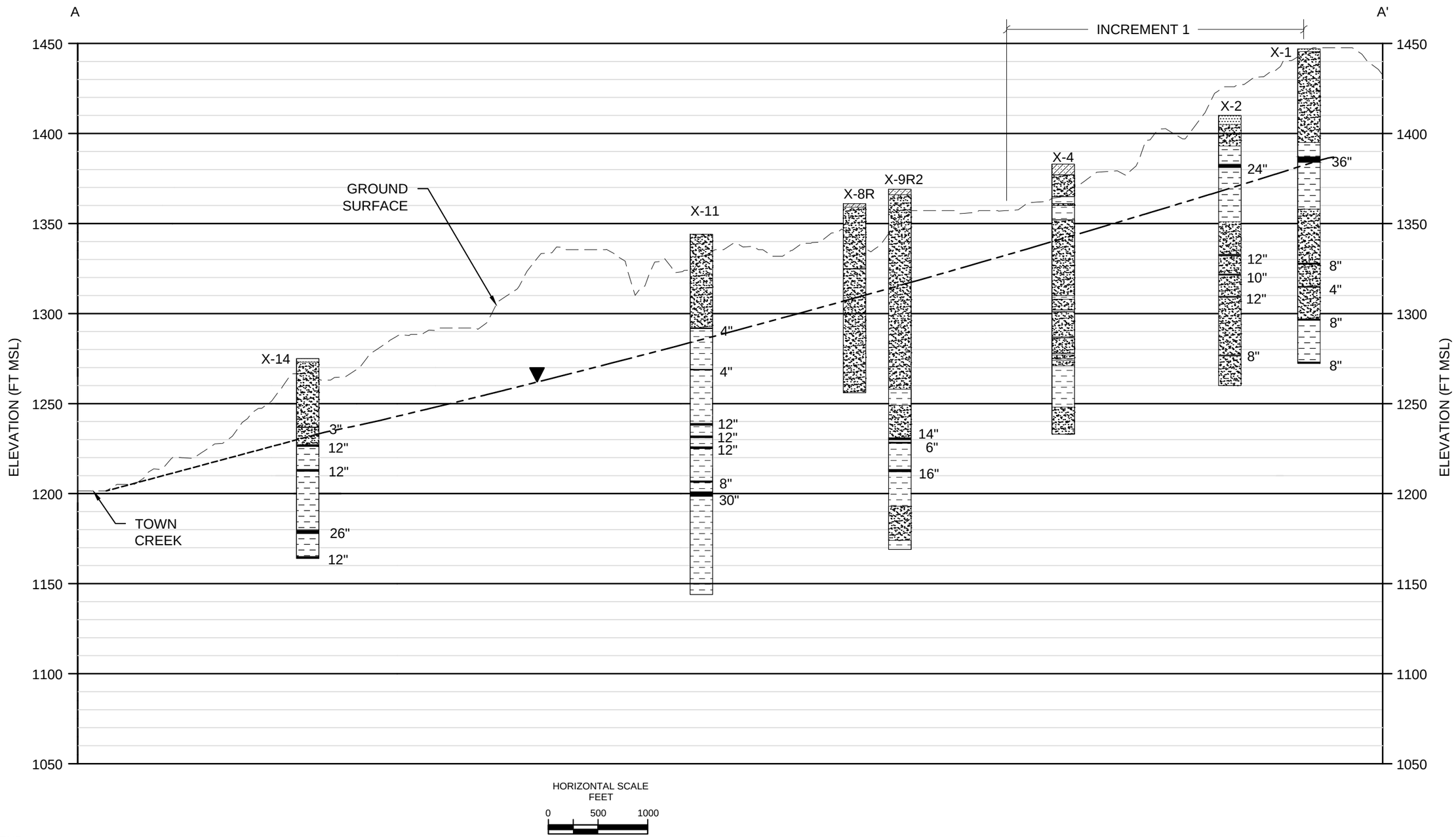
FACILITY NAME Ridgeholm

COMMENTS

EARTHCON™

Environmental Challenges
BUSINESS SOLUTIONS

APPENDIX II.E.1-B



LEGEND

- Sandstone
- Shale
- Sand
- Clay
- 12" Coal and Thickness
- Static Water Level 04-20-13
- Extrapolated Water Level

Note: Borings and Phase Boundaries are Projected to Cross Section line.

RIDGEHOLM ENERGY PARTNERS, LLC

100 OXMOORE ROAD, SUITE 110
BIRMINGHAM, ALABAMA 35209

PROJ. NO: 02.20120195.00

EARTHCON®

EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

CROSS SECTION A-A'
JOHN POE MINE
DEKALB COUNTY, ALABAMA

DRAWN:	CHECKED:	DATE:	FIGURE:
LDG	RAD	05/14	II.E.1-B-1

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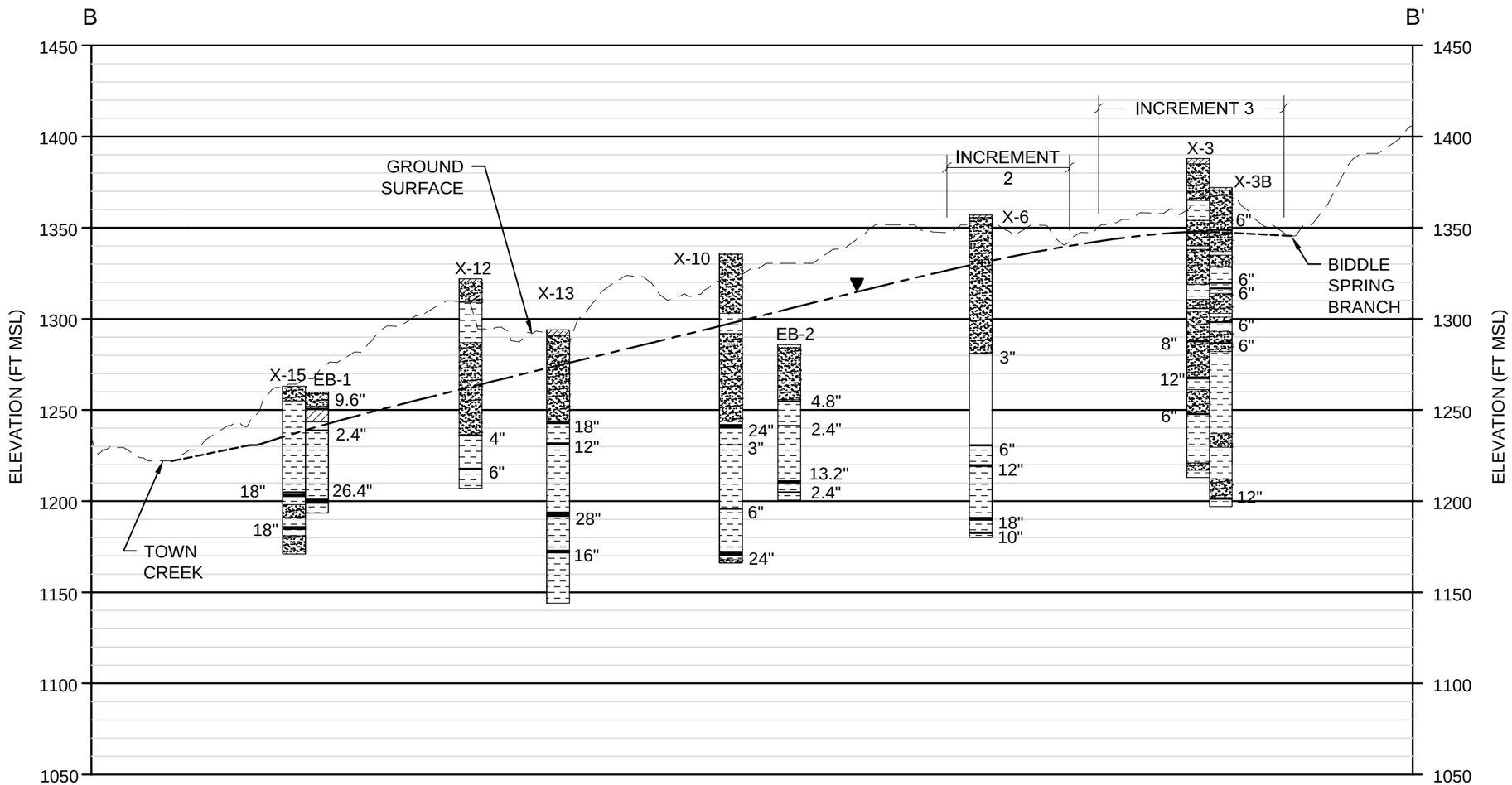


HORIZONTAL SCALE
FEET
0 750 1500

LEGEND

- Sandstone
- Shale
- Sand
- Clay
- 12" Coal and Thickness
- Static Water Level 04-20-13
- Extrapolated Water Level

Note: Borings and Phase Boundaries are Projected to Cross Section line.

RIDGEHOLM ENERGY PARTNERS, LLC

100 OXMOORE ROAD, SUITE 110
BIRMINGHAM, ALABAMA 35209

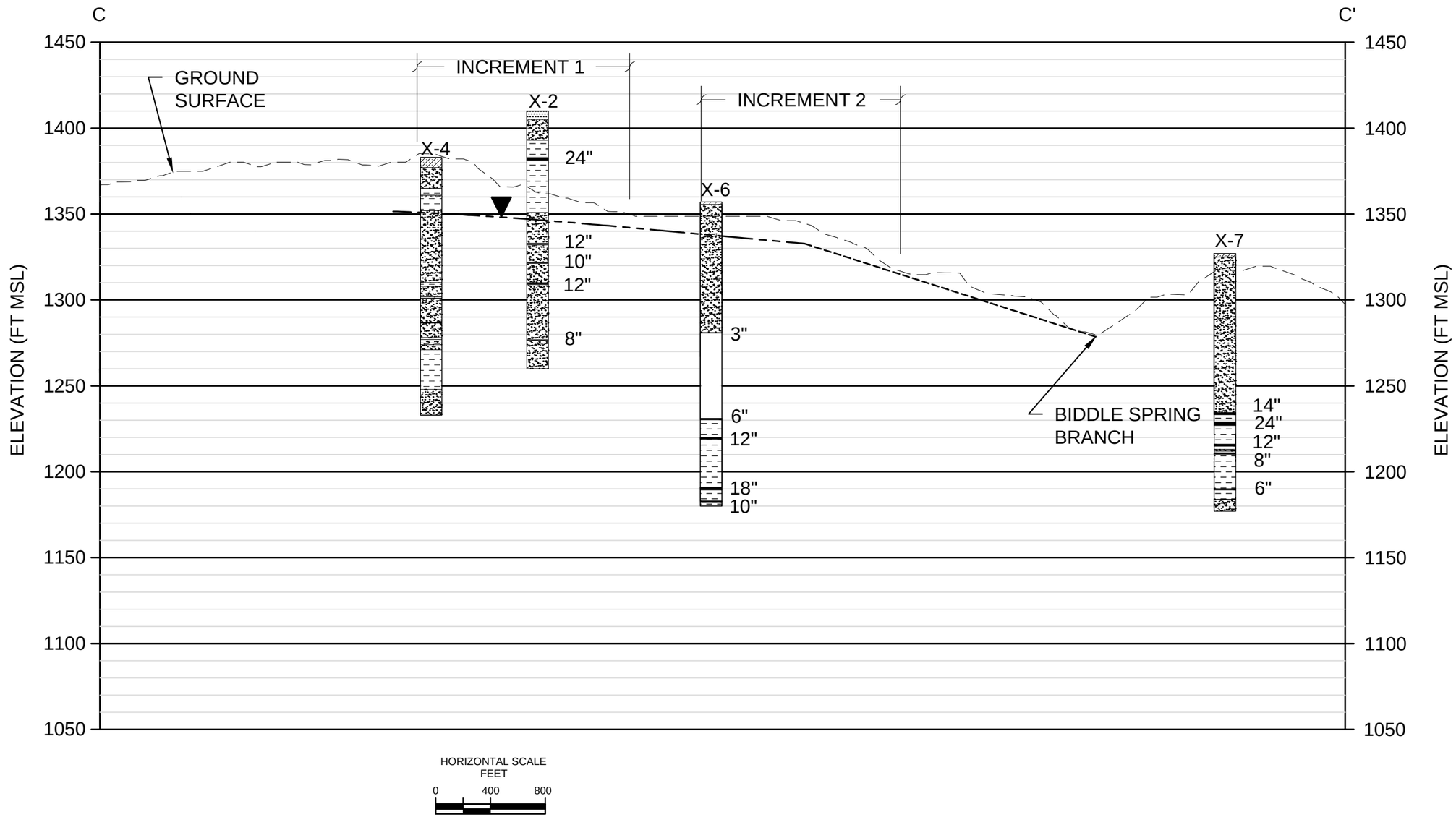
PROJ. NO: 02.20120195.00

EARTHCON®
EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

CROSS SECTION B-B'
JOHN POE MINE
DEKALB COUNTY, ALABAMA

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	05/14	II.E.1-B-2

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\122713 Boring Locations and Sections.dwg, B-B', 6/17/2014 11:17:11 AM



LEGEND

- Sandstone
- Shale
- Sand
- Clay
- 12" Coal and Thickness
- Static Water Level 04-20-13
- Extrapolated Water Level
- No Recovery

Note: Borings and Phase Boundaries are Projected to Cross Section line.

RIDGEHOLM ENERGY PARTNERS, LLC

100 OXMOORE ROAD, SUITE 110
BIRMINGHAM, ALABAMA 35209

PROJ. NO: 02.20120195.00

EARTHCON®

EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

CROSS SECTION C-C'
JOHN POE MINE
DEKALB COUNTY, ALABAMA

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	05/14	II.E.1-B-3

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\122713 Boring Locations and Sections.dwg, C-C', 6/17/2014 11:18:40 AM

ATTACHMENT II.E.2

OVERBURDEN ANALYSIS

Attachment II.E.2
Overburden Analysis & Summary of Acid-Base Accounting

Overburden samples were collected from four borings (X-2, X-10, X-11, X-15) by EarthCon Consultants, Inc. to assess the potential for acid formation from the overburden within the permit area. Samples were collected from drill cuttings every 5 feet from each of the borings. Samples were analyzed for paste pH, total sulfur, and neutralization potential by Standard Laboratories, Inc. (Jacksboro, TN) using EPA methods 600 3.2.2, 600 3.2.4, and 600 3.2.3, respectively. The laboratory results for the overburden samples are provided as Appendix II.E.2-A.

Select samples of coal were collected and sent to Central Testing Laboratory, LLC (Birmingham, AL) for testing. Results of the testing on coal are included in Appendix II.E.2-B.

Note that total sulfur concentrations are assumed to all be derived from pyrite. The presence of non -acid producing sulfate minerals, such as gypsum and barite, and organic sulfur may result in over-estimation of the acid potential.

Price and others (1997) provided guidelines for interpretation of static tests. For rocks with sulfide sulfur less than 0.3% and paste pH higher than 5.5, there is no potential for acid production, and no additional testing is recommended. Note that sulfide-sulfur results will be equal to or less than total sulfur results. Based on these criteria, the following overburden intervals are the only ones identified with a potential to form acid:

- Boring X-2,0 to 40 foot depth
- Boring X-10, 0 to 20 foot depth
- Boring X-10, 25 to 40 foot
- Boring X-11, 5 to 10 foot depth
- Boring X-11, 140 to 145.5 foot depth
- Boring X-15, 0 to 15 foot depth
- Boring X-15, 20 to 30 foot depth

Field data suggests that overburden within these intervals are not likely to be acid producing. Most of these intervals are above the water table, and field logging indicates that the rocks are weathered. No pyrite was noted in the shallow weathered rocks in the permit area, and it is unlikely that pyrite is present in the weathered rocks. Perry (1998) notes that the weathered overburden lacks the ability to generate either significant acidity or alkalinity.

In boring X-2, the total sulfur concentrations in the upper 40 feet are extremely low, and no sulfur was detected in the upper 15 feet. The highest sulfur concentrations were recorded for the 25 to 30 foot sample, which was contaminated by coal.

In boring X-10, the total sulfur concentration in the upper 40 feet is 0.02 percent or less.

In boring X-11, total sulfur was not detected in the 5- to 10-foot interval. Samples from the 140- to 145.5-foot interval were contaminated by coal, and total sulfur concentrations are likely over-estimated for overburden in that part of the section.

The upper 15 feet in boring X-15 was noted to be weathered, and it is unlikely that pyrite or other acid-producing minerals are present in that interval. The 20- to 30- foot interval in boring EB-1 (adjacent to X-15) contains a thin coal seam and organic clays. It is likely that total sulfur concentrations for this interval primarily reflect the presence of organic sulfur, which is not generally acid-forming.

In summary, evaluation of the field observations and test results suggests the following:

- Total sulfur concentrations are generally low in the overburden
- Higher sulfur concentrations detected in the overburden likely come from non-acid-forming organic sulfur
- Paste pH is higher than 4.6 in all samples
- Total sulfur values likely greatly overestimate the potential for acid formation

Results of geochemical analysis of the overburden were evaluated using mass-weighted acid-base accounting methods (Smith and Brady, 1990) and are included in Appendix II.E.2-C. The areas of influence of the four overburden borings were approximated using the Thiessen polygon method. The four resulting polygons are designated T-1 through T-4, and the areas of mining for each Increment within each polygon was calculated as follows:

T-1	Increment 1	50.00 ac
	Increment 2	52.84 ac
	Increment 3	84.00 ac
T-3	Increment 2	4.16 ac

Overburden volume calculations in each mine Increment followed the procedures and interpolation methods in Smith and Brady (1990). For more accurate volumes, each mine area was divided into two sections. The section below the lowest surface topography within each area was treated by setting the upper and lower areas to be equal to the total acreage. Volumes of overburden at elevations above the lowest topographic portion of the area were interpolated.

For example, the Increment 1 mining area is entirely within polygon T-1; this polygon is constructed around boring X-2. The lowest topographic elevation within the Increment 1 area is at 1,350 feet mean sea level (ft-msl). Overburden intervals at elevations equal to or less than 1,350 ft-msl are assigned an area of 50.0 acres, equal to the total area of the Increment 1

mining area. To determine the volume of overburden in the portion of the section above 1,350 ft- msl, the area was interpolated between the area at the elevation of the control boring and the area of the total Increment 1 area. The surface elevation for boring X-2 is 1,410 ft-msl. The area enclosed by the 1,410 ft-msl contour within the Increment 1 mine area was measured to be 35.1 acres. For intervals between elevations 1,410 and 1,350 ft-msl, the areas were interpolated between 35.1 acres and 50.0 acres.

Results of the acid-base accounting are presented in Appendix II.E.2-C. The acid-base accounting suggests an excess neutralization potential for areas in polygons T-1 (all areas of mine Increment 1 and 97% of the mine Increment 2 area) as follows:

	Increment 1	Increment 2	Increment 3
Total Overburden Volume (ac-ft):	1098.75	4626.56	7752.14
Percent Sandstone:	29	82	80
NP/MPA Ratio:	1.45	1.66	1.65
Tons/ac Required (1:1):	93 (Excess)	472 (Excess)	489 (Excess)

A neutralization deficiency is suggested for the portion of mine Increment 2 in polygon T-3 (3% of the mine Increment 2 area) as follows:

	Increment 2
Total Overburden Volume (ac-ft):	250.75
Percent Sandstone:	80
NP/MPA Ratio:	0.11
Tons/ac Required (1:1):	-73 (Deficient)

The analysis suggests that overburden from both portions of Increment 2 can be mixed or stockpiled together to effectively neutralize potential acid forming materials.

As noted previously, the low sulfur content and high paste pH of the overburden strongly indicates little potential for acid formation. In general, no appreciable carbonates were noted in borings from the Permit Area, and the indication of neutralization deficiency is more a function of the absence of carbonates rather than the presence of acid-forming minerals.

Surface water and groundwater sampling in the Permit Area suggests that the overburden is not likely to be acid forming. Surface water pH ranged from 5.96 to 6.64 and groundwater pH ranged from 5.18 to 7.21. Surface water sampled at Pond-1, an off-site pond related to a former off-site coal mine had a pH range from 6.47 to 7.58, and an alkalinity of 16.6 to 33.4 milligrams per liter (mg/L), and acidity was below the reporting limit of 10 mg/L. There was no indication of acid formation related to leaching of the overburden at Pond-1 location.

REFERENCES

Perry, E.F., 1998, Interpretation of Acid-Base Accounting, in *Coal Mine Drainage Prediction and Pollution Prevention in Pennsylvania,* K. B.C. Brady, T. Kania, M. W. Smith and R. J. Hornberger, eds Pennsylvania Department of Environmental Protection, Harrisburg, PA.

Price, W.A., Morin, K. and Hutt, N. (1997), *Guidelines for the Prediction of Acid Rock Drainage and Metal Leaching for Mines in British Columbia: Part II - Recommended Procedures for Static and Kinetic Testing*, Proc. 4th International Conference on Acid Rock Drainage, Vancouver, BC, p15-30.

Smith, M.W., and Brady, K.B.C., 1990, *Evaluation of acid base accounting data using computer spreadsheets,* in Skousen, J., Sencindiver, J., and Samuel, D., eds., Proceedings of the 1990 Mining and Reclamation Conference and Exhibition, Charleston, West Virginia, April 23-26, 1990: Morgantown, W.Va., West Virginia University, v. 1, p. 213-219.

APPENDIX II.E.2-A

Analyses of Samples

STANDARD LABORATORIES, INC.
1138 McGhee Lane, Suite 2, Jacksboro, Tn 37757 - 423-562-1934

Earthcon Consultants
1880 West Oak Pkwy
Bldg 100 Suite 106
Marietta, GA 30062

Type of Samle: Overburden
Date Rec'd: 4/11/2013

Sample I.D. No.			Ridgeholm Energy X-2	(1) Paste pH (Standard Units)	Date Analyzed	(2) Total Sulfur (percent)	Date Analyzed	(3) Pyritic Sulfur (percent)	Date Analyzed	(4) * Potential Acidity	Date Analyzed	(5) * Neutralization Potential	Date Analyzed	(6) ** Fizz Rate	Date Analyzed	(7) Net* Acid-Base Accounting	Date Analyzed
1304-11009-1	0	5		5.24	04/15/13	0.00	04/12/13			0.00	04/12/13	0.00	04/15/13	1	04/15/13	0.00	04/15/13
1304-11009-2	5	10		5.06	04/15/13	0.00	04/12/13			0.00	04/12/13	0.00	04/15/13	1	04/15/13	0.00	04/15/13
1304-11009-3	10	15		5.21	04/15/13	0.00	04/12/13			0.00	04/12/13	2.50	04/15/13	1	04/15/13	2.50	04/15/13
1304-11009-4	15	20		4.71	04/05/13	0.02	04/12/13			0.63	04/12/13	0.00	04/15/13	1	04/15/13	-0.63	04/15/13
1304-11009-5	20	25		5.37	04/15/13	0.02	04/12/13			0.63	04/12/13	8.50	04/15/13	1	04/15/13	7.88	04/15/13
1304-11009-6	25	30		4.84	04/15/13	0.25	04/12/13			7.81	04/12/13	0.25	04/15/13	1	04/15/13	-7.56	04/15/13
1304-11009-7	30	35		4.60	04/15/13	0.17	04/12/13			5.31	04/12/13	6.25	04/15/13	1	04/15/13	0.94	04/15/13
1304-11009-8	35	40		5.00	04/15/13	0.03	04/12/13			0.94	04/12/13	0.25	04/15/13	1	04/15/13	-0.69	04/15/13
1304-11009-9	40	45		5.67	04/15/13	0.01	04/12/13			0.31	04/12/13	2.00	04/15/13	1	04/15/13	1.69	04/15/13
1304-11009-10	45	50		5.94	04/15/13	0.10	04/12/13			3.13	04/12/13	0.00	04/15/13	1	04/15/13	-3.13	04/15/13
1304-11009-11	50	55		7.50	04/15/13	0.00	04/12/13			0.00	04/12/13	3.75	04/15/13	1	04/15/13	3.75	04/15/13
1304-11009-12	55	60		7.65	04/15/13	0.02	04/12/13			0.63	04/12/13	5.00	04/15/13	1	04/15/13	4.38	04/15/13
1304-11009-13	60	65		7.46	04/15/13	0.00	04/12/13			0.00	04/12/13	0.00	04/15/13	1	04/15/13	0.00	04/15/13
1304-11009-14	65	70		7.39	04/15/13	0.01	04/12/13			0.31	04/12/13	0.00	04/15/13	1	04/15/13	-0.31	04/15/13
1304-11009-15	70	75		7.15	04/15/13	0.02	04/12/13			0.63	04/12/13	0.00	04/15/13	1	04/15/13	-0.63	04/15/13
1304-11009-16	75	80		7.40	04/15/13	0.02	04/12/13			0.63	04/12/13	9.50	04/15/13	1	04/15/13	8.88	04/15/13
1304-11009-17	80	85		7.13	04/15/13	0.10	04/12/13			3.13	04/12/13	14.25	04/15/13	1	04/15/13	11.13	04/15/13
1304-11009-18	85	90		6.85	04/15/13	0.17	04/12/13			5.31	04/12/13	8.50	04/15/13	1	04/15/13	3.19	04/15/13
1304-11009-19	90	95		6.70	04/15/13	0.06	04/12/13			1.88	04/12/13	8.25	04/15/13	1	04/15/13	6.38	04/15/13
1304-11009-20	95	100		6.96	04/15/13	0.06	04/12/13			1.88	04/12/13	0.50	04/15/13	1	04/15/13	-1.38	04/15/13
1304-11009-21	100	105		7.14	04/15/13	0.05	04/12/13			1.56	04/12/13	0.25	04/15/13	1	04/15/13	-1.31	04/15/13
1304-11009-22	105	110		7.22	04/15/13	0.06	04/12/13			1.88	04/12/13	3.25	04/15/13	1	04/15/13	1.38	04/15/13
1304-11009-23	110	115		7.16	04/15/13	0.06	04/12/13			1.88	04/12/13	0.00	04/15/13	1	04/15/13	-1.88	04/15/13
1304-11009-24	115	120		7.01	04/15/13	0.08	04/12/13			2.50	04/12/13	1.50	04/15/13	1	04/15/13	-1.00	04/15/13
1304-11009-25	120	125		6.87	04/15/13	0.12	04/12/13			3.75	04/01/13	13.75	04/15/13	1	04/15/13	10.00	04/15/13
1304-11009-26	125	130		7.16	04/15/13	0.15	04/12/13			4.69	04/12/13	0.50	04/15/13	1	04/15/13	-4.19	04/15/13
1304-11009-27	130	135		7.08	04/15/13	0.09	04/12/13			2.81	04/12/13	1.25	04/15/13	1	04/15/13	-1.56	04/15/13
1304-11009-28	135	140		7.45	04/15/13	0.12	04/12/13			3.75	04/12/13	0.00	04/15/13	1	04/15/13	-3.75	04/15/13
1304-11009-29	140	145		7.13	04/15/13	0.20	04/12/13			6.25	04/12/13	1.75	04/15/13	1	04/15/13	-4.50	04/15/13
1304-11009-30	145	150		7.45	04/15/13	0.13	04/12/13			4.06	04/12/13	0.00	04/15/13	1	04/15/13	-4.06	04/15/13

(1) EPA 600 3.2.2
(2) EPA 600 3.2.4
(3) ASTM D-2492
(4) EPA 600 3.2.4
(5) EPA 600 3.2.3
(6) EPA 600 3.2.3
(7) EPA 600 3.2.4

*Units: Tons of CaCO3 equivalent per 1000 tons of material
**Units: 1=None 3=Moderate
2=Slight 4=Strong

Respectfully Submitted

Analyses of Samples

STANDARD LABORATORIES, INC.
1138 McGhee Lane, Suite 2, Jacksboro, Tn 37757 - 423-562-1934

Earthcon Consultants
1880 West Oak Pkwy
Bldg 100 Suite 106
Marietta, GA 30062

Type of Sample: Overburden
Date Rec'd: 4/11/2013

Sample I.D. No.			Ridgeholm Energy X-10	(1) Paste pH (Standard Units)	Date Analyzed	(2) Total Sulfur (percent)	Date Analyzed	(3) Pyritic Sulfur (percent)	Date Analyzed	(4) * Potential Acidity	Date Analyzed	(5) * Neutralization Potential	Date Analyzed	(6) ** Fizz Rate	Date Analyzed	(7) Net* Acid-Base Accounting	Date Analyzed
1304-11010-1	0	5		4.68	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-2	5	10		4.95	04/16/13	0.00	04/15/13			0.00	04/15/13	0.00	04/16/13	1	04/16/13	0.00	04/16/13
1304-11010-3	10	15		5.14	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-4	15	20		5.38	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-5	20	25		5.69	04/16/13	0.00	04/15/13			0.00	04/15/13	0.00	04/16/13	1	04/16/13	0.00	04/16/13
1304-11010-6	25	30		5.43	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-7	30	35		5.36	04/16/13	0.02	04/15/13			0.63	04/15/13	0.00	04/16/13	1	04/16/13	-0.63	04/16/13
1304-11010-8	35	40		5.29	04/16/13	0.02	04/15/13			0.63	04/15/13	0.00	04/16/13	1	04/16/13	-0.63	04/16/13
1304-11010-9	40	45		6.18	04/16/13	0.01	04/15/13			0.31	04/15/13	0.25	04/16/13	1	04/16/13	-0.06	04/16/13
1304-11010-10	45	50		6.43	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-11	50	55		6.32	04/16/13	0.00	04/15/13			0.00	04/15/13	0.00	04/16/13	1	04/16/13	0.00	04/16/13
1304-11010-12	55	60		6.47	04/16/13	0.03	04/15/13			0.94	04/15/13	0.00	04/16/13	1	04/16/13	-0.94	04/16/13
1304-11010-13	60	65		6.92	04/16/13	0.02	04/15/13			0.63	04/15/13	0.25	04/16/13	1	04/16/13	-0.38	04/16/13
1304-11010-14	65	70		6.22	04/16/13	0.03	04/15/13			0.94	04/15/13	0.00	04/16/13	1	04/16/13	-0.94	04/16/13
1304-11010-15	70	75		6.59	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-16	75	80		6.60	04/16/13	0.02	04/15/13			0.63	04/15/13	0.00	04/16/13	1	04/16/13	-0.63	04/16/13
1304-11010-17	80	85		6.64	04/16/13	0.03	04/15/13			0.94	04/15/13	0.00	04/16/13	1	04/16/13	-0.94	04/16/13
1304-11010-18	85	90		6.84	04/16/13	0.02	04/15/13			0.63	04/15/13	0.00	04/16/13	1	04/16/13	-0.63	04/16/13
1304-11010-19	90	95		6.56	04/16/13	0.05	04/15/13			1.56	04/15/13	0.00	04/16/13	1	04/16/13	-1.56	04/16/13
1304-11010-20	95	100		7.22	04/06/13	0.20	04/15/13			6.25	04/15/13	0.50	04/16/13	1	04/16/13	-5.75	04/16/13
1304-11010-21	100	105		7.47	04/16/13	0.12	04/15/13			3.75	04/15/13	1.00	04/16/13	1	04/16/13	-2.75	04/16/13
1304-11010-22	105	110		7.56	04/16/13	0.09	04/15/13			2.81	04/15/13	0.00	04/16/13	1	04/16/13	-2.81	04/16/13
1304-11010-23	110	115		7.93	01/16/00	0.06	04/15/13			1.88	04/15/13	0.00	04/16/13	1	04/16/13	-1.88	04/16/13
1304-11010-24	115	120		8.19	04/16/13	0.04	04/15/13			1.25	04/15/13	0.00	04/16/13	1	04/16/13	-1.25	04/16/13
1304-11010-25	120	125		8.37	04/16/13	0.01	04/15/13			0.31	04/15/13	0.00	04/16/13	1	04/16/13	-0.31	04/16/13
1304-11010-26	125	130		8.50	04/16/13	0.02	04/15/13			0.63	04/15/13	0.00	04/16/13	1	04/16/13	-0.63	04/16/13
1304-11010-27	130	135		8.50	04/16/13	0.05	04/15/13			1.56	04/15/13	1.00	04/16/13	1	04/16/13	-0.56	04/16/13
1304-11010-28	135	140		8.57	04/16/13	0.02	04/15/13			0.63	04/15/13	0.00	04/16/13	1	04/16/13	-0.63	04/16/13
1304-11010-29	140	145		8.42	04/16/13	0.06	04/15/13			1.88	04/15/13	0.00	04/16/13	1	04/16/13	-1.88	04/16/13
1304-11010-30	145	150		8.51	04/16/13	0.04	04/15/13			1.25	04/15/13	0.00	04/16/13	1	04/16/13	-1.25	04/16/13
1304-11010-31	150	155		8.27	04/16/13	0.15	04/15/13			4.69	04/15/13	0.00	04/16/13	1	04/16/13	-4.69	04/16/13
1304-11010-32	15	160		8.40	04/16/13	0.03	04/15/13			0.94	04/15/13	0.00	04/16/13	1	04/16/13	-0.94	04/16/13
1304-11010-33	160	165		8.53	04/16/13	0.07	04/15/13			2.19	04/15/13	0.00	04/16/13	1	04/16/13	-2.19	04/16/13
1304-11010-34	165	170		8.37	04/16/13	.0.12	04/15/13			3.75	04/15/13	0.00	04/16/13	1	04/16/13	-3.75	04/16/13

(1) EPA 600 3.2.2
(2) EPA 600 3.2.4
(3) ASTM D-2492
(4) EPA 600 3.2.4
(5) EPA 600 3.2.3
(6) EPA 600 3.2.3
(7) EPA 600 3.2.4

*Units: Tons of $CaCO_3$ equivalent per 1000 tons of material
**Units: 1=None 3=Moderate
2=Slight 4=Strong

Respectfully Submitted

Analyses of Samples

STANDARD LABORATORIES, INC.
1138 McGhee Lane, Suite 2, Jacksboro, Tn 37757 - 423-562-1934

Earthcon Consultants
1880 West Oak Pkwy
Bldg 100 Suite 106
Marietta, GA 30062

Type of Sample: Overburden
Date Rec'd: 4/11/2013

Sample I.D. No.			Ridgeholm Energy X-11	(1) Paste pH (Standard Units)	Date Analyzed	(2) Total Sulfur (percent)	Date Analyzed	(3) Pyritic Sulfur (percent)	Date Analyzed	(4) * Potential Acidity	Date Analyzed	(5) * Neutralization Potential	Date Analyzed	(6) ** Fizz Rate	Date Analyzed	(7) Net* Acid-Base Accounting	Date Analyzed
1304-15001-1	0	5		5.92	04/17/13	0.00	04/16/13			0.00	04/16/13	1.25	04/19/13	1	04/17/13	1.25	04/19/13
1304-15001-2	5	10		5.38	04/17/13	0.00	04/16/13			0.00	04/16/13	0.50	04/19/13	1	04/17/13	0.50	04/19/13
1304-15001-3	10	15		5.54	04/17/13	0.00	04/16/13			0.00	04/16/13	3.00	04/19/13	1	04/17/13	3.00	04/19/13
1304-15001-4	15	20		5.64	04/17/13	0.00	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-5	20	25		5.85	04/17/13	0.00	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-6	25	30		5.59	04/17/13	0.00	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-7	30	35		5.51	04/17/13	0.00	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-8	35	40		5.75	04/17/13	0.00	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	01/09/00
1304-15001-9	40	45		5.85	04/17/13	0.00	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-10	45	50		6.56	04/17/13	0.02	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-11	50	55		5.51	04/17/13	0.06	04/16/13			0.63	04/16/13	1.50	04/19/13	1	04/17/13	0.88	04/19/13
1304-15001-12	55	60		5.60	04/17/13	0.04	04/16/13			1.88	04/16/13	0.00	04/19/13	1	04/17/13	-1.88	04/19/13
1304-15001-13	60	65		5.52	04/17/13	0.03	04/16/13			1.25	04/16/13	0.00	04/19/13	1	04/17/13	-1.25	04/19/13
1304-15001-14	65	70		5.93	04/17/13	0.02	04/16/13			0.94	04/16/13	2.00	04/19/13	1	04/17/13	1.06	04/19/13
1304-15001-15	70	75		6.12	04/17/13	0.02	04/16/13			0.63	04/16/13	0.00	04/19/13	1	04/17/13	-0.63	04/19/13
1304-15001-16	75	80		6.53	04/17/13	0.03	04/16/13			0.63	04/16/13	0.50	04/19/13	1	04/17/13	-0.13	04/19/13
1304-15001-17	80	85		6.97	04/17/13	0.01	04/16/13			0.94	04/16/13	0.00	04/19/13	1	04/17/13	-0.94	04/19/13
1304-15001-18	85	90		6.62	04/17/13	0.02	04/16/13			0.31	04/16/13	0.00	04/19/13	1	04/17/13	-0.31	04/19/13
1304-15001-19	90	95		6.78	04/17/13	0.00	04/16/13			0.63	04/16/13	0.75	04/01/13	1	04/17/13	0.13	04/19/13
1304-15001-20	95	100		6.84	04/17/13	0.01	04/16/13			0.00	04/16/13	0.25	04/19/13	1	04/17/13	0.25	04/19/13
1304-15001-21	100	105		6.95	04/17/13	0.02	04/16/13			0.31	04/16/13	0.00	04/19/13	1	04/17/13	-0.31	04/19/13
1304-15001-22	105	110		6.86	04/17/13	0.02	04/16/13			0.63	04/16/13	0.25	04/19/13	1	04/17/13	-0.38	04/19/13
1304-15001-23	110	115		7.05	04/17/13	0.01	04/16/13			0.63	04/16/13	0.00	04/19/13	1	04/17/13	-0.63	04/19/13
1304-15001-24	115	120		6.85	04/17/13	0.00	04/16/13			0.31	04/16/13	20.00	04/19/13	1	04/17/13	19.69	04/19/13
1304-15001-25	120	125		6.87	04/17/13	0.01	04/16/13			0.00	04/16/13	0.00	04/19/13	1	04/17/13	0.00	04/19/13
1304-15001-26	125	130		7.50	04/17/13	0.01	04/16/13			0.31	04/16/13	0.50	04/19/13	1	04/17/13	0.19	04/19/13
1304-15001-27	130	135		7.58	04/17/13	0.02	04/16/13			0.31	04/16/13	0.00	04/19/13	1	04/17/13	-0.31	04/19/13
1304-15001-28	135	140		8.41	04/17/13	0.02	04/16/13			0.63	04/16/13	0.00	04/19/13	1	04/17/13	-0.63	04/19/13
1304-15001-29	140	145		7.17	04/17/13	0.46	04/16/13			0.63	04/16/13	0.00	04/19/13	1	04/17/13	-0.63	04/19/13
1304-15001-30	145	150		7.79	04/17/13	0.16	04/16/13			14.38	04/16/13	1.75	04/19/13	1	04/17/13	-12.63	04/19/13
										5.00	04/16/13	0.25	04/19/13	1	04/17/13	-4.75	04/19/13

(1) EPA 600 3.2.2
(2) EPA 600 3.2.4
(3) ASTM D-2492
(4) EPA 600 3.2.4
(5) EPA 600 3.2.3
(6) EPA 600 3.2.3
(7) EPA 600 3.2.4

*Units: Tons of $CaCO_3$ equivalent per 1000 tons of material
**Units: 1=None 3=Moderate
2=Slight 4=Strong

Respectfully Submitted

Analyses of Samples

STANDARD LABORATORIES, INC.
1138 McGhee Lane, Suite 2, Jacksboro, Tn 37757 - 423-562-1934

Earthcon Consultants
1880 West Oak Pkwy
Bldg 100 Suite 106
Marietta, GA 30062

Type of Sample: Overburden
Date Rec'd: 4/11/2013

Sample I.D. No.			Ridgeholm Energy X-15	(1) Paste pH (Standard Units)	Date Analyzed	(2) Total Sulfur (percent)	Date Analyzed	(3) Pyritic Sulfur (percent)	Date Analyzed	(4) * Potential Acidity	Date Analyzed	(5) * Neutralization Potential	Date Analyzed	(6) ** Fizz Rate	Date Analyzed	(7) Net* Acid-Base Accounting	Date Analyzed
1304-16005-1	0	5		5.21	04/22/13	0.00	04/18/13			0.00	04/18/13	0.00	04/22/13	1	04/17/13	0.00	04/22/13
1304-16005-2	5	10		4.62	04/22/13	0.01	04/18/13			0.31	04/18/13	0.00	04/22/13	1	04/17/13	-0.31	04/22/13
1304-16005-3	10	15		4.42	04/22/13	0.08	04/18/13			2.50	04/18/13	0.00	04/22/13	1	04/17/13	-2.50	04/22/13
1304-16005-4	15	20		5.79	04/22/13	0.02	04/18/13			0.63	04/18/13	1.25	04/22/13	1	04/17/13	0.63	04/22/13
1304-16005-5	20	25		4.88	04/22/13	0.06	04/18/13			1.88	04/18/13	0.00	04/22/13	1	04/17/13	-1.88	04/22/13
1304-16005-6	25	30		5.03	04/22/13	0.06	04/18/13			1.88	04/18/13	0.00	04/22/13	1	04/17/13	-1.88	04/22/13
1304-16005-7	30	35		5.60	04/22/13	0.02	04/18/13			0.63	04/18/13	0.00	04/22/13	1	04/17/13	-0.63	04/22/13
1304-16005-8	35	40		5.99	04/22/13	0.04	04/18/13			1.25	04/18/13	0.00	04/22/13	1	04/17/13	-1.25	04/22/13
1304-16005-9	40	45		6.54	04/22/13	0.03	04/18/13			0.94	04/18/13	0.00	04/22/13	1	04/17/13	-0.94	04/22/13
1304-16005-10	45	50		6.90	04/22/13	0.03	04/18/13			0.94	04/18/13	0.25	04/22/13	1	04/17/13	-0.69	04/22/13
1304-16005-11	50	55		7.26	04/22/13	0.04	04/18/13			1.25	04/18/13	0.75	04/22/13	1	04/17/13	-0.50	04/22/13
1304-16005-12	55	60		7.29	04/22/13	0.13	04/18/13			4.06	04/18/13	1.00	04/22/13	1	04/17/13	-3.06	04/22/13
1304-16005-13	60	65		7.40	04/22/13	0.26	04/18/13			8.13	04/18/13	5.50	04/22/13	1	04/17/13	-2.63	04/22/13
1304-16005-14	65	70		7.55	04/22/13	0.07	04/18/13			2.19	04/18/13	1.00	04/22/13	1	04/17/13	-1.19	04/22/13
1304-16005-15	70	75		7.14	04/22/13	0.12	04/18/13			3.75	04/18/13	0.25	04/22/13	1	04/17/13	-3.50	04/22/13
1304-16005-16	75	80		6.50	04/22/13	0.09	04/18/13			2.81	04/18/13	0.00	04/22/13	1	04/17/13	-2.81	04/22/13
1304-16005-17	80	85		7.21	04/22/13	0.12	04/18/13			3.75	04/18/13	0.75	04/22/13	1	04/17/13	-3.00	04/22/13
1304-16005-18	85	90		7.41	04/22/13	0.07	04/18/13			2.19	04/18/13	1.75	04/22/13	1	04/17/13	-0.44	04/22/13
1304-16005-19	90	95		7.35	04/22/13	0.05	04/18/13			1.56	04/18/13	0.50	04/22/13	1	04/17/13	-1.06	04/22/13

(1) EPA 600 3.2.2
(2) EPA 600 3.2.4
(3) ASTM D-2492
(4) EPA 600 3.2.4
(5) EPA 600 3.2.3
(6) EPA 600 3.2.3
(7) EPA 600 3.2.4

*Units: Tons of $CaCO_3$ equivalent per 1000 tons of material
**Units: 1=None 3=Moderate
2=Slight 4=Strong

Respectfully Submitted

APPENDIX II.E.2-B

Central Testing Laboratory, LLC

P. O. Box 320213
5245 1st Ave. North
Birmingham, AL 35212

ANALYSIS INFORMATION

Date	Analysis No.
8/29/2012	168211

Phone #	(205)-591-1000
Fax #	(205)-591-8300

Name / Address
EARTHCON PO BOX 10 DELMAR, AL 35551 FAX 205-465-1971

Description		Test Results	Dry Basis	As Received	Retained %	%Accumula...	Total
EB #1 8-29-12							0.00
Moisture Total D3302				1.55			0.00
Volatile Matter D3175			24.80	24.42			0.00
Ash D3174			8.55	8.42			0.00
Fixed Carbon D3172			66.65	65.62			0.00
Sulfur D4239			.83	.82			0.00
Free Swelling Index D720			8	8			0.00
BTU D5865			13,615	13,404			60.00
Oxidation Index D5263		98.6					30.00
PLASTOMETER D2639							175.00
DDPM	*C	8,169					0.00
Maximum Fluid Temp	*C	464					0.00
Intital Temp	*C	405					0.00
Solidfication Temp	*C	500					0.00
Range Temp	*C	95					0.00
ASH FUSION TEST D1857							0.00
Initial Deformation Temp	*F						0.00
Softening Temp	*F						0.00
Hemisphericial Temp	*F						0.00
Fluid Temp	*F						0.00
FLOAT SINK TEST							0.00
							265.00

ASTM Specifications Mary E Armstrong

Total $265.00

Central Testing Laboratory, LLC

P. O. Box 320213
5245 1st Ave. North
Birmingham, AL 35212

ANALYSIS INFORMATION

Date	Analysis No.
8/31/2012	168260

Phone #	(205)-591-1000
Fax #	(205)-591-8300

Name / Address
EARTHCON PO BOX 10 DELMAR, AL 35551 FAX 205-465-1971

Description		Test Results	Dry Basis	As Received	Retained %	%Accumula...	Total
BOTTOM EB 2 8-31-12							0.00
Moisture Total D3302				2.03			0.00
Volatile Matter D3175			26.48	25.94			0.00
Ash D3174			5.60	5.49			0.00
Fixed Carbon D3172			67.92	66.54			0.00
Sulfur D4239			2.15	2.11			0.00
Free Swelling Index D720			8	8			0.00
BTU D5865			14,178	13,890			60.00
Oxidation Index D5263		99.0					30.00
PLASTOMETER D2639							175.00
DDPM	*C	101,864					0.00
Maximum Fluid Temp	*C	454					0.00
Intital Temp	*C	370					0.00
Solidfication Temp	*C	502					0.00
Range Temp	*C	132					0.00
ASH FUSION TEST D1857							0.00
Initial Deformation Temp	*F						0.00
Softening Temp	*F						0.00
Hemisphericial Temp	*F						0.00
Fluid Temp	*F						0.00
FLOAT SINK TEST							0.00
							265.00

ASTM Specifications Harry E. Huntsinger

Total $265.00

Central Testing Laboratory, LLC

P. O. Box 320213
5245 1st Ave. North
Birmingham, AL 35212

ANALYSIS INFORMATION

Date	Analysis No.
8/31/2012	168261

Phone #	(205)-591-1000
Fax #	(205)-591-8300

Name / Address
EARTHCON PO BOX 10 DELMAR, AL 35551 FAX 205-465-1971

Description		Test Results	Dry Basis	As Received	Retained %	%Accumula...	Total
TOP EB 2 8-31-12							0.00
Moisture Total D3302				1.27			0.00
Volatile Matter D3175			24.18	23.87			0.00
Ash D3174			6.60	6.52			0.00
Fixed Carbon D3172			69.22	68.34			0.00
Sulfur D4239			1.30	1.28			0.00
Free Swelling Index D720			8	8			0.00
BTU D5865			13,909	13,732			60.00
Oxidation Index D5263		99.2					30.00
PLASTOMETER D2639							175.00
DDPM	*C	6,266					0.00
Maximum Fluid Temp	*C	454					0.00
Intital Temp	*C	402					0.00
Solidfication Temp	*C	503					0.00
Range Temp	*C	101					0.00
ASH FUSION TEST D1857							0.00
Initial Deformation Temp	*F						0.00
Softening Temp	*F						0.00
Hemisphericial Temp	*F						0.00
Fluid Temp	*F						0.00
FLOAT SINK TEST							0.00
							265.00

ASTM Specifications Gary E Hunterey

Total $265.00

Central Testing Laboratory, LLC

P. O. Box 320213
5245 1st Ave. North
Birmingham, AL 35212

ANALYSIS INFORMATION

Date	Analysis No.
5/28/2013	172834

Phone #	(205)-591-1000
Fax #	(205)-591-8300

Name / Address
RIDGEHOLM ENERGY PARTNERS LLC 100 OXMOOR RD STE 110 BIRMINGHAM, AL 35209-5962 FAX 205-465-1971

Description	Test Results	Dry Basis	As Received	Retained %	%Accumula...	Total
SCHOOL HOUSE 5-28-13						0.00
Moisture Total D3302			.55			0.00
Volatile Matter D3175		19.36	19.25			0.00
Ash D3174		20.64	20.53			0.00
Fixed Carbon D3172		60.00	59.67			0.00
Sulfur D4239		.70	.70			0.00
Free Swelling Index D720		4-1/2	4-1/2			0.00
BTU D5865		11,595	11,531			60.00
Oxidation Index D5263	97.2					30.00
PLASTOMETER D2639						0.00
DDPM *C						0.00
Maximum Fluid Temp *C						0.00
Intital Temp *C						0.00
Solidfication Temp *C						0.00
Range Temp *C						0.00
ASH FUSION TEST D1857						0.00
Initial Deformation Temp *F						0.00
Softening Temp *F						0.00
Hemisphericial Temp *F						0.00
Fluid Temp *F						0.00
FLOAT SINK TEST						0.00
						90.00

ASTM Specifications Gary E Hunterdon

Total $90.00

Central Testing Laboratory, LLC

P. O. Box 320213
5245 1st Ave. North
Birmingham, AL 35212

ANALYSIS INFORMATION

Date	Analysis No.
5/30/2013	172860

Phone #	(205)-591-1000
Fax #	(205)-591-8300

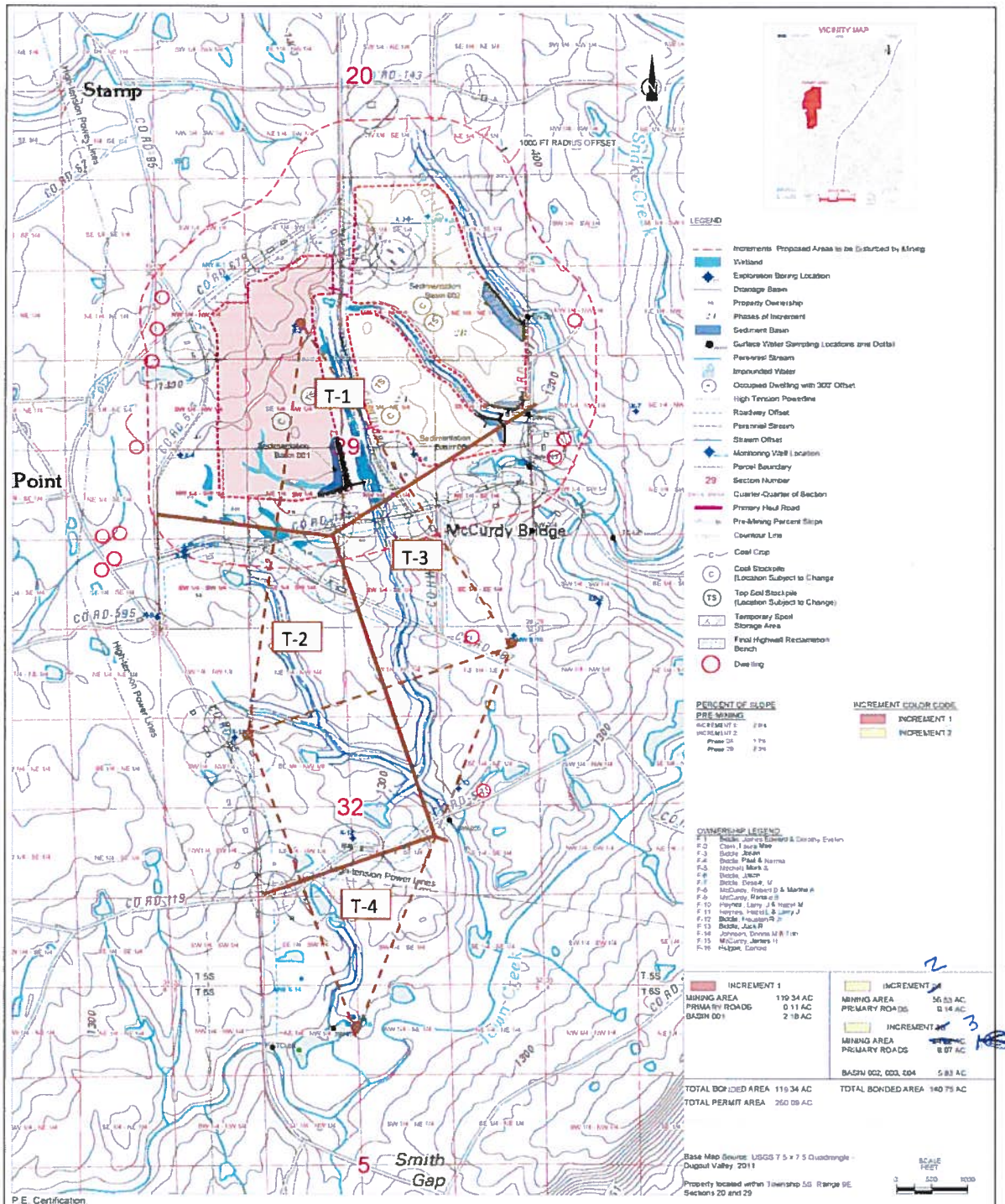
Name / Address
RIDGEHOLM ENERGY PARTNERS LLC 100 OXMOOR RD STE 110 BIRMINGHAM, AL 35209-5962 FAX 205-465-1971

Description	Test Results	Dry Basis	As Received	Retained %	%Accumula...	Total
PAUL #2 5-30-13						0.00
Moisture Total D3302			1.69			0.00
Volatile Matter D3175		16.84	16.56			0.00
Ash D3174		35.17	34.58			0.00
Fixed Carbon D3172		47.99	47.18			0.00
Sulfur D4239		2.74	2.69			0.00
Free Swelling Index D720		1	1			0.00
BTU D5865		9,819	9,653			60.00
Oxidation Index D5263	99.2					30.00
PLASTOMETER D2639						0.00
DDPM *C						0.00
Maximum Fluid Temp *C						0.00
Intital Temp *C						0.00
Solidfication Temp *C						0.00
Range Temp *C						0.00
ASH FUSION TEST D1857						0.00
Initial Deformation Temp *F						0.00
Softening Temp *F						0.00
Hemisphericial Temp *F						0.00
Fluid Temp *F						0.00
FLOAT SINK TEST						0.00
						90.00

ASTM Specifications Gary E Hamstrong

Total $90.00

APPENDIX II.E.2-C



Ridgeholm Energy Partners, LLC.
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO. 02 201201195.00

EARTHCON
Environmental Challenges
BUSINESS SOLUTIONS
EarthCon Consultants Inc
14405 Walters Rd, Suite 700
Houston, Tx 77014

PERMIT MAP
John Poe Mine
Dekalb County, Alabama

DRAWN	CHECKED	DATE	FIGURE
JMT	RAD	05/2014	1

Overburden Analysis: Ridgeholm Energy Partners

PERMIT NO:
COUNTY: DeKalb
DRILL HOLE: X-2
TOWNSHIP:

THRESHOLD VALUES	SULFUR	NP	FIZZ
	0	0.00	0.00

Lithology	Abbreviation	Unit Weight (tons/ac-foot)
CLAY	CL	3450
SHALE	SH	3700
SILTSTONE	ST	3750
SANDSTONE	SS	3670
LIMESTONE	LS	3670
COAL	CO	1800
CARBONOLITH	CB	2580
OTHER	OT	3670

ALK ADD(tns/ac CaCO3):
COAL SEAMS:
STATE PLANE ZONE:
FEET (NORTH/SOUTH):
FEET (EAST/WEST):
SURFACE ELEV. (FT):

Elevation of Bottom of Layer (feet msl)	Depth to Bottom of Layer (feet)	Thickness (feet)	Lithology	Paste pH (Standard Units)	Total Sulfur (percent)	Maximum Potential Acidity	Neutralization Potential	Fizz Rate	T-1 Area Increment 1 (acres)	T-1 Area Increment 2 (acres)	T-1 Area Increment 3 (acres)	Unit Weight (tons/ac-ft)	Fraction Spoiled	Tons MPA Incr. 1	Tons MPA Incr. 2	Tons MPA Incr. 3	Tons NP Incr. 1	Tons NP Incr. 2	Tons NP Incr. 3	Net Tons NP Incr. 1	Net Tons NP Incr. 2	Net Tons NP Incr. 3	Tons of Overburden Incr. 1	Tons of Overburden Incr. 2	Tons of Overburden Incr. 3
1405	5	5	SS	5.24	0.00	0.00	0.00	1	5.1	0.00	1.58	3670	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93585	0	28993
1400	10	5	SS	5.06	0.00	0.00	0.00	1	18.57	0.00	8.45	3670	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	340760	0	155027
1395	15	5	SS	5.21	0.00	0.00	2.50	1	27.55	0.00	13.03	3670	1.00	0.00	0.00	0.00	1263.86	0.00	597.62	1263.86	0.00	597.62	505543	0	239050
1393	17	2	SS	4.71	0.02	0.63	0.00	1	33.84	0.00	16.23	3670	1.00	155.22	0.00	74.47	0.00	0.00	0.00	-155.22	0.00	-74.47	248356	0	119146
1390	20	3	SH	4.71	0.02	0.63	0.00	1	38.33	0.00	18.52	3700	1.00	265.89	0.00	128.50	0.00	0.00	0.00	-265.89	0.00	-128.50	425419	0	205593
1385	25	5	SH	5.37	0.02	0.63	8.50	1	50.00	0.00	22.19	3700	1.00	578.13	0.00	256.51	7862.50	0.00	3488.59	7284.38	0.00	3232.08	925000	0	410423
1383	27	2	SH	4.84	0.25	7.81	0.25	1	50.00	0.00	25.39	3700	1.00	2890.63	0.00	1467.87	92.50	0.00	46.97	-2798.13	0.00	-1420.90	370000	0	187888
1381	29	2	CO	4.84	0.25	7.81	0.25	1	50.00	0.00	27.22	1800	0.10	140.63	0.00	76.56	4.50	0.00	2.45	-136.13	0.00	-74.11	180000	0	97998
1380	30	1	SH	4.84	0.25	7.81	0.25	1	50.00	1.00	28.60	3700	1.00	1445.31	28.91	826.59	46.25	0.93	26.45	-1399.06	-27.98	-800.14	185000	3700	105803
1375	35	5	SH	4.60	0.17	5.31	6.25	1	50.00	19.72	31.34	3700	1.00	4914.06	1938.11	3080.41	5781.25	2280.13	3624.01	867.19	342.02	543.60	925000	364820	579841
1370	40	5	SH	5.00	0.03	0.94	0.25	1		22.60	35.92	3700	1.00	0.00	391.97	623.02	0.00	104.53	166.14	0.00	-287.44	-456.88	0	418100	664551
1365	45	5	SH	5.67	0.01	0.31	2.00	1		25.48	40.50	3700	1.00	0.00	147.31	234.14	0.00	942.76	1498.52	0.00	795.45	1264.38	0	471380	749260
1360	50	5	SH	5.94	0.10	3.13	0.00	1		28.36	45.08	3700	1.00	0.00	1639.56	2606.16	0.00	0.00	0.00	0.00	-1639.56	-2606.16	0	524660	833970
1355	55	5	SH	7.50	0.00	0.00	3.75	1		31.24	49.66	3700	1.00	0.00	0.00	0.00	0.00	2167.28	3445.05	0.00	2167.28	3445.05	0	577940	918679
1350	60	5	SH	7.65	0.02	0.63	5.00	1		34.12	54.24	3700	1.00	0.00	394.51	627.12	0.00	3156.10	5016.94	0.00	2761.59	4389.83	0	631220	1003389
1345	65	5	SS	7.46	0.00	0.00	0.00	1		37.00	58.82	3670	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	678950	1079276
1340	70	5	SS	7.39	0.01	0.31	0.00	1		39.88	63.40	3670	1.00	0.00	228.69	363.53	0.00	0.00	0.00	0.00	-228.69	-363.53	0	731798	1163298
1335	75	5	SS	7.15	0.02	0.63	0.00	1		42.76	67.97	3670	1.00	0.00	490.40	779.58	0.00	0.00	0.00	0.00	-490.40	-779.58	0	784646	1247321
1333	77	2	SS	7.40	0.02	0.63	9.50	1		44.78	71.18	3670	1.00	0.00	205.41	326.53	0.00	3122.23	4963.32	0.00	2916.82	4636.79	0	328656	522455
1332	78	1	CO	7.40	0.02	0.63	9.50	1		45.64	72.55	1800	0.15	0.00	7.70	12.24	0.00	117.07	186.10	0.00	109.36	173.85	0	82152	130595
1330	80	2	SS	7.40	0.02	0.63	9.50	1		46.50	73.93	3670	1.00	0.00	213.34	339.14	0.00	3242.72	5154.89	0.00	3029.39	4815.75	0	341339	542620
1325	85	5	SS	7.13	0.10	3.13	14.25	1		48.52	77.13	3670	1.00	0.00	2782.32	4423.02	0.00	12687.37	20168.97	0.00	9905.05	15745.95	0	890342	1415366
1322	88	3	SS	6.85	0.17	5.31	8.50	1		50.82	80.79	3670	1.00	0.00	2972.73	4725.74	0.00	4756.36	7561.18	0.00	1783.64	2835.44	0	559572	889551
1321.2	88.8	0.8	CO	6.85	0.17	5.31	8.50	1		51.92	82.53	1800	0.15	0.00	59.58	94.71	0.00	95.32	151.53	0.00	35.75	56.83	0	74762	118850
1320	90	1	SS	6.85	0.17	5.31	8.50	1		52.84	84.00	3670	1.00	0.00	1236.26	1965.29	0.00	1978.01	3144.46	0.00	741.75	1179.17	0	232707	369936
1315	95	5	SS	6.70	0.06	1.88	8.25	1		52.84	84.00	3670	1.00	0.00	1818.03	2890.13	0.00	7999.32	12716.55	0.00	6181.29	9826.43	0	969614	1541400
1310	100	5	SS	6.96	0.06	1.88	0.50	1		52.84	84.00	3670	1.00	0.00	1818.03	2890.13	0.00	484.81	770.70	0.00	-1333.22	-2119.43	0	969614	1541400
1309	101	1	CO	7.14	0.05	1.56	0.25	1		52.84	84.00	1800	0.15	0.00	22.29	35.44	0.00	3.57	5.67	0.00	-18.73	-29.77	0	95112	151200
1305	105	4	SS	7.14	0.05	1.56	0.25	1		52.84	84.00	3670	1.00	0.00	1212.02	1926.75	0.00	193.92	308.28	0.00	-1018.09	-1618.47	0	775691	1233120
1300	110	5	SS	7.22	0.06	1.88	3.25	1		52.84	84.00	3670	1.00	0.00	1818.03	2890.13	0.00	3151.25	5009.55	0.00	1333.22	2119.43	0	969614	1541400
1295	115	5	SS	7.16	0.06	1.88	0.00	1		52.84	84.00	3670	1.00	0.00	1818.03	2890.13	0.00	0.00	0.00	0.00	-1818.03	-2890.13	0	969614	1541400
1290	120	5	SS	7.01	0.08	2.50	1.50	1		52.84	84.00	3670	1.00	0.00	2424.04	3853.50	0.00	1454.42	2312.10	0.00	-969.61	-1541.40	0	969614	1541400
1285	125	5	SS	6.87	0.12	3.75	13.75	1		52.84	84.00	3670	1.00	0.00	3636.05	5780.25	0.00	13332.19	21194.25	0.00	9696.14	15414.00	0	969614	1541400
1280	130	5	SS	7.16	0.15	4.69	0.50	1		52.84	84.00	3670	1.00	0.00	4545.07	7225.31	0.00	484.81	770.70	0.00	-4060.26	-6454.61	0	969614	1541400
1277	133	3	SS	7.08	0.09	2.81	1.25	1		52.84	84.00	3670	1.00	0.00	1636.22	2601.11	0.00	727.21	1156.05	0.00	-909.01	-1445.06	0	581768	924840
1276.3	133.7	0.7	CO	7.08	0.09	2.81	1.25	1		52.84	84.00	1800	0.15	0.00	28.09	44.65	0.00	12.48	19.84	0.00	-15.60	-24.81	0	66578	105840
1275	135	1	SS	7.08	0.09	2.81	1.25	1		52.84	84.00	3670	1.00	0.00	709.03	1127.15	0.00	315.12	500.96	0.00	-393.91	-626.19	0	252100	400764
1270	140	5	SS	7.45	0.12	3.75	0.00	1		52.84	84.00	3670	1.00	0.00	3636.05	5780.25	0.00	0.00	0.00	0.00	-3636.05	-5780.25	0	969614	1541400
													Total (tons):	10389.86	37857.74	62966.02	15050.86	62809.90	104007.84	4661.00	24952.16	41041.82	4198661.84	17224906.94	28925841.40
													Total (tons/thousand):	2.47	2.20	2.18	3.58	3.65	3.60	1.11	1.45	1.42			

	Increment 1	Increment 2	Increment 3
Total Overburden Volume (ac-ft):	1098.75	4626.56	7752.14
Percent Sandstone:	29	82	80
NP/MPA Ratio	1.45	1.66	1.65
Tons/ac Required (1.1):	93	472	489
	Excess	Excess	Excess

Overburden Analysis: Ridgeholm Energy Partners

PERMIT NO:
COUNTY: DeKalb

DRILL HOLE. **X-10**
TOWNSHIP:

THRESHOLD VALUES:	SULFUR	NP	FIZZ
	0	0.00	0.00

Portion of Mining Increment 2 within Theissen Polygon 3 (T-3)

Lithology	Abbreviation	Unit Weight (tons/ac-foot)
CLAY	CL	3450
SHALE	SH	3700
SILTSTONE	ST	3750
SANDSTONE	SS	3670
LIMESTONE	LS	3670
COAL	CO	1800
CARBONOLITH	CB	2580
OTHER	OT	3670

ALK ADD(tns/ac CaCO3):
COAL SEAMS:
STATE PLANE ZONE:
FEET (NORTH/SOUTH):
FEET (EAST/WEST):
SURFACE ELEV. (FT):

Elevation of Bottom of Layer (feet msl)	Depth to Bottom of Layer (feet)	Thickness (feet)	Lithology	Paste pH (Standard Units)	Total Sulfur (percent)	Maximum Potential Acidity	Neutralization Potential	Fizz Rate	Area (acres)	Unit Weight (tons/ac-ft)	Fraction Spoiled	Tons MPA	Tons NP	Net Tons NP	Tons of Overburden
1331	5	5	SS	4.68	0.01	0.31	0.00	1	1.54	3670	1.00	8.83	0.00	-8.83	28259
1326	10	5	SS	4.95	0.00	0.00	0.00	1	2.85	3670	1.00	0.00	0.00	0.00	52298
1321	15	5	SS	5.14	0.01	0.31	0.00	1	4.16	3670	1.00	23.86	0.00	-23.86	76336
1316	20	5	SS	5.38	0.01	0.31	0.00	1	4.16	3670	1.00	23.86	0.00	-23.86	76336
1311	25	5	SS	5.69	0.00	0.00	0.00	1	4.16	3670	1.00	0.00	0.00	0.00	76336
1306	30	5	SS	5.43	0.01	0.31	0.00	1	4.16	3670	1.00	23.86	0.00	-23.86	76336
1303	33	3	SS	5.36	0.02	0.63	0.00	1	4.16	3670	1.00	28.63	0.00	-28.63	45802
1302.8	33.2	0.2	CO	5.36	0.02	0.63	0.00	1	4.16	1800	1.00	0.94	0.00	-0.94	1498
1301	35	2	SH	5.36	0.02	0.63	0.00	1	4.16	3700	1.00	17.32	0.00	-17.32	27706
1296	40	5	SH	5.29	0.02	0.63	0.00	1	4.16	3700	1.00	48.10	0.00	-48.10	76960
1291	45	5	SH	6.18	0.01	0.31	0.25	1	4.16	3700	1.00	24.05	19.24	-4.81	76960
1286	50	5	SS	6.43	0.01	0.31	0.00	1	4.16	3670	1.00	23.86	0.00	-23.86	76336
1281	55	5	SS	6.32	0.00	0.00	0.00	1	4.16	3670	1.00	0.00	0.00	0.00	76336
1280	56	1	SS	6.47	0.03	0.94	0.00	1	4.16	3670	1.00	14.31	0.00	-14.31	15267
1279.8	56.2	0.2	CO	6.47	0.03	0.94	0.00	1	4.16	1800	1.00	1.40	0.00	-1.40	1498
1276	60	4	SS	6.47	0.03	0.94	0.00	1	4.16	3670	1.00	54.39	0.00	-54.39	58015
1271	65	5	SS	6.92	0.02	0.63	0.25	1	4.16	3670	1.00	47.71	19.08	-28.63	76336

	Increment 2
Total Overburden Volume (ac-ft):	250.75
Percent Sandstone:	80
NP/MPA Ratio:	0.11
Tons/ac Required (1:1):	-73
	Deficient

	Tons MPA	Tons NP	Net Tons NP	Tons of Overburden
Total (tons):	341.10	38.32	-302.77	918613.46
Total (tons/thousand):	0.37	0.04	-0.33	

ATTACHMENT II.F

GROUNDWATER HYDROLOGY

ATTACHMENT II.F

GROUNDWATER HYDROLOGY

General Groundwater Hydrology

Soils on Sand Mountain are generally shallow and generally do not produce sufficient water for residential use. Average annual precipitation is about 55 inches per year, but more than half runs off during and directly after rainstorms (GSA, 2008).

The Pottsville Aquifer system is the shallowest source of drinking water for the area (GSA, 2008). The Pottsville Aquifer is relatively impermeable and produces moderate amounts of water. Bossong (1989) estimated recharge to the Pottsville aquifer at about 2 to 3 inches per year.

Sandstone in the Pottsville Formation yields moderate amounts of water with variable quality. High iron and manganese content is noted in the Pottsville Aquifer, and water from many wells completed in the Pottsville exceeds the secondary drinking water standard for iron of 0.3 milligrams per liter (mg/L). The secondary drinking water standard for manganese is 0.05 mg/L Based on data from AGS (2008), ground water in the Pottsville aquifer in the Permit Area would be expected to contain more than 0.5 mg/L iron.

Long-distance ground water flow in the Pottsville Aquifer is inhibited by sharp permeability contrasts and by low matrix permeability values within the aquifer (Stricklin, 1989). Groundwater is primarily found in fractures and weathered zones. Most public water supply wells completed in the Pottsville aquifer yield less than 0.15 million gallons per day (mgd), although yields of 0.3 mgd have been noted for some wells in DeKalb County.

The underlying Parkwood and Pennington Formations are composed of shale, sandstone, mudstone, and conglomerate. These formations are considered to be confining layers, and yield only low quantities of groundwater sufficient for domestic use. Groundwater from these formations is often high in iron concentrations.

Hydrogeology in the Permit Area

Subsurface conditions within the permit area were explored by a series of exploratory borings as indicated in Attachment II.E.1. Groundwater was encountered in exploratory borings at depths ranging from 20 to 70 feet below the ground surface (ft-bgs).

Monitor wells were installed at the locations indicated on the figures included in Appendix II.F-1. Monitor well installation logs are included in Appendix II.F-4.

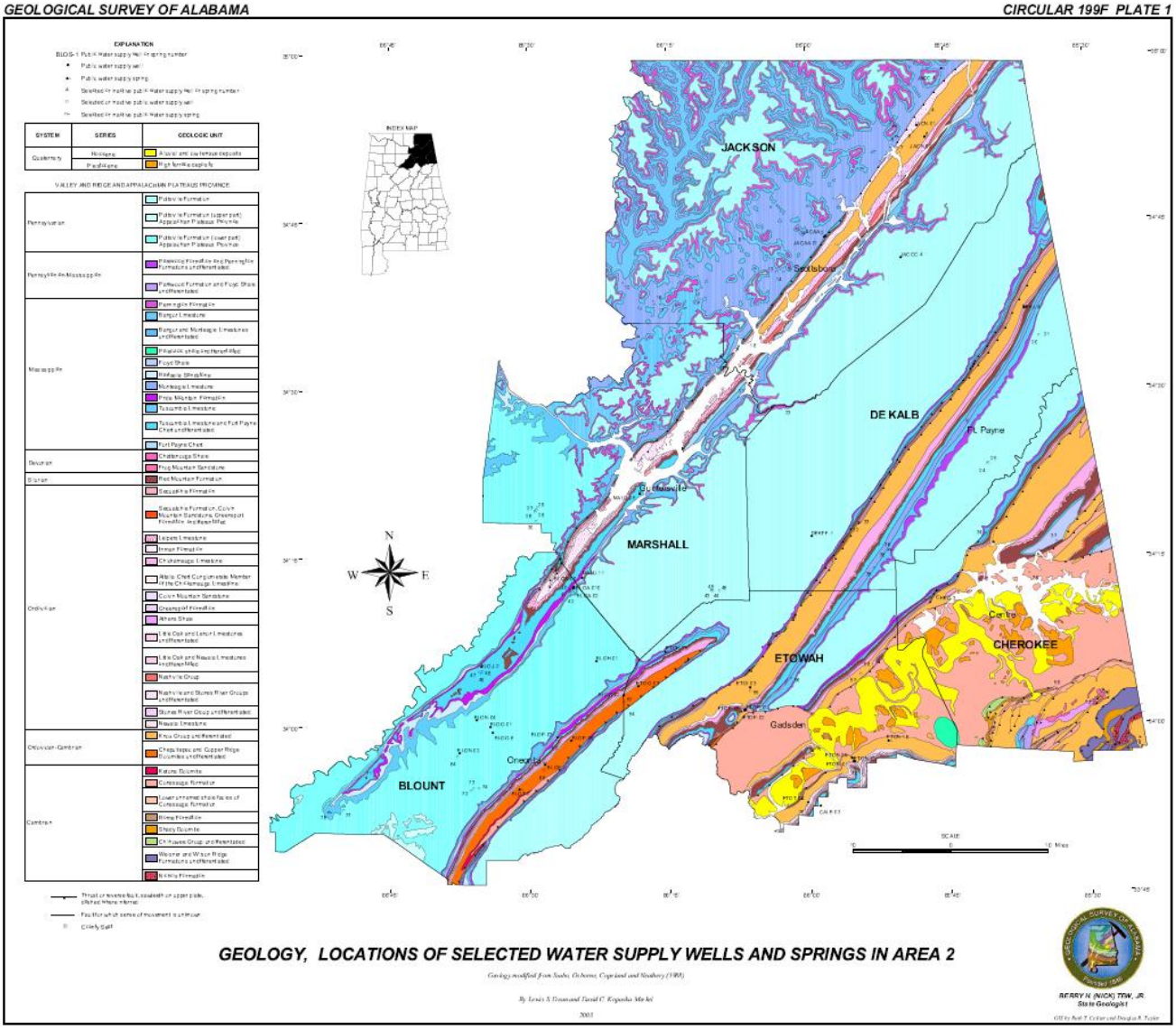
Yields were not measured for the monitor wells, but the monitor wells were able to sustain withdrawal of 1 gallon per minute with minimal drawdown during purging and sampling.

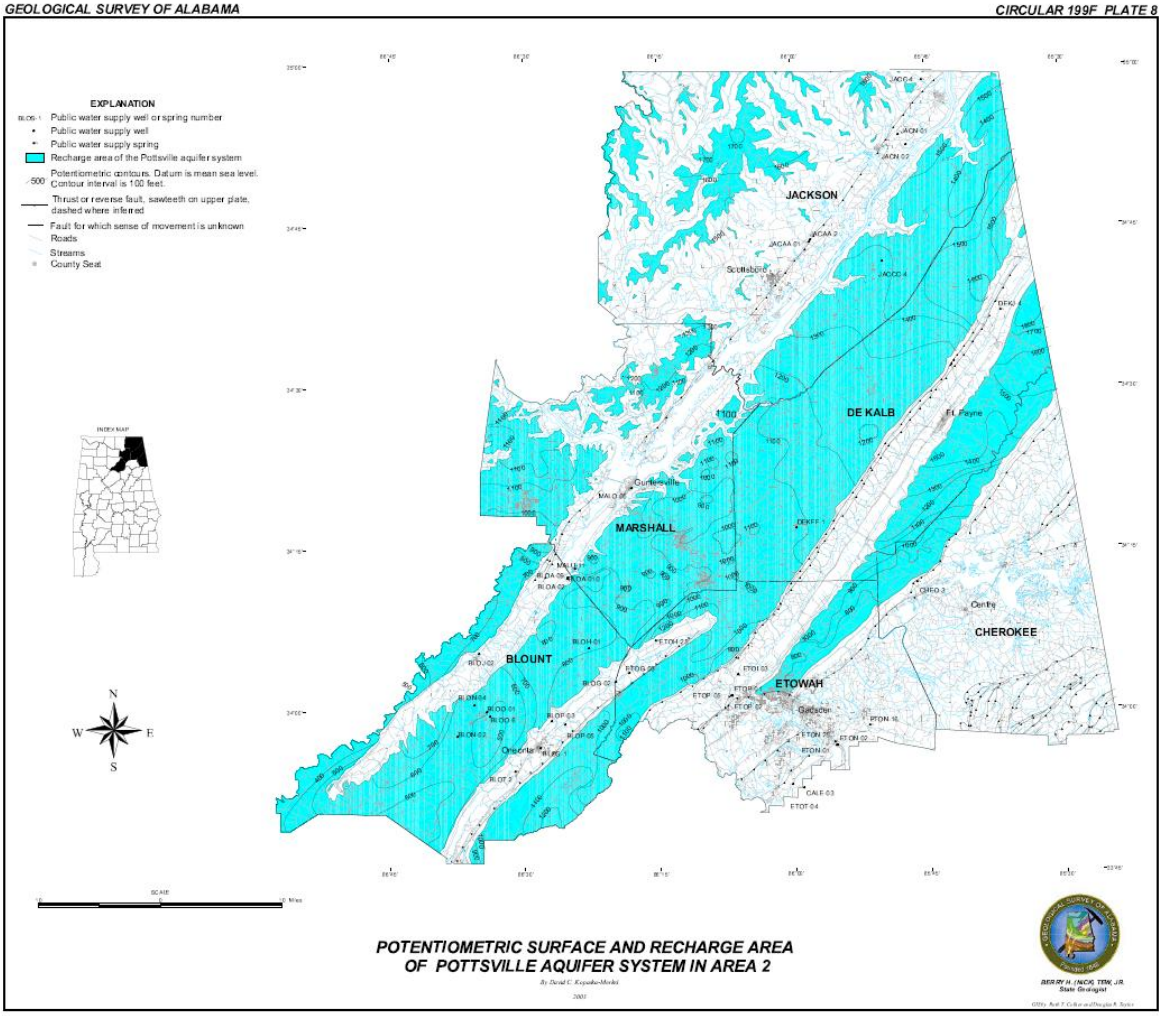
A number of abandoned surface mining pits are present in the vicinity of the Permit Area, but none are located within the Permit Boundary. These pits modify local surface and subsurface hydrology by acting as discharge or recharge points for the Pottsville Formation. Pond-1 is an off-site pond related to an off-site former strip mine located south of the Permit Areas. The surface water elevation at Pond-1 is approximately 1,230 feet mean sea level (ft-msl).

There are no documented public supply wells, public supply springs, or wellhead protection areas on the Permit Area. A number of shallow water wells were noted within the Permit Area. Most of these wells are used for agricultural purposes. Potable water for personal use is supplied by DeKalb County.

Coal seams to be mined in the Permit Area lie above the confining units of the Parkwood and Pennington Formations. It is not anticipated that aquifers hosted in carbonates below the confining units will be affected by proposed mining operations, due to the low permeability strata below the proposed excavation areas.

Surface coal mines are currently operating on Sand Mountain in the Fabius and Henagar areas, and mining has occurred in the past in those areas, and in areas around, but not on the Permit Area. Considering the long history of surface mining in the area, the proposed mining is not anticipated to have significant additional impact on the surface or subsurface hydrology.


GEOLOGICAL SURVEY OF ALABAMA
CIRCULAR 199F PLATE 1
EXPLANATION
SYSTEM
SERIES
GEOLOGIC UNIT
VALLEY AND RIDGE AND APPALACHIAN PLATEAUS PROVINCE
INDEX MAP
JACKSON
DE KALB
MARSHALL
ETOWAH
CHEROKEE
BLOUNT
Ft. Payne
Gadsden
Centre
Oneonta
N
S
E
W
GEOLOGY, LOCATIONS OF SELECTED WATER SUPPLY WELLS AND SPRINGS IN AREA 2
BERRY H. (NICK) TEW, JR.
State Geologist


GEOLOGICAL SURVEY OF ALABAMA
CIRCULAR 199F PLATE 8
EXPLANATION
Public water supply well or spring number
Public water supply well
Public water supply spring
Recharge area of the Pottsville aquifer system
Potentiometric contours. Datum is mean sea level. Contour interval is 100 feet.
Thrust or reverse fault, sawteeth on upper plate, dashed where inferred
Fault for which sense of movement is unknown
Roads
Streams
County Seat
JACKSON
DE KALB
MARSHALL
BLOUNT
ETOWAH
CHEROKEE
Scottsboro
Guntersville
Ft. Payne
Centre
Gadsden
Oneonta
N
S
E
W
POTENTIOMETRIC SURFACE AND RECHARGE AREA
OF POTTSVILLE AQUIFER SYSTEM IN AREA 2
BERRY H. (NICK) TEW, JR.
State Geologist

On-site Lithology

Surface soils in upland and slope areas are generally clayey sand (Unified Soil Classification System group symbol SC) to silty loam (Unified Soil Classification System group symbol ML, NRCS, 2013).

The upper portion of the bedrock is typically moderately to deeply weathered. The uppermost bedrock unit encountered in exploratory borings is sandstone, which is locally conglomeratic and locally cross-bedded. Bedrock exposure in the Permit Area primarily consists of sandstone beds. Strike of the sandstone varies between N20E to N70W. Dips are generally shallow, with a general dip southwest. The surficial sandstones in most of the Permit Area are interpreted to be the Upper Conglomerate Unit. Overburden consists of a sequence of sandstone, siltstone, shale and clays. Logging of the exploratory borings did not identify sections of the overburden that would likely be a source of increased alkalinity or that are likely to produce acidic leachates.

A sequence of sandy siltstone, shale to sandy shale, and sandstone underlies the upper sandstone unit and contains the Upper Cliff coal seams. The Upper Cliff seams in the Permit Area are laterally discontinuous and vary in thickness. In some areas, one or two shale partings occur within individual coal beds.

Aquifer Tests

Aquifer tests have not been performed as part of this permit submittal.

Water Well Inventory

A water well inventory was performed by representatives of EarthCon Consultants, Inc. and Ridgeholm Energy Partners during March 2013. The locations of found water wells are mapped on the Groundwater Potentiometric maps included in Appendix II.F-1. Potable water is supplied in the area by DeKalb County.

Installed Monitor Wells

Subsurface conditions were explored for the Permit Area by a series of borings. As part of the investigation process, a total of six monitoring wells were installed to monitor groundwater that was encountered during the exploration boring process.

The six monitor wells (X-1, X-3B, X-9R2, X-10, X-14 AND X-15) were installed and developed to ensure that monitoring data is representative of the formation water and not influenced by the drilling and installation methods. The monitor wells were sampled to develop a groundwater quality baseline, as well as groundwater surface information.

Groundwater Sampling and Analytical Methods

Each monitor well was initially developed by purging a minimum of three well volumes until field measurements of pH, specific conductivity and temperature had stabilized. Prior to sampling, the water level in each monitor well was measured, then was purged a minimum of three well volumes prior to obtaining a sample. Purging and sampling was performed using separate disposable bailers for each monitor well. Samples obtained using the disposable bailers were poured into appropriate containers. Field measurements included pH, specific conductivity and temperature. All metals samples were preserved with nitric acid. All other samples had no preservatives added. All samples were placed in coolers and were iced down to maintain a temperature at or below 4° Celsius.

Samples were analyzed in the laboratory by Analytical Environmental Services, Inc. for pH (field), total iron (Method SW6020A), total manganese (Method SW6020A), total dissolved solids (Method E160.1), sulfates (Method E300.0), alkalinity (Method E310.2) and acidity (Method E305.1).

Groundwater Sampling and Analysis Baseline Data

Groundwater Potentiometric Maps for sampling events to date are included in Appendix II.F-1. The results of the analysis performed to date are included on the tables in Appendix II.F-2. Copies of the field and laboratory analytical data are included in Appendix II.F-3.

The potentiometric maps indicate the general groundwater gradient is towards Town Creek. This groundwater is likely a source for some of the flow within Town Creek. The gradient appears to remain fairly constant at approximately 1.4 percent to the south-southeast. Based upon a review of the April 2013, July 2013 and November 2013 potentiometric maps that have been developed as part of this permit submission, it does not appear that the overall direction of groundwater flow and gradient is seasonally affected.

Groundwater Hydrology Certification Statement:

The Groundwater Hydrology section of this permit application was prepared by Joseph McKinney, who is a licensed by the State of Alabama as a Professional Geologist. I certify that the information in this section is correct and accurate to the best of my knowledge and belief.

EarthCon Consultants, Inc.

Joseph McKinney, P.G.
Alabama PG No. 1359

Date 7/11/14

I, Gary R. Horwitch, P.E., a Registered Professional Engineer in the State of Alabama, hereby certify that the information, contained in the Groundwater Hydrology section of this permit application was prepared by EarthCon Consultants, Inc., under my direct supervision, and that the information in this section is correct and accurate to the best of my knowledge and belief.

EarthCon Consultants, Inc.

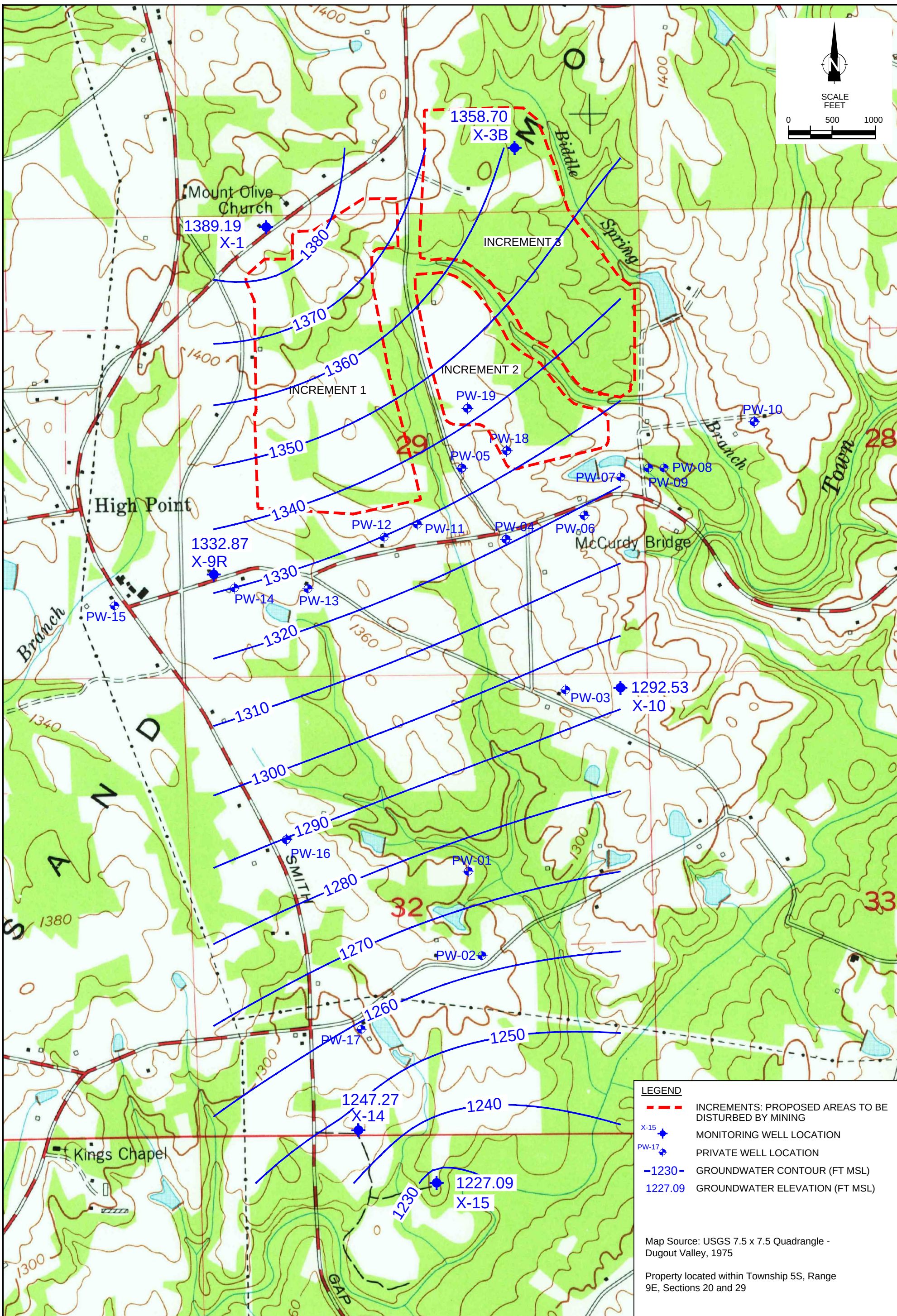
Gary R. Horwitch, P.E.
Alabama PE No. 32845-PE

Date 7-11-14

ALABAMA LICENSED No. 32845-PE PROFESSIONAL ENGINEER GARY RUSSELL HORWITCH

7-11-14

APPENDIX II.F-1



Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

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BUSINESS SOLUTIONS ®
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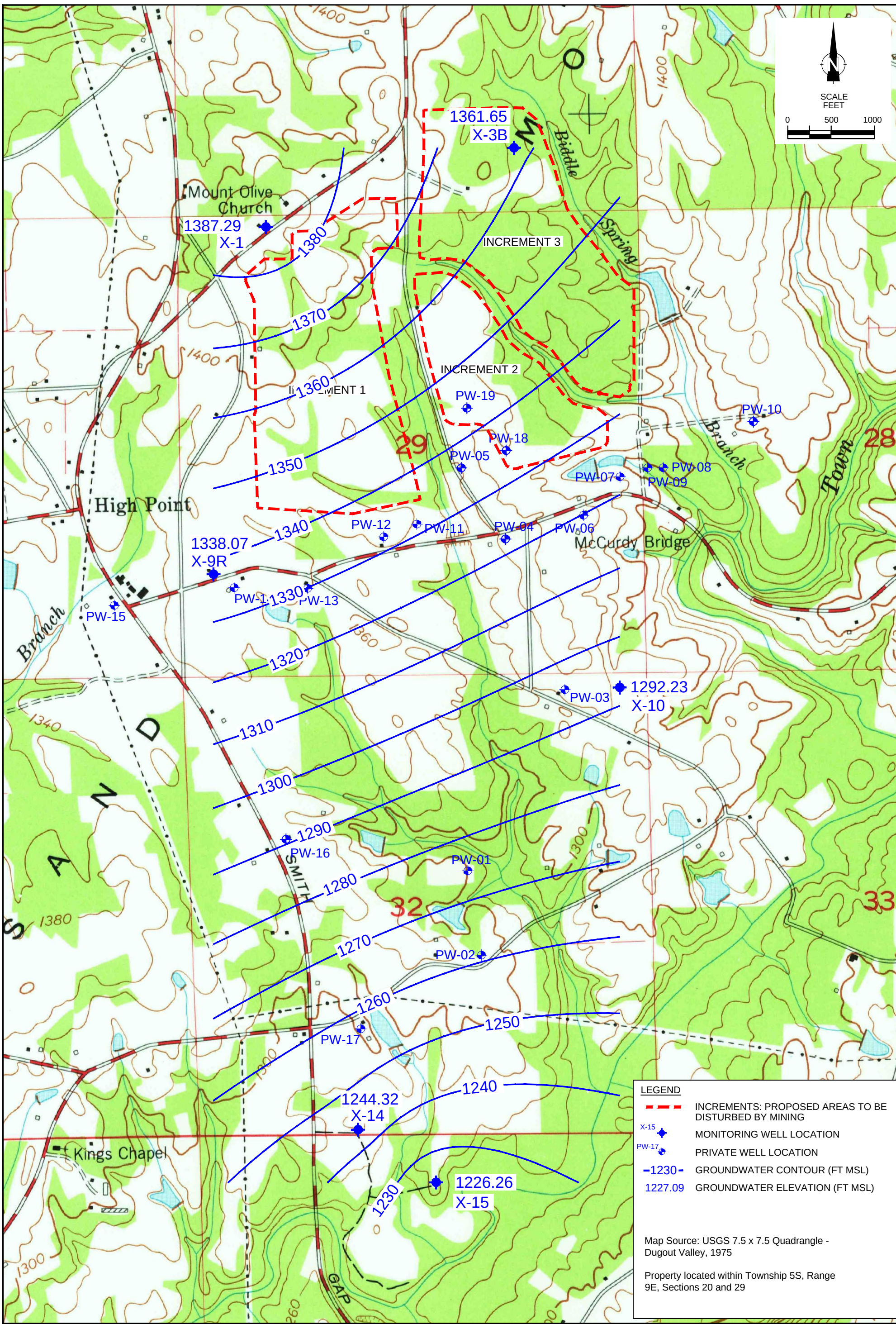
Houston, Tx 77014

Groundwater Potentiometric Map - April 18, 2013
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-1

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\GW 120413\120413 GW ELEVATIONS.dwg, II.F-1-1, 6/30/2014 10:21:9 PM



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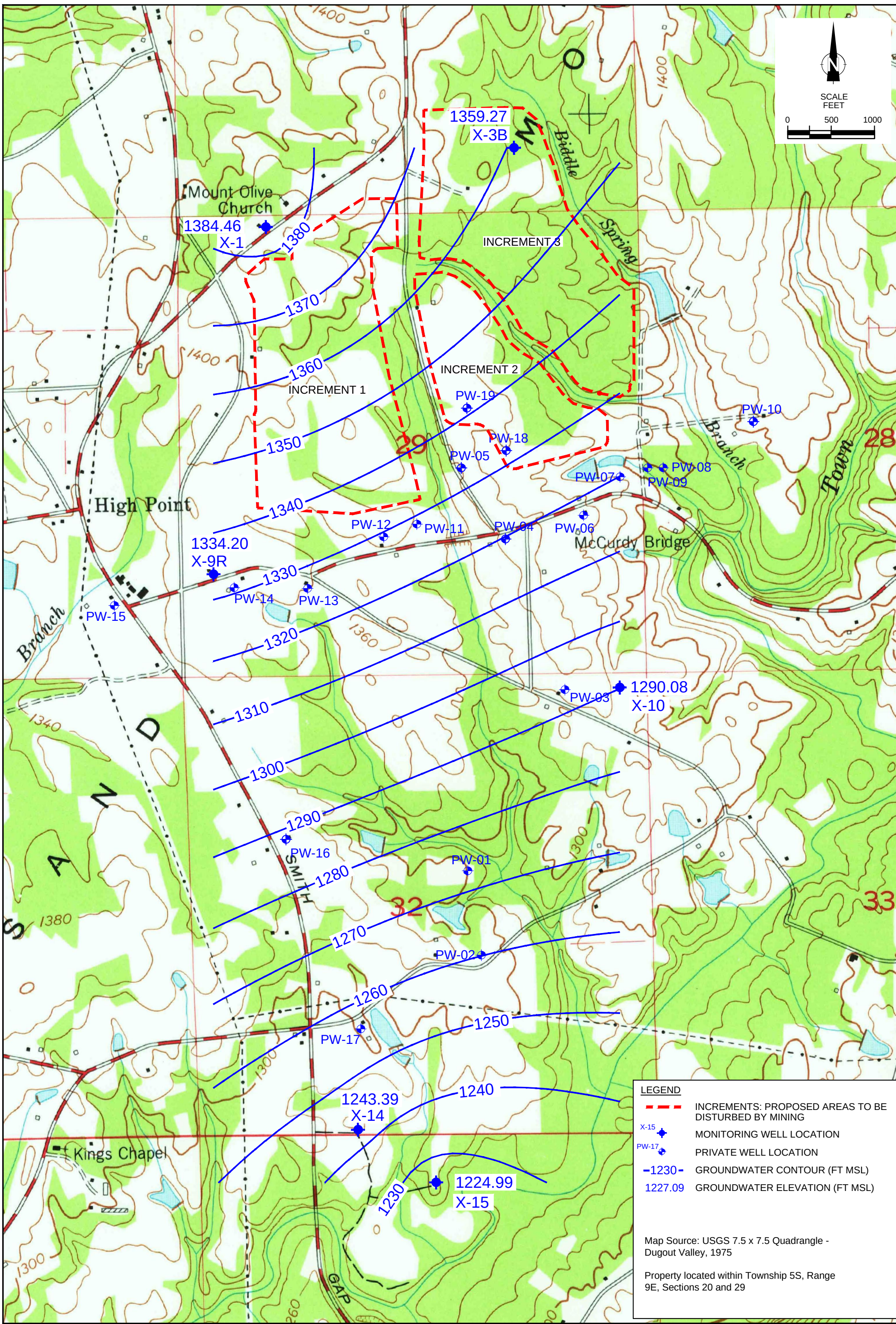
Groundwater Potentiometric Map - July 23, 2013
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-2

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\GW 120413\120413 GW ELEVATIONS.dwg, II.F-1-2, 6/30/2014 1:02:30 PM



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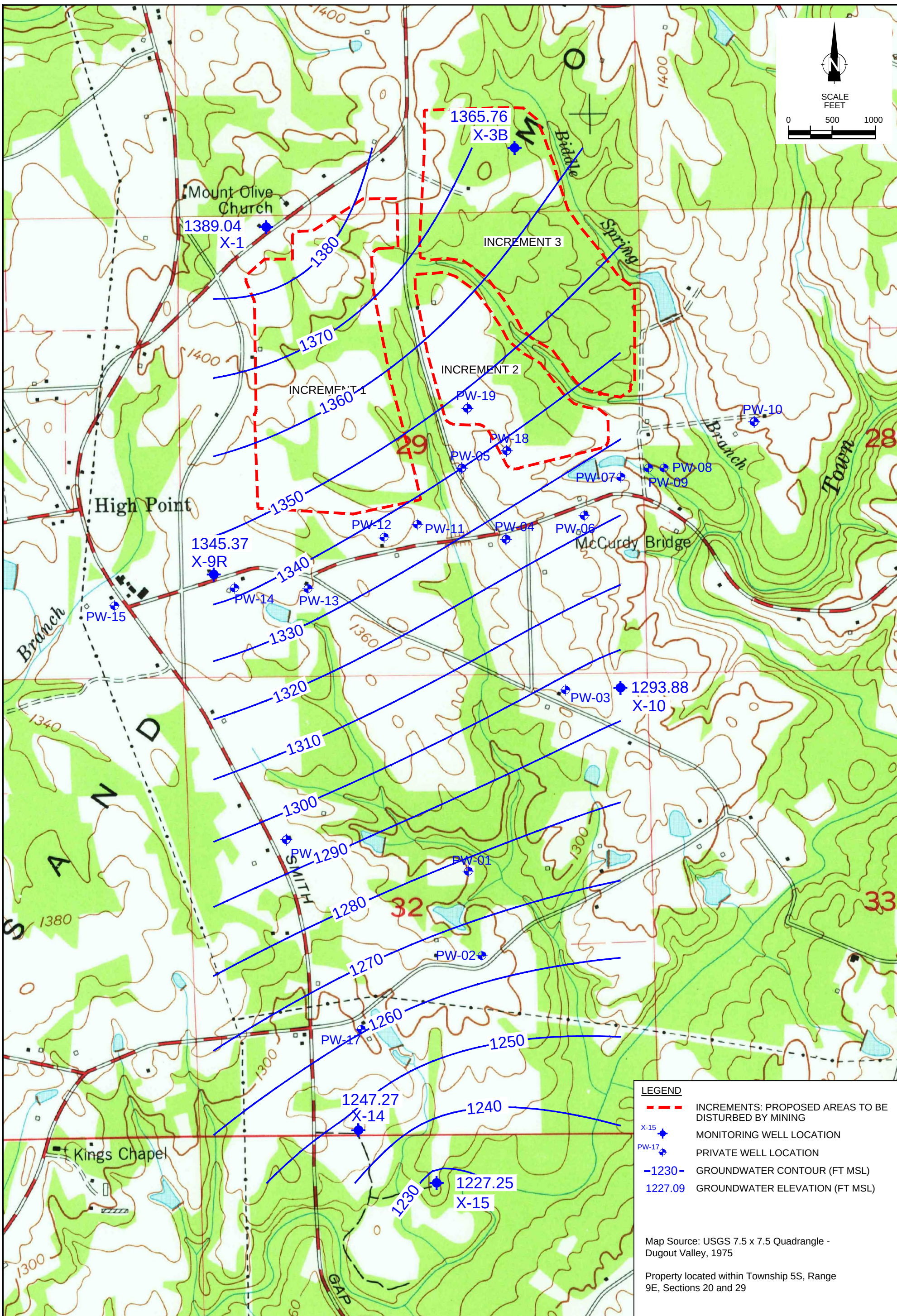
Groundwater Potentiometric Map - November 14, 2013
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-3

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\GW 120413\120413 GW ELEVATIONS.dwg, II.F-1-3, 6/30/2014 1:02:40 PM



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Groundwater Potentiometric Map - February 4, 2014
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-4

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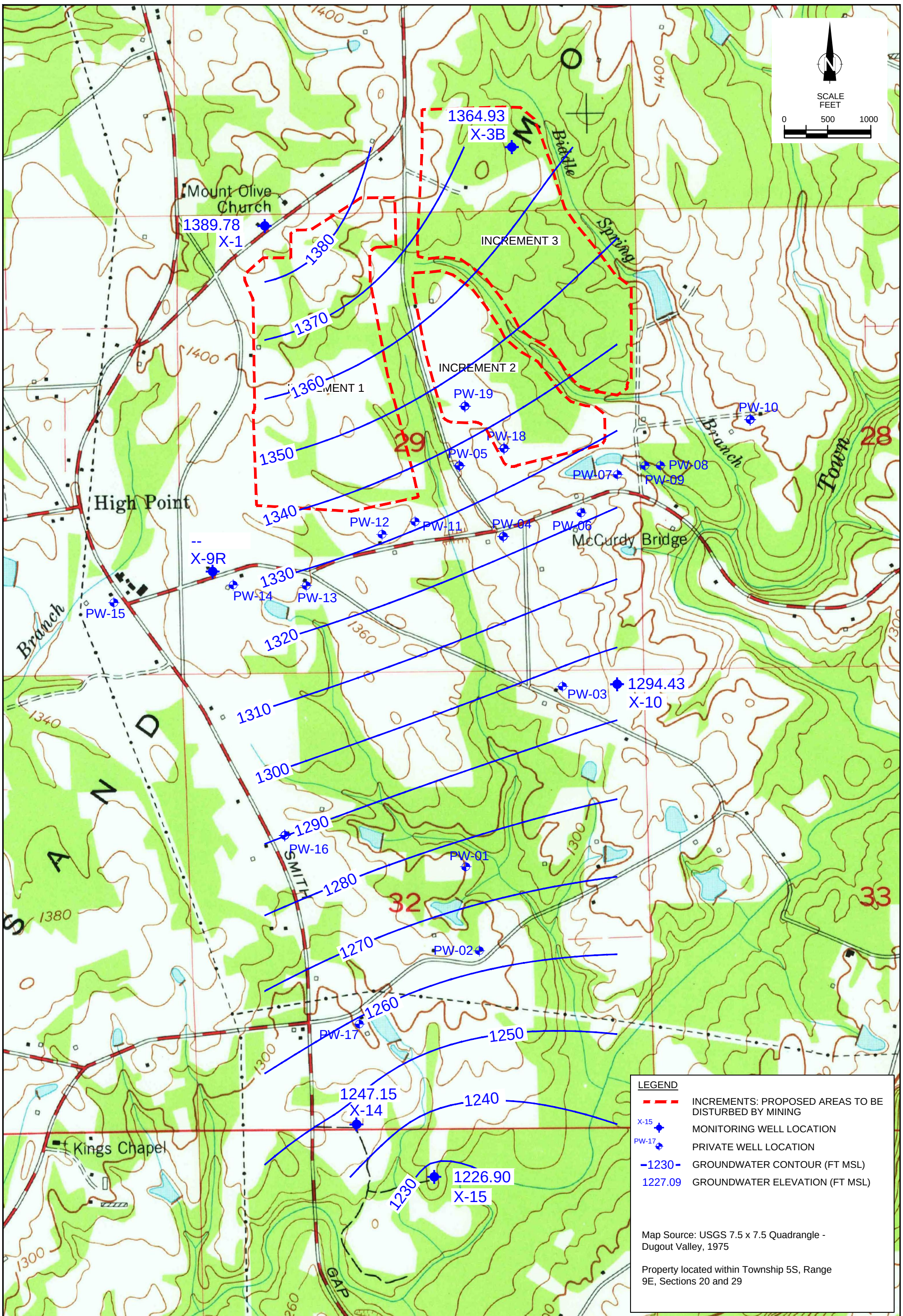

LEGEND

- INCREMENTS: PROPOSED AREAS TO BE DISTURBED BY MINING
- X-15 MONITORING WELL LOCATION
- PW-17 PRIVATE WELL LOCATION
- 1230 GROUNDWATER CONTOUR (FT MSL)
- 1227.09 GROUNDWATER ELEVATION (FT MSL)

Map Source: USGS 7.5 x 7.5 Quadrangle - Dugout Valley, 1975

Property located within Township 5S, Range 9E, Sections 20 and 29

Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

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Groundwater Potentiometric Map - March 12, 2014
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-5

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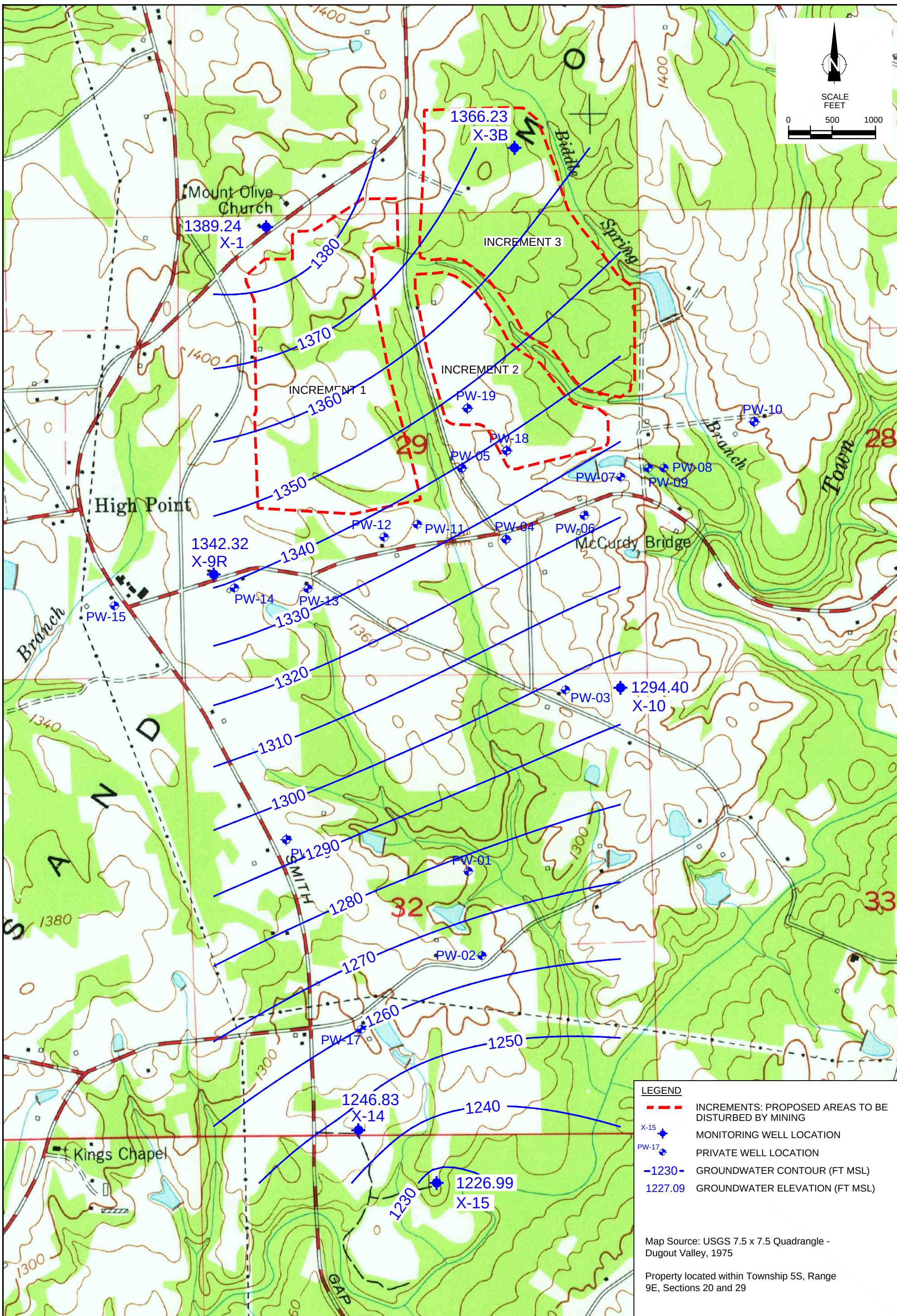

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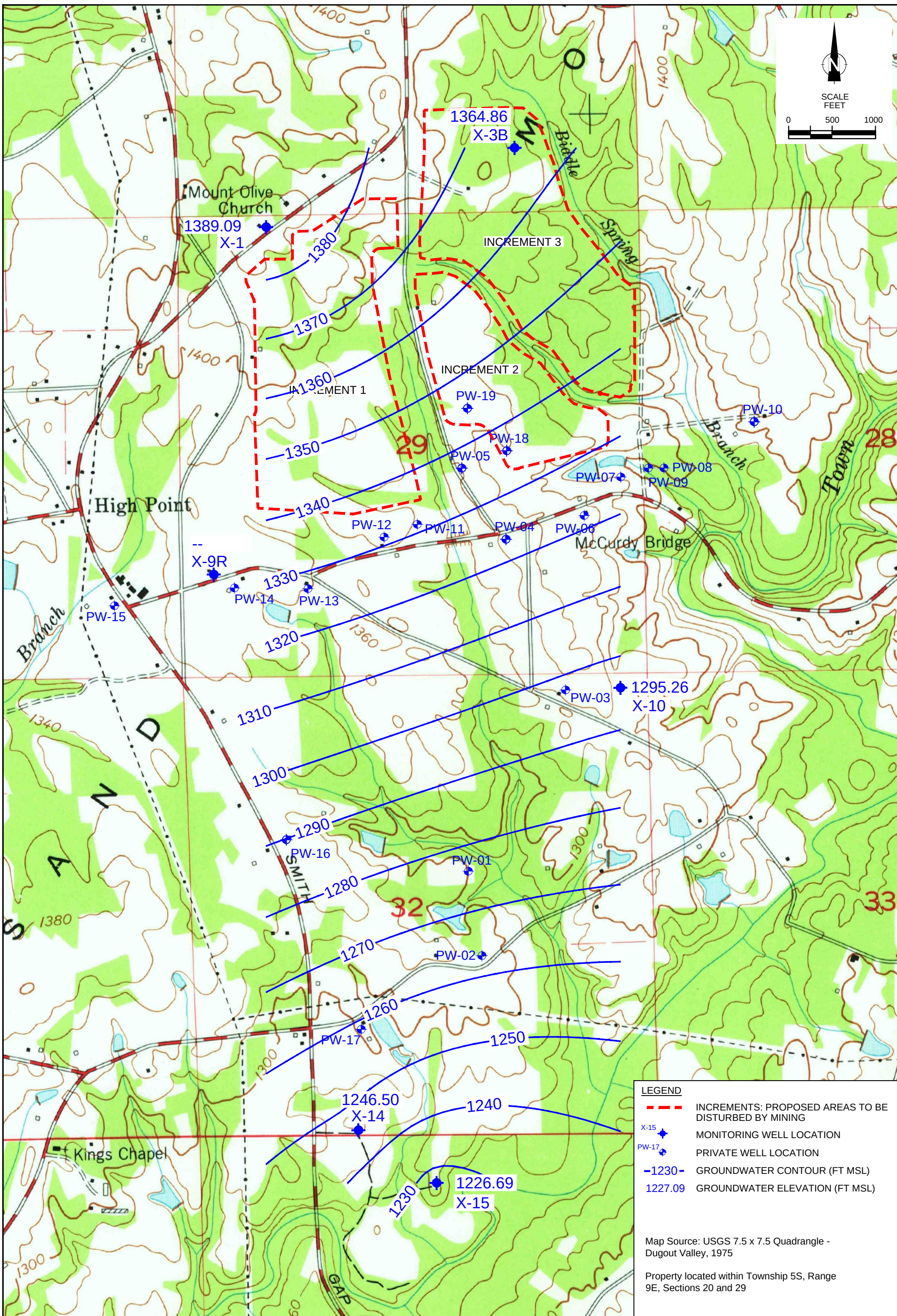
Groundwater Potentiometric Map - April 9, 2014
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-6

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\GW 120413\120413 GW ELEVATIONS.dwg, II.F-1-6, 6/30/2014 1:03:19 PM



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Birmingham, Alabama 35209

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Groundwater Potentiometric Map - May 7, 2014
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/2014	II.F-1-7

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\GW 120413\120413 GW ELEVATIONS.dwg, II.F-1-7, 6/30/2014 1:03:31 PM

APPENDIX II.F-2

APPENDIX II.F-2
TABLE OF GROUNDWATER SAMPLING RESULTS

Sample Point: **X-1**
Monitor Well

Sample Date	Water Elevation ft-msl	pH s.u.	TDS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l	Comments
04-18-13	1389.19	6.09	41	<0.100	0.422	--	--	--	Fe and Mn were inadvertently run as dissolved
07-23-13	1387.29	6.17	142	17.400	0.663	1.09	<10.0	44.5	
11-14-13	1384.46	6.30	35	24.2	0.885	<1.00	69.8	49.7	
02-04-14	1389.04	5.91	23	18.5	0.692	1.02	30.5	32.9	
03-12-14	1389.78	7.21	35	13.000	0.814	1.10	<10.0	34.7	
04-09-14	1389.24	5.71	127	18.0	0.724	<1.00	<10.0	34.0	
05-07-14	1389.09	6.01	112	16.700	0.705	<1.00	<10.0	25.0	

Sample Point: **X-3B**
Monitor Well

Sample Date	Water Elevation ft-msl	pH s.u.	TDS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l	Comments
04-18-13	1358.70	5.28	24	<0.100	0.155	--	--	--	Fe and Mn were inadvertently run as dissolved
07-23-13	1361.65	5.43	39	20.400	0.402	1.94	<10.0	11.3	
11-14-13	1359.27	6.19	37	36.2	0.597	1.72	72.6	19.9	
02-04-14	1365.76	4.85	38	53.10	0.790	2.24	<10.0	<10.0	
03-12-14	1364.93	6.14	46	5.500	0.192	1.71	<10.0	<10.0	
04-09-14	1366.23	5.18	30	7.340	0.134	1.7	<10.0	8.00	
05-07-14	1364.86	4.99	64	5.510	0.121	1.7	<10.0	3.00	

Sample Point: **X-9R**
Monitor Well

Sample Date	Water Elevation ft-msl	pH s.u.	TDS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l	Comments
04-18-13	1332.87	6.35	129	<0.100	0.684	--	--	--	Fe and Mn were inadvertently run as dissolved
07-23-13	1338.07	6.17	145	3.420	0.781	20.1	<10.0	68.4	
11-14-13	1334.20	5.94	52	2.730	0.750	11.2	<10.0	72.1	
02-04-14	1345.37	5.55	108	11.00	1.220	15.0	53.0	31.1	
03-12-14	--	--	--	--	--	--	--	--	Inaccessible, gate locked
04-09-14	1342.32	6.10	118	1.740	1.030	20	<10.0	44.0	
05-07-14	--	--	--	--	--	--	--	--	Inaccessible, gate locked

Notes:
1. ft-msl – feet mean sea level
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. Fe – iron
5. Mn – Manganese
6. SO_4 – sulfates
7. -- - Not performed

Source: EarthCon Consultants, Inc., 2014

TABLE OF GROUNDWATER SAMPLING RESULTS

Sample Point: **X-10**
Monitor Well

Sample Date	Water Elevation ft-msl	pH s.u.	TDS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l	Comments
04-18-13	1292.53	6.43	212	<0.100	0.662	--	--	--	Fe and Mn were inadvertently run as dissolved
07-23-13	1292.23	6.37	110	6.660	0.595	2.45	<10.0	82.4	
11-14-13	1290.08	6.02	40	3.640	1.120	4.14	<10.0	220	
02-04-14	1293.88	5.78	17	9.110	0.547	4.70	<10.0	23.5	
03-12-14	1294.43	5.93	39	7.360	0.416	3.25	15.9	13.5	
04-09-14	1294.40	5.76	57	8.000	0.396	3.2	<10.0	20.0	
05-07-14	1295.26	5.78	82	11.000	0.481	3.6	<10.0	34.0	

Sample Point: **X-14**
Monitor Well

Sample Date	Water Elevation ft-msl	pH s.u.	TDS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l	Comments
04-18-13	1247.27	6.83	130	<0.100	0.0514	--	--	--	Fe and Mn were inadvertently run as dissolved
07-23-13	1244.32	7.00	132	0.89	0.0509	2.54	<10.0	108	
11-13-13	1243.39	7.22	20	0.954	0.0597	2.11	<10.0	122	
02-04-14	1247.27	7.07	117	0.851	0.0531	2.30	<10.0	116	
03-12-14	1247.15	7.21	120	0.811	0.0506	1.87	<10.0	106	
04-09-14	1246.83	7.20	139	0.874	0.0549	2.1	<10.0	103	
05-07-14	1246.50	7.02	167	0.791	0.0513	2.5	<10.0	104	

Sample Point: **X-15**
Monitor Well

Sample Date	Water Elevation ft-msl	pH s.u.	TDS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l	Comments
04-18-13	1227.09	6.32	65	<0.100	0.153	--	--	--	Fe and Mn were inadvertently run as dissolved
07-23-13	1226.26	6.72	75	4.000	0.157	4.43	<10.0	49.3	
11-13-13	1224.99	6.64	63	3.660	0.170	3.29	<10.0	58.2	
02-04-14	1227.25	6.31	70	3.780	0.170	3.94	<10.0	51.4	
03-12-14	1226.90	6.31	73	3.640	0.166	3.05	<10.0	43.7	
04-09-14	1226.99	6.28	104	4.360	0.171	3.4	171	46.0	
05-07-14	1226.69	6.27	97	4.120	0.181	3.8	<10.0	37.0	

Notes:
1. ft-msl – feet mean sea level
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. Fe – iron
5. Mn – Manganese
6. SO_4 – sulfates
7. -- - Not performed

Source: EarthCon Consultants, Inc., 2014

APPENDIX II.F-3

GROUNDWATER LABORATORY ANALYSIS

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

April 30, 2013

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1304K09

Analytical Environmental Services, Inc. received 7 samples on 4/22/2013 10:38:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3785 PRESIDENTIAL PARKWAY • ATLANTA, GEORGIA 30340 • TEL: (770) 457-8177 • FAX: (770)457-8188

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1304K09

Date: 4/20/13 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: Fe, Mn, AL (Dissolved); pH; TDS; TSS; Fe, Mn (Dissolved)

PRESERVATION (See codes): N; I; I; I; N

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Fe, Mn, AL (Dissolved)	pH	TDS	TSS	Fe, Mn (Dissolved)	REMARKS	No # of Containers
1	SW006	4/18/13	1300	X		SW	X	X	X	X			4
2	MWX1	4/20/13	1140	X		GW		X	X		X		3
3	MWX3B	4/20/13	1310	X		GW		X	X		X		3
4	MWX15	4/20/13	1515	X		GW		X	X		X		3
5	MWX14	4/20/13	1645	X		GW		X	X		X		3
6	MWX9R2	4/20/13	1747	X		GW		X	X		X		
7	MWX10	4/20/13	1820	X		GW		X	X		X		
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	4/22/13 1038	1:	4/22/13 10:38
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 4/22/13 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1304K09

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside of the holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 1:00:00 PM
Lab ID:	1304K09-001	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	10.5	5.0		mg/L	175175	1	04/23/2013 09:30	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	58	10		mg/L	175203	1	04/23/2013 16:30	DM
METALS, DISSOLVED E200.7				**(E200.7)**				
Aluminum	BRL	0.200		mg/L	175259	1	04/25/2013 19:56	MR
Iron	0.328	0.100		mg/L	175259	1	04/25/2013 19:56	MR
Manganese	0.0821	0.0150		mg/L	175259	1	04/25/2013 19:56	MR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.44	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 1
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 11:40:00 AM
Lab ID:	1304K09-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	41	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.20	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 13:15	JY
Manganese	422	5.00		ug/L	175253	1	04/25/2013 13:15	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 3B
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 1:10:00 PM
Lab ID:	1304K09-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	24	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.53	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:04	JY
Manganese	155	5.00		ug/L	175253	1	04/25/2013 14:04	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 15
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 3:15:00 PM
Lab ID:	1304K09-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	65	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.62	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:10	JY
Manganese	153	5.00		ug/L	175253	1	04/25/2013 14:10	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 14
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 4:45:00 PM
Lab ID:	1304K09-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	130	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.29	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:16	JY
Manganese	51.4	5.00		ug/L	175253	1	04/25/2013 14:16	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 9R2
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 5:47:00 PM
Lab ID:	1304K09-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	129	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.62	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:22	JY
Manganese	684	5.00		ug/L	175253	1	04/25/2013 14:22	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 10
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 6:20:00 PM
Lab ID:	1304K09-007	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	212	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.93	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:28	JY
Manganese	662	5.00		ug/L	175253	1	04/25/2013 14:28	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth G Work Order Number 1304K09

Checklist completed by MJ 4/22/13
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1304K09

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1304K09-001B	SW 006	4/18/2013 1:00:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-001C	SW 006	4/18/2013 1:00:00PM	Surface Water	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-001C	SW 006	4/18/2013 1:00:00PM	Surface Water	Residue, Suspended (TSS)		04/23/2013	04/23/2013
1304K09-001D	SW 006	4/18/2013 1:00:00PM	Surface Water	METALS, DISSOLVED		04/25/2013	04/25/2013
1304K09-002B	MW X 1	4/20/2013 11:40:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-002C	MW X 1	4/20/2013 11:40:00AM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-002C	MW X 1	4/20/2013 11:40:00AM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-003B	MW X 3B	4/20/2013 1:10:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-003C	MW X 3B	4/20/2013 1:10:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-003C	MW X 3B	4/20/2013 1:10:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-004B	MW X 15	4/20/2013 3:15:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-004C	MW X 15	4/20/2013 3:15:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-004C	MW X 15	4/20/2013 3:15:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-005B	MW X 14	4/20/2013 4:45:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-005C	MW X 14	4/20/2013 4:45:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-005C	MW X 14	4/20/2013 4:45:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-006B	MW X 9R2	4/20/2013 5:47:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-006C	MW X 9R2	4/20/2013 5:47:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-006C	MW X 9R2	4/20/2013 5:47:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-007B	MW X 10	4/20/2013 6:20:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-007C	MW X 10	4/20/2013 6:20:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-007C	MW X 10	4/20/2013 6:20:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: **175175**

Sample ID: **MB-175175** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242616**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175175** Analysis Date: **04/23/2013** Seq No: **5079971**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0	0	0	0	0	0	0	0	0	

Sample ID: **1304J15-001ADUP** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242616**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175175** Analysis Date: **04/23/2013** Seq No: **5079973**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	16.00	5.0	0	0	0	0	0	16.50	3.08	5	

Sample ID: **1304J17-007ADUP** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242616**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175175** Analysis Date: **04/23/2013** Seq No: **5080004**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	37.00	5.0	0	0	0	0	0	36.00	2.74	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: 175203

Sample ID: **MB-175203** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242758**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **175203** Analysis Date: **04/23/2013** Seq No: **5083136**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10	0	0	0	0	0	0	0	0	

Sample ID: **1304K09-001CDUP** Client ID: **SW 006** Units: **mg/L** Prep Date: **04/23/2013** Run No: **242758**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **175203** Analysis Date: **04/23/2013** Seq No: **5083138**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	60.00	10	0	0	0	0	0	58.00	3.39	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: **175253**

Sample ID: **MB-175253** Client ID: Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **MBLK** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084650**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100	0	0	0	0	0	0	0	0	
Manganese	BRL	5.00	0	0	0	0	0	0	0	0	

Sample ID: **LCS-175253** Client ID: Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **LCS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084649**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	960.7	100	1000	0	96.1	80	120	0	0	0	
Manganese	95.96	5.00	100.0	0.4010	95.6	80	120	0	0	0	

Sample ID: **1304K09-002CMS** Client ID: **MW X 1** Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **MS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084652**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	966.9	100	1000	0	96.7	75	125	0	0	0	
Manganese	512.0	5.00	100.0	422.4	89.6	75	125	0	0	0	

Sample ID: **1304K09-002CMSD** Client ID: **MW X 1** Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084654**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	956.3	100	1000	0	95.6	75	125	966.9	1.10	20	
Manganese	521.7	5.00	100.0	422.4	99.3	75	125	512.0	1.88	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: 175259

Sample ID: **MB-175259** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **MBLK** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085516**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	0.200	0	0	0	0	0	0	0	0	
Iron	BRL	0.100	0	0	0	0	0	0	0	0	
Manganese	BRL	0.0150	0	0	0	0	0	0	0	0	

Sample ID: **LCS-175259** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **LCS** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085515**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	10.39	0.200	10.00	0	104	85	115	0	0	0	
Iron	9.844	0.100	10.00	0	98.4	85	115	0	0	0	
Manganese	1.039	0.0150	1.000	0	104	85	115	0	0	0	

Sample ID: **1304K96-002AMS** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **MS** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085519**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	10.38	0.200	10.00	0.1483	102	70	130	0	0	0	
Iron	10.60	0.100	10.00	0.9295	96.7	70	130	0	0	0	
Manganese	1.037	0.0150	1.000	0.01252	102	70	130	0	0	0	

Sample ID: **1304K96-002AMSD** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **MSD** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085522**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	10.57	0.200	10.00	0.1483	104	70	130	10.38	1.85	20	
Iron	10.79	0.100	10.00	0.9295	98.6	70	130	10.60	1.79	20	
Manganese	1.057	0.0150	1.000	0.01252	104	70	130	1.037	1.88	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: **R242627**

Sample ID: **LCS-R242627** Client ID: Units: **pH Units** Prep Date: Run No: **242627**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R242627** Analysis Date: **04/23/2013** Seq No: **5080245**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.010	0.01	7.000	0	100	90	110	0	0	0	

Sample ID: **1304J97-001ADUP** Client ID: Units: **pH Units** Prep Date: Run No: **242627**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R242627** Analysis Date: **04/23/2013** Seq No: **5080248**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.310	0.01	0	0	0	0	0	7.330	0.273	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

August 02, 2013

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1307K40

Analytical Environmental Services, Inc. received 6 samples on 7/24/2013 11:00:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY 1307K40

Work Order: ~~1307J51~~ PT 7/25/13

Date: 7/23/13 Page 1 of 1

COMPANY: Earthcon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: Total Fe, Mn; PH, acidity; TDS, SO4, Alkalinity

PRESERVATION (See codes): N; I; I

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Total Fe, Mn	PH, acidity	TDS, SO4, Alkalinity	REMARKS	No # of Containers
1	MWX15	7/23/13	0905	X		GW	X	X	X		3
2	MWX14	7/23/13	1145	X		GW	X	X	X		3
3	MWX9R	7/23/13	1535	X		GW	X	X	X		3
4	MWX1	7/23/13	1620	X		GW	X	X	X		3
5	MWX3B	7/23/13	1700	X		GW	X	X	X		3
6	MWX10	7/23/13	1720	X		GW	X	X	X		3
7											
8											
9											
10											
11											
12											
13											
14											

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	7/24/13 1100	1:	7/24/13 11:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS: Alkalinity to be preserved by lab

SHIPMENT METHOD
OUT / / VIA:
IN 7/24/13 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers 18

Turnaround Time Request
☒ Standard 5 Business Days
○ 2 Business Day Rush
○ Next Business Day Rush
○ Same Day Rush (auth req.)
○ Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1307K40

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX15
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 9:05:00 AM
Lab ID:	1307K40-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	4000	100		ug/L	179035	1	07/27/2013 02:42	TA
Manganese	157	5.00		ug/L	179035	1	07/27/2013 02:42	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	75	10		mg/L	179118	1	07/26/2013 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	4.43	1.00		mg/L	R248950	1	07/25/2013 18:27	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.74	0.01	H	pH Units	R248898	1	07/29/2013 16:45	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	49.3	10.0		mg/L	R248771	1	07/26/2013 10:58	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX14
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 11:45:00 AM
Lab ID:	1307K40-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	890	100		ug/L	179035	1	07/27/2013 02:49	TA
Manganese	50.9	5.00		ug/L	179035	1	07/27/2013 02:49	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	132	10		mg/L	179118	1	07/26/2013 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	2.54	1.00		mg/L	R248950	1	07/25/2013 18:43	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.31	0.01	H	pH Units	R248898	1	07/29/2013 16:45	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	108	10.0		mg/L	R248771	1	07/26/2013 10:59	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX9R
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 3:35:00 PM
Lab ID:	1307K40-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	3420	100		ug/L	179035	1	07/27/2013 02:55	TA
Manganese	781	5.00		ug/L	179035	1	07/27/2013 02:55	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	145	10		mg/L	179118	1	07/26/2013 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	20.1	1.00		mg/L	R248950	1	07/25/2013 18:58	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.43	0.01	H	pH Units	R248898	1	07/29/2013 16:45	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	68.4	10.0		mg/L	R248771	1	07/26/2013 11:00	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX1
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 4:20:00 PM
Lab ID:	1307K40-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	17400	100		ug/L	179035	1	07/27/2013 03:01	TA
Manganese	663	5.00		ug/L	179035	1	07/27/2013 03:01	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	142	10		mg/L	179118	1	07/26/2013 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	1.09	1.00		mg/L	R248950	1	07/25/2013 20:13	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.29	0.01	H	pH Units	R248898	1	07/29/2013 16:45	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	44.5	10.0		mg/L	R248771	1	07/26/2013 11:01	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX3B
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 5:00:00 PM
Lab ID:	1307K40-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	20400	100		ug/L	179035	1	07/27/2013 03:07	TA
Manganese	402	5.00		ug/L	179035	1	07/27/2013 03:07	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	39	10		mg/L	179118	1	07/26/2013 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	1.94	1.00		mg/L	R248950	1	07/25/2013 20:28	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.49	0.01	H	pH Units	R248898	1	07/29/2013 16:45	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	11.3	10.0		mg/L	R248771	1	07/26/2013 11:02	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX10
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 5:20:00 PM
Lab ID:	1307K40-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	6660	100		ug/L	179035	1	07/27/2013 03:14	TA
Manganese	595	5.00		ug/L	179035	1	07/27/2013 03:14	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	110	10		mg/L	179118	1	07/26/2013 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	2.45	1.00		mg/L	R248934	1	07/25/2013 19:42	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.56	0.01	H	pH Units	R248898	1	07/29/2013 16:45	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	82.4	10.0		mg/L	R248771	1	07/26/2013 11:03	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earthcon Work Order Number 1307K40

Checklist completed by [signature] 7/25/13
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by PT

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1307K40

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1307K40-001A	MWX15	7/23/2013 9:05:00AM	Groundwater	Total Metals by ICP/MS		07/26/2013	07/27/2013
1307K40-001B	MWX15	7/23/2013 9:05:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			07/29/2013
1307K40-001B	MWX15	7/23/2013 9:05:00AM	Groundwater	Acidity			07/31/2013
1307K40-001B	MWX15	7/23/2013 9:05:00AM	Groundwater	Alkalinity			07/26/2013
1307K40-001C	MWX15	7/23/2013 9:05:00AM	Groundwater	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307K40-001C	MWX15	7/23/2013 9:05:00AM	Groundwater	Inorganic Anions by IC			07/25/2013
1307K40-002A	MWX14	7/23/2013 11:45:00AM	Groundwater	Total Metals by ICP/MS		07/26/2013	07/27/2013
1307K40-002B	MWX14	7/23/2013 11:45:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			07/29/2013
1307K40-002B	MWX14	7/23/2013 11:45:00AM	Groundwater	Acidity			07/31/2013
1307K40-002B	MWX14	7/23/2013 11:45:00AM	Groundwater	Alkalinity			07/26/2013
1307K40-002C	MWX14	7/23/2013 11:45:00AM	Groundwater	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307K40-002C	MWX14	7/23/2013 11:45:00AM	Groundwater	Inorganic Anions by IC			07/25/2013
1307K40-003A	MWX9R	7/23/2013 3:35:00PM	Groundwater	Total Metals by ICP/MS		07/26/2013	07/27/2013
1307K40-003B	MWX9R	7/23/2013 3:35:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			07/29/2013
1307K40-003B	MWX9R	7/23/2013 3:35:00PM	Groundwater	Acidity			07/31/2013
1307K40-003B	MWX9R	7/23/2013 3:35:00PM	Groundwater	Alkalinity			07/26/2013
1307K40-003C	MWX9R	7/23/2013 3:35:00PM	Groundwater	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307K40-003C	MWX9R	7/23/2013 3:35:00PM	Groundwater	Inorganic Anions by IC			07/25/2013
1307K40-004A	MWX1	7/23/2013 4:20:00PM	Groundwater	Total Metals by ICP/MS		07/26/2013	07/27/2013
1307K40-004B	MWX1	7/23/2013 4:20:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			07/29/2013
1307K40-004B	MWX1	7/23/2013 4:20:00PM	Groundwater	Acidity			07/31/2013
1307K40-004B	MWX1	7/23/2013 4:20:00PM	Groundwater	Alkalinity			07/26/2013
1307K40-004C	MWX1	7/23/2013 4:20:00PM	Groundwater	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307K40-004C	MWX1	7/23/2013 4:20:00PM	Groundwater	Inorganic Anions by IC			07/25/2013
1307K40-005A	MWX3B	7/23/2013 5:00:00PM	Groundwater	Total Metals by ICP/MS		07/26/2013	07/27/2013
1307K40-005B	MWX3B	7/23/2013 5:00:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			07/29/2013
1307K40-005B	MWX3B	7/23/2013 5:00:00PM	Groundwater	Acidity			07/31/2013
1307K40-005B	MWX3B	7/23/2013 5:00:00PM	Groundwater	Alkalinity			07/26/2013
1307K40-005C	MWX3B	7/23/2013 5:00:00PM	Groundwater	Residue, Dissolved (TDS)		07/26/2013	07/26/2013

Analytical Environmental Services, Inc

Date: 2-Aug-13

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1307K40

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1307K40-005C	MWX3B	7/23/2013 5:00:00PM	Groundwater	Inorganic Anions by IC			07/25/2013
1307K40-006A	MWX10	7/23/2013 5:20:00PM	Groundwater	Total Metals by ICP/MS		07/26/2013	07/27/2013
1307K40-006B	MWX10	7/23/2013 5:20:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			07/29/2013
1307K40-006B	MWX10	7/23/2013 5:20:00PM	Groundwater	Acidity			07/31/2013
1307K40-006B	MWX10	7/23/2013 5:20:00PM	Groundwater	Alkalinity			07/26/2013
1307K40-006C	MWX10	7/23/2013 5:20:00PM	Groundwater	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307K40-006C	MWX10	7/23/2013 5:20:00PM	Groundwater	Inorganic Anions by IC			07/25/2013

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: **179035**

Sample ID: **MB-179035** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **248858**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **179035** Analysis Date: **07/27/2013** Seq No: **5216897**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **LCS-179035** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **248858**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **179035** Analysis Date: **07/27/2013** Seq No: **5216896**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1094	100	1000		109	80	120				
Manganese	98.94	5.00	100.0		98.9	80	120				

Sample ID: **1307J71-001CMS** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **248858**
SampleType: **MS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **179035** Analysis Date: **07/27/2013** Seq No: **5216908**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	2543	100	1000	1466	108	75	125				
Manganese	260.4	5.00	100.0	158.8	102	75	125				

Sample ID: **1307J71-001CMSD** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **248858**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **179035** Analysis Date: **07/27/2013** Seq No: **5216923**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	2519	100	1000	1466	105	75	125	2543	0.948	20	
Manganese	257.8	5.00	100.0	158.8	99.0	75	125	260.4	1.00	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: 179118

Sample ID: **MB-179118** Client ID: Units: **mg/L** Prep Date: **07/26/2013** Run No: **248821**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **179118** Analysis Date: **07/26/2013** Seq No: **5214312**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1307J62-001DDUP** Client ID: Units: **mg/L** Prep Date: **07/26/2013** Run No: **248821**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **179118** Analysis Date: **07/26/2013** Seq No: **5214314**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	46.00	10						47.00	2.15	5	

Sample ID: **1307K40-004CDUP** Client ID: **MWX1** Units: **mg/L** Prep Date: **07/26/2013** Run No: **248821**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **179118** Analysis Date: **07/26/2013** Seq No: **5214325**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	143.0	10						142.0	0.702	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: R248771

Sample ID: **MB-R248771** Client ID: Units: **mg/L** Prep Date: Run No: **248771**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R248771** Analysis Date: **07/26/2013** Seq No: **5213309**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R248771** Client ID: Units: **mg/L** Prep Date: Run No: **248771**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R248771** Analysis Date: **07/26/2013** Seq No: **5213310**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	243.0	10.0	250.0		97.2	75	125				

Sample ID: **1307J66-003DDUP** Client ID: Units: **mg/L** Prep Date: Run No: **248771**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R248771** Analysis Date: **07/26/2013** Seq No: **5213340**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	49.00	10.0						48.70	0.614	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: R248898

Sample ID: **LCS-R248898** Client ID: Units: **pH Units** Prep Date: Run No: **248898**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R248898** Analysis Date: **07/29/2013** Seq No: **5216015**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.020	0.01	7.000		100	90	110				

Sample ID: **1307I76-001DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **248898**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R248898** Analysis Date: **07/29/2013** Seq No: **5216017**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.620	0.01						6.630	0.151	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: R248934

Sample ID: **MB-R248934** Client ID: Units: **mg/L** Prep Date: Run No: **248934**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R248934** Analysis Date: **07/25/2013** Seq No: **5217024**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R248934** Client ID: Units: **mg/L** Prep Date: Run No: **248934**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R248934** Analysis Date: **07/25/2013** Seq No: **5217025**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	25.81	1.00	25.00		103	90	110				

Sample ID: **1307K71-001FMS** Client ID: Units: **mg/L** Prep Date: Run No: **248934**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R248934** Analysis Date: **07/25/2013** Seq No: **5217028**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	32.61	1.00	25.00	7.263	101	90	110				

Sample ID: **1307K76-001FMS** Client ID: Units: **mg/L** Prep Date: Run No: **248934**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R248934** Analysis Date: **07/25/2013** Seq No: **5217041**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	26.86	1.00	25.00	0.8193	104	90	110				

Sample ID: **1307K71-001FMSD** Client ID: Units: **mg/L** Prep Date: Run No: **248934**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R248934** Analysis Date: **07/25/2013** Seq No: **5217032**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	32.55	1.00	25.00	7.263	101	90	110	32.61	0.178	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: **R248950**

Sample ID: **MB-R248850** Client ID: Units: **mg/L** Prep Date: Run No: **248950**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R248950** Analysis Date: **07/25/2013** Seq No: **5217300**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R248850** Client ID: Units: **mg/L** Prep Date: Run No: **248950**
SampleType: **LCS** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R248950** Analysis Date: **07/25/2013** Seq No: **5217302**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	26.55	1.00	25.00		106	90	110				

Sample ID: **1307L36-001CMS** Client ID: Units: **mg/L** Prep Date: Run No: **248950**
SampleType: **MS** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R248950** Analysis Date: **07/25/2013** Seq No: **5217311**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	31.88	1.00	25.00	5.028	107	90	110				

Sample ID: **1307L36-001CMSD** Client ID: Units: **mg/L** Prep Date: Run No: **248950**
SampleType: **MSD** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R248950** Analysis Date: **07/25/2013** Seq No: **5217315**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	31.82	1.00	25.00	5.028	107	90	110	31.88	0.181	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307K40

ANALYTICAL QC SUMMARY REPORT

BatchID: R249070

Sample ID: **MB-R249070** Client ID: Units: **mg/L** Prep Date: Run No: **249070**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R249070** Analysis Date: **07/31/2013** Seq No: **5219623**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R249070** Client ID: Units: **mg/L** Prep Date: Run No: **249070**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R249070** Analysis Date: **07/31/2013** Seq No: **5219625**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	101.0	10.0	100.0		101	80	120				

Sample ID: **1307J62-001DDUP** Client ID: Units: **mg/L** Prep Date: Run No: **249070**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R249070** Analysis Date: **07/31/2013** Seq No: **5219629**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

December 16, 2013

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1311B36

Analytical Environmental Services, Inc. received 12 samples on 11/14/2013 5:45:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1311B36

Date: 11/14/13 Page 1 of 2

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: Al, Fe, Mn; Acidity; Alkalinity; pH; sulfates; TDS

PRESERVATION (See codes): N; I; I; I; I; I

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Al, Fe, Mn (N)	Acidity (I)	Alkalinity (I)	pH (I)	sulfates (I)	TDS (I)	REMARKS	No # of Containers
1	MW X15	11/13/13	1100	X		GW	1	1	1	1	1	1		6
2	MW X14	11/13/13	1500	X		GW	1	1	1	1	1	1		6
3	MW X1	11/14/13	0910	X		GW	1	1	1	1	1	1		6
4	MW X3B	11/14/13	1000	X		GW	1	1	1	1	1	1		6
5	MW X9R	11/14/13	1100	X		GW	1	1	1	1	1	1		6
6	MW X10	11/14/13	1120	X		GW	1	1	1	1	1	1		6
7														
8														
9														
10														
11														
12														
13														
14														

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
	11/14/13 1745	1:	11/14/13 5:45
		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: OZ.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 36

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1311B36

Date: 11/14/13 Page 2 of 2

COMPANY: EarthCon
ADDRESS: 11405 Walters Rd Ste 700 Houston TX 77014
PHONE: 281-240-5200
FAX:
SAMPLED BY: J McKenney
SIGNATURE: [signature]

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Phenolics	BOD	Acidity	Alkalinity	pH	metals	cyanide	sulfate	TDS	TSS				REMARKS	No # of Containers
PRESERVATION (See codes)							S+I	I	I	I	I	N	NaOH	I	I	I					
1	SW POND 1	11/13/13	1145	X		SW	2	1	1	1	1	1	1	1	1	1					11
2	SW 006	11/13/13	1230	X		SW	2	1	1	1	1	1	1	1	1	1					11
3	SWTC Down	11/13/13	1315	X		SW	2	1	1	1	1	1	1	1	1	1					11
4	SW005	11/13/13	1530	X		SW	2	1	1	1	1	1	1	1	1	1					11
5	SW001	11/14/13	1200	X		SW	2	1	1	1	1	1	1	1	1	1					11
6	SWTC up	11/14/13	1300	X		SW	2	1	1	1	1	1	1	1	1	1					11
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					

RELINQUISHED BY / DATE/TIME
1: [signature] 11/14/13, 1745
2:
3:

RECEIVED BY / DATE/TIME
1: [signature] 11/14/13 5:45
2:
3:

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 66

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1311B36

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX15
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 11:00:00 AM
Lab ID:	1311B36-001	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**				
Aluminum	26.5		2.04	10.0	ug/L	183792	1	11/22/2013 15:34	TA
Iron	3660		7.65	100	ug/L	183792	1	11/22/2013 15:34	TA
Manganese	170		0.187	5.00	ug/L	183792	1	11/22/2013 15:34	TA
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	63		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Inorganic Anions by IC E300.0									
Sulfate	3.29		0.262	1.00	mg/L	R256278	1	11/19/2013 13:51	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.97	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	58.2		2.1	10.0	mg/L	R256173	1	11/20/2013 10:41	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX14
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 3:00:00 PM
Lab ID:	1311B36-002	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**				
Aluminum	99.2		2.04	10.0	ug/L	183792	1	11/22/2013 16:10	TA
Iron	954		7.65	100	ug/L	183792	1	11/22/2013 16:10	TA
Manganese	59.7		0.187	5.00	ug/L	183792	1	11/22/2013 16:10	TA
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	20		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Inorganic Anions by IC E300.0									
Sulfate	2.11		0.262	1.00	mg/L	R256278	1	11/19/2013 14:06	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.29	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	122		2.1	10.0	mg/L	R256173	1	11/20/2013 10:42	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX1
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 9:10:00 AM
Lab ID:	1311B36-003	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**				
Aluminum	7280		2.04	10.0	ug/L	183792	1	11/25/2013 16:05	TA
Iron	24200		7.65	100	ug/L	183792	1	11/22/2013 16:16	TA
Manganese	885		0.187	5.00	ug/L	183792	1	11/25/2013 16:05	TA
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	35		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Inorganic Anions by IC E300.0									
Sulfate	0.863	J	0.262	1.00	mg/L	R256278	1	11/19/2013 15:36	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.15	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	49.7		2.1	10.0	mg/L	R256173	1	11/20/2013 10:43	TL
Acidity (E305.1/SM2310 B)									
Acidity	69.8		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX3B
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 10:00:00 AM
Lab ID:	1311B36-004	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**				
Aluminum	30200		2.04	10.0	ug/L	183792	1	11/25/2013 16:10	TA
Iron	36200		7.65	100	ug/L	183792	1	11/22/2013 16:21	TA
Manganese	597		0.187	5.00	ug/L	183792	1	11/25/2013 16:10	TA
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	37		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Inorganic Anions by IC E300.0									
Sulfate	1.72		0.262	1.00	mg/L	R256278	1	11/19/2013 15:52	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	5.61	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	19.9		2.1	10.0	mg/L	R256173	1	11/20/2013 10:44	TL
Acidity (E305.1/SM2310 B)									
Acidity	72.6		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX9R
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 11:00:00 AM
Lab ID:	1311B36-005	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**				
Aluminum	93.0		2.04	10.0	ug/L	183792	1	11/22/2013 16:26	TA
Iron	2730		7.65	100	ug/L	183792	1	11/22/2013 16:26	TA
Manganese	750		0.187	5.00	ug/L	183792	1	11/22/2013 16:26	TA
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	52		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Inorganic Anions by IC E300.0									
Sulfate	11.2		0.262	1.00	mg/L	R256278	1	11/19/2013 16:07	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.44	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	72.1		2.1	10.0	mg/L	R256173	1	11/20/2013 10:45	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX10
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 11:20:00 AM
Lab ID:	1311B36-006	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**				
Aluminum	605		2.04	10.0	ug/L	183792	1	11/22/2013 16:31	TA
Iron	3640		7.65	100	ug/L	183792	1	11/22/2013 16:31	TA
Manganese	1120		0.187	5.00	ug/L	183792	1	11/22/2013 16:31	TA
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	40		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Inorganic Anions by IC E300.0									
Sulfate	4.14		0.262	1.00	mg/L	R256278	1	11/19/2013 16:22	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.14	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	220		2.1	10.0	mg/L	R256173	1	11/20/2013 10:46	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW POND 1
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 11:45:00 AM
Lab ID:	1311B36-007	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	33.6		4.45	10.0	ug/L	183791	1	11/20/2013 19:29	TA
Antimony	0.0731	J	0.0437	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Arsenic	0.998	J	0.228	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Beryllium	BRL		0.181	1.00	ug/L	183791	1	11/21/2013 19:08	TA
Cadmium	BRL		0.0132	0.700	ug/L	183791	1	11/21/2013 19:08	TA
Chromium	BRL		0.115	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Copper	BRL		1.24	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Iron	2580		40.5	100	ug/L	183791	1	11/20/2013 19:29	TA
Lead	BRL		0.134	1.00	ug/L	183791	1	11/20/2013 19:29	TA
Manganese	1250		0.157	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Nickel	0.796	J	0.111	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Selenium	BRL		0.302	5.00	ug/L	183791	1	11/20/2013 19:29	TA
Silver	BRL		0.0654	1.00	ug/L	183791	1	11/20/2013 19:29	TA
Thallium	BRL		0.0537	1.00	ug/L	183791	1	11/20/2013 19:29	TA
Zinc	BRL		2.97	10.0	ug/L	183791	1	11/20/2013 19:29	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00004	0.00020	mg/L	183881	1	11/20/2013 14:12	CG
Total Cyanide (SM4500 CN-C, E)					**(SM4500-CN-E)**				
Cyanide, Total	0.004	J	0.001	0.010	mg/L	184030	1	11/21/2013 19:20	EH
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	3.0	J	1.0	5.0	mg/L	183912	1	11/19/2013 12:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	14		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Phenolics, Total Recoverable E420.1					**(E420.1)**				
Phenolics, Total Recoverable	BRL		0.02	0.05	mg/L	184106	1	11/15/2013 09:00	KB
Inorganic Anions by IC E300.0									
Sulfate	3.60		0.262	1.00	mg/L	R256278	1	11/19/2013 16:37	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.03	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
BOD (5 day) (E405.1/SM5210B)									
Biochemical Oxygen Demand	BRL		5.0	5.0	mg/L	183749	1	11/15/2013 11:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW POND 1
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 11:45:00 AM
Lab ID:	1311B36-007	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	33.4		2.1	10.0	mg/L	R256173	1	11/20/2013 10:47	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 12:30:00 PM
Lab ID:	1311B36-008	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	38.5		4.45	10.0	ug/L	183791	1	11/20/2013 19:35	TA
Antimony	0.0539	J	0.0437	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Arsenic	0.774	J	0.228	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Beryllium	BRL		0.181	1.00	ug/L	183791	1	11/21/2013 19:14	TA
Cadmium	BRL		0.0132	0.700	ug/L	183791	1	11/21/2013 19:14	TA
Chromium	0.119	J	0.115	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Copper	1.55	J	1.24	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Iron	3580		40.5	100	ug/L	183791	1	11/20/2013 19:35	TA
Lead	0.154	J	0.134	1.00	ug/L	183791	1	11/20/2013 19:35	TA
Manganese	1360		0.157	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Nickel	0.172	J	0.111	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Selenium	BRL		0.302	5.00	ug/L	183791	1	11/20/2013 19:35	TA
Silver	BRL		0.0654	1.00	ug/L	183791	1	11/20/2013 19:35	TA
Thallium	BRL		0.0537	1.00	ug/L	183791	1	11/20/2013 19:35	TA
Zinc	3.75	J	2.97	10.0	ug/L	183791	1	11/20/2013 19:35	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00004	0.00020	mg/L	183881	1	11/20/2013 13:59	CG
Total Cyanide (SM4500 CN-C, E)					**(SM4500-CN-E)**				
Cyanide, Total	0.003	J	0.001	0.010	mg/L	184030	1	11/21/2013 19:20	EH
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	9.0		1.0	5.0	mg/L	183912	1	11/19/2013 12:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	BRL		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Phenolics, Total Recoverable E420.1					**(E420.1)**				
Phenolics, Total Recoverable	BRL		0.02	0.05	mg/L	184106	1	11/15/2013 09:00	KB
Inorganic Anions by IC E300.0									
Sulfate	1.64		0.262	1.00	mg/L	R256278	1	11/19/2013 16:52	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.69	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
BOD (5 day) (E405.1/SM5210B)									
Biochemical Oxygen Demand	BRL		5.0	5.0	mg/L	183749	1	11/15/2013 11:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 12:30:00 PM
Lab ID:	1311B36-008	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	29.5		2.1	10.0	mg/L	R256173	1	11/20/2013 10:53	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SWTC DOWN
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 1:15:00 PM
Lab ID:	1311B36-009	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	31.7		4.45	10.0	ug/L	183791	1	11/20/2013 19:40	TA
Antimony	0.0682	J	0.0437	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Arsenic	0.420	J	0.228	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Beryllium	BRL		0.181	1.00	ug/L	183791	1	11/21/2013 19:19	TA
Cadmium	BRL		0.0132	0.700	ug/L	183791	1	11/21/2013 19:19	TA
Chromium	BRL		0.115	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Copper	BRL		1.24	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Iron	543		40.5	100	ug/L	183791	1	11/20/2013 19:40	TA
Lead	BRL		0.134	1.00	ug/L	183791	1	11/20/2013 19:40	TA
Manganese	53.6		0.157	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Nickel	0.486	J	0.111	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Selenium	BRL		0.302	5.00	ug/L	183791	1	11/20/2013 19:40	TA
Silver	BRL		0.0654	1.00	ug/L	183791	1	11/20/2013 19:40	TA
Thallium	BRL		0.0537	1.00	ug/L	183791	1	11/20/2013 19:40	TA
Zinc	3.41	J	2.97	10.0	ug/L	183791	1	11/20/2013 19:40	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00004	0.00020	mg/L	183881	1	11/20/2013 14:14	CG
Total Cyanide (SM4500 CN-C, E)					**(SM4500-CN-E)**				
Cyanide, Total	0.004	J	0.001	0.010	mg/L	184030	1	11/21/2013 19:20	EH
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	BRL		1.0	5.0	mg/L	183912	1	11/19/2013 12:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	20		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Phenolics, Total Recoverable E420.1					**(E420.1)**				
Phenolics, Total Recoverable	BRL		0.02	0.05	mg/L	184106	1	11/15/2013 09:00	KB
Inorganic Anions by IC E300.0									
Sulfate	4.04		0.262	1.00	mg/L	R256278	1	11/19/2013 17:07	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.33	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
BOD (5 day) (E405.1/SM5210B)									
Biochemical Oxygen Demand	BRL		5.0	5.0	mg/L	183749	1	11/15/2013 11:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SWTC DOWN
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 1:15:00 PM
Lab ID:	1311B36-009	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	29.1		2.1	10.0	mg/L	R256173	1	11/20/2013 10:54	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 005
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 3:30:00 PM
Lab ID:	1311B36-010	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	27.7		4.45	10.0	ug/L	183791	1	11/20/2013 19:45	TA
Antimony	0.0653	J	0.0437	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Arsenic	0.372	J	0.228	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Beryllium	BRL		0.181	1.00	ug/L	183791	1	11/21/2013 19:24	TA
Cadmium	BRL		0.0132	0.700	ug/L	183791	1	11/21/2013 19:24	TA
Chromium	BRL		0.115	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Copper	BRL		1.24	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Iron	576		40.5	100	ug/L	183791	1	11/20/2013 19:45	TA
Lead	BRL		0.134	1.00	ug/L	183791	1	11/20/2013 19:45	TA
Manganese	55.5		0.157	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Nickel	0.279	J	0.111	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Selenium	BRL		0.302	5.00	ug/L	183791	1	11/20/2013 19:45	TA
Silver	BRL		0.0654	1.00	ug/L	183791	1	11/20/2013 19:45	TA
Thallium	BRL		0.0537	1.00	ug/L	183791	1	11/20/2013 19:45	TA
Zinc	2.99	J	2.97	10.0	ug/L	183791	1	11/20/2013 19:45	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00004	0.00020	mg/L	183881	1	11/20/2013 14:16	CG
Total Cyanide (SM4500 CN-C, E)					**(SM4500-CN-E)**				
Cyanide, Total	BRL		0.001	0.010	mg/L	184184	1	11/22/2013 14:30	EH
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	2.5	J	1.0	5.0	mg/L	183912	1	11/19/2013 12:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	15		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Phenolics, Total Recoverable E420.1					**(E420.1)**				
Phenolics, Total Recoverable	BRL		0.02	0.05	mg/L	184106	1	11/15/2013 09:00	KB
Inorganic Anions by IC E300.0									
Sulfate	3.00		0.262	1.00	mg/L	R256278	1	11/19/2013 17:22	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.01	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
BOD (5 day) (E405.1/SM5210B)									
Biochemical Oxygen Demand	BRL		5.0	5.0	mg/L	183749	1	11/15/2013 11:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 005
Project Name:	Ridgeholm	**Collection Date:**	11/13/2013 3:30:00 PM
Lab ID:	1311B36-010	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	20.5		2.1	10.0	mg/L	R256173	1	11/20/2013 10:55	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 001
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 12:00:00 PM
Lab ID:	1311B36-011	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	168		4.45	10.0	ug/L	183791	1	11/20/2013 20:01	TA
Antimony	0.0814	J	0.0437	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Arsenic	0.906	J	0.228	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Beryllium	BRL		0.181	1.00	ug/L	183791	1	11/21/2013 19:29	TA
Cadmium	BRL		0.0132	0.700	ug/L	183791	1	11/21/2013 19:29	TA
Chromium	0.324	J	0.115	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Copper	BRL		1.24	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Iron	2870		40.5	100	ug/L	183791	1	11/20/2013 20:01	TA
Lead	0.298	J	0.134	1.00	ug/L	183791	1	11/20/2013 20:01	TA
Manganese	144		0.157	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Nickel	0.508	J	0.111	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Selenium	BRL		0.302	5.00	ug/L	183791	1	11/20/2013 20:01	TA
Silver	BRL		0.0654	1.00	ug/L	183791	1	11/20/2013 20:01	TA
Thallium	BRL		0.0537	1.00	ug/L	183791	1	11/20/2013 20:01	TA
Zinc	6.85	J	2.97	10.0	ug/L	183791	1	11/20/2013 20:01	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00004	0.00020	mg/L	183881	1	11/20/2013 14:18	CG
Total Cyanide (SM4500 CN-C, E)					**(SM4500-CN-E)**				
Cyanide, Total	BRL		0.001	0.010	mg/L	184184	1	11/22/2013 14:30	EH
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	20.5		1.0	5.0	mg/L	183912	1	11/19/2013 12:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	7	J	5	10	mg/L	183997	1	11/19/2013 10:00	KB
Phenolics, Total Recoverable E420.1					**(E420.1)**				
Phenolics, Total Recoverable	BRL		0.02	0.05	mg/L	184106	1	11/15/2013 09:00	KB
Inorganic Anions by IC E300.0									
Sulfate	2.53		0.262	1.00	mg/L	R256278	1	11/19/2013 17:37	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.93	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
BOD (5 day) (E405.1/SM5210B)									
Biochemical Oxygen Demand	BRL		5.0	5.0	mg/L	183749	1	11/15/2013 11:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 001
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 12:00:00 PM
Lab ID:	1311B36-011	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	11.1		2.1	10.0	mg/L	R256173	1	11/20/2013 10:56	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SWTC UP
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 1:00:00 PM
Lab ID:	1311B36-012	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	33.2		4.45	10.0	ug/L	183791	1	11/20/2013 20:06	TA
Antimony	0.0637	J	0.0437	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Arsenic	0.353	J	0.228	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Beryllium	BRL		0.181	1.00	ug/L	183791	1	11/21/2013 19:45	TA
Cadmium	0.0146	J	0.0132	0.700	ug/L	183791	1	11/21/2013 19:45	TA
Chromium	BRL		0.115	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Copper	BRL		1.24	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Iron	174		40.5	100	ug/L	183791	1	11/20/2013 20:06	TA
Lead	BRL		0.134	1.00	ug/L	183791	1	11/20/2013 20:06	TA
Manganese	19.8		0.157	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Nickel	0.482	J	0.111	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Selenium	BRL		0.302	5.00	ug/L	183791	1	11/20/2013 20:06	TA
Silver	BRL		0.0654	1.00	ug/L	183791	1	11/20/2013 20:06	TA
Thallium	BRL		0.0537	1.00	ug/L	183791	1	11/20/2013 20:06	TA
Zinc	4.39	J	2.97	10.0	ug/L	183791	1	11/20/2013 20:06	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00004	0.00020	mg/L	183881	1	11/20/2013 14:20	CG
Total Cyanide (SM4500 CN-C, E)					**(SM4500-CN-E)**				
Cyanide, Total	BRL		0.001	0.010	mg/L	184184	1	11/22/2013 14:30	EH
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	2.0	J	1.0	5.0	mg/L	183912	1	11/19/2013 12:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	18		5	10	mg/L	183997	1	11/19/2013 10:00	KB
Phenolics, Total Recoverable E420.1					**(E420.1)**				
Phenolics, Total Recoverable	BRL		0.02	0.05	mg/L	184106	1	11/15/2013 09:00	KB
Inorganic Anions by IC E300.0									
Sulfate	3.63		0.262	1.00	mg/L	R256278	1	11/19/2013 19:08	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.53	H	0.01	0.01	pH Units	R256339	1	11/20/2013 15:00	KB
BOD (5 day) (E405.1/SM5210B)									
Biochemical Oxygen Demand	BRL		5.0	5.0	mg/L	183749	1	11/15/2013 11:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc

Date: 16-Dec-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SWTC UP
Project Name:	Ridgeholm	**Collection Date:**	11/14/2013 1:00:00 PM
Lab ID:	1311B36-012	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	30.4		2.1	10.0	mg/L	R256173	1	11/20/2013 10:57	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R256678	1	11/20/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth Con Work Order Number 1311836

Checklist completed by MJ 11/14/13
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1° Cooler #2 3.6° Cooler #3 3.8 Cooler #4 3.9° Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1311B36

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1311B36-001A	MWX15	11/13/2013 11:00:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/22/2013
1311B36-001B	MWX15	11/13/2013 11:00:00AM	Groundwater	Acidity			11/20/2013
1311B36-001C	MWX15	11/13/2013 11:00:00AM	Groundwater	Alkalinity			11/20/2013
1311B36-001D	MWX15	11/13/2013 11:00:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-001E	MWX15	11/13/2013 11:00:00AM	Groundwater	Inorganic Anions by IC			11/19/2013
1311B36-001F	MWX15	11/13/2013 11:00:00AM	Groundwater	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-002A	MWX14	11/13/2013 3:00:00PM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/22/2013
1311B36-002B	MWX14	11/13/2013 3:00:00PM	Groundwater	Acidity			11/20/2013
1311B36-002C	MWX14	11/13/2013 3:00:00PM	Groundwater	Alkalinity			11/20/2013
1311B36-002D	MWX14	11/13/2013 3:00:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-002E	MWX14	11/13/2013 3:00:00PM	Groundwater	Inorganic Anions by IC			11/19/2013
1311B36-002F	MWX14	11/13/2013 3:00:00PM	Groundwater	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-003A	MWX1	11/14/2013 9:10:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/22/2013
1311B36-003A	MWX1	11/14/2013 9:10:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/25/2013
1311B36-003B	MWX1	11/14/2013 9:10:00AM	Groundwater	Acidity			11/20/2013
1311B36-003C	MWX1	11/14/2013 9:10:00AM	Groundwater	Alkalinity			11/20/2013
1311B36-003D	MWX1	11/14/2013 9:10:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-003E	MWX1	11/14/2013 9:10:00AM	Groundwater	Inorganic Anions by IC			11/19/2013
1311B36-003F	MWX1	11/14/2013 9:10:00AM	Groundwater	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-004A	MWX3B	11/14/2013 10:00:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/22/2013
1311B36-004A	MWX3B	11/14/2013 10:00:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/25/2013
1311B36-004B	MWX3B	11/14/2013 10:00:00AM	Groundwater	Acidity			11/20/2013
1311B36-004C	MWX3B	11/14/2013 10:00:00AM	Groundwater	Alkalinity			11/20/2013
1311B36-004D	MWX3B	11/14/2013 10:00:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-004E	MWX3B	11/14/2013 10:00:00AM	Groundwater	Inorganic Anions by IC			11/19/2013
1311B36-004F	MWX3B	11/14/2013 10:00:00AM	Groundwater	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-005A	MWX9R	11/14/2013 11:00:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/22/2013
1311B36-005B	MWX9R	11/14/2013 11:00:00AM	Groundwater	Acidity			11/20/2013
1311B36-005C	MWX9R	11/14/2013 11:00:00AM	Groundwater	Alkalinity			11/20/2013

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1311B36

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1311B36-005D	MWX9R	11/14/2013 11:00:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-005E	MWX9R	11/14/2013 11:00:00AM	Groundwater	Inorganic Anions by IC			11/19/2013
1311B36-005F	MWX9R	11/14/2013 11:00:00AM	Groundwater	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-006A	MWX10	11/14/2013 11:20:00AM	Groundwater	Total Metals by ICP/MS		11/18/2013	11/22/2013
1311B36-006B	MWX10	11/14/2013 11:20:00AM	Groundwater	Acidity			11/20/2013
1311B36-006C	MWX10	11/14/2013 11:20:00AM	Groundwater	Alkalinity			11/20/2013
1311B36-006D	MWX10	11/14/2013 11:20:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-006E	MWX10	11/14/2013 11:20:00AM	Groundwater	Inorganic Anions by IC			11/19/2013
1311B36-006F	MWX10	11/14/2013 11:20:00AM	Groundwater	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-007A	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/20/2013
1311B36-007A	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/21/2013
1311B36-007A	SW POND 1	11/13/2013 11:45:00AM	Surface Water	TOTAL MERCURY		11/20/2013	11/20/2013
1311B36-007B	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Acidity			11/20/2013
1311B36-007C	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Alkalinity			11/20/2013
1311B36-007D	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-007E	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Inorganic Anions by IC			11/19/2013
1311B36-007F	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-007G	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Residue, Suspended (TSS)		11/19/2013	11/19/2013
1311B36-007H	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Total Cyanide		11/21/2013	11/21/2013
1311B36-007I	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Biochemical Oxygen Demand (BOD)		11/15/2013	11/15/2013
1311B36-007J	SW POND 1	11/13/2013 11:45:00AM	Surface Water	Phenolics, Total Recoverable		11/15/2013	11/15/2013
1311B36-008A	SW 006	11/13/2013 12:30:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/20/2013
1311B36-008A	SW 006	11/13/2013 12:30:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/21/2013
1311B36-008A	SW 006	11/13/2013 12:30:00PM	Surface Water	TOTAL MERCURY		11/20/2013	11/20/2013
1311B36-008B	SW 006	11/13/2013 12:30:00PM	Surface Water	Acidity			11/20/2013
1311B36-008C	SW 006	11/13/2013 12:30:00PM	Surface Water	Alkalinity			11/20/2013
1311B36-008D	SW 006	11/13/2013 12:30:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-008E	SW 006	11/13/2013 12:30:00PM	Surface Water	Inorganic Anions by IC			11/19/2013
1311B36-008F	SW 006	11/13/2013 12:30:00PM	Surface Water	Residue, Dissolved (TDS)		11/19/2013	11/19/2013

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1311B36

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1311B36-008G	SW 006	11/13/2013 12:30:00PM	Surface Water	Residue, Suspended (TSS)		11/19/2013	11/19/2013
1311B36-008H	SW 006	11/13/2013 12:30:00PM	Surface Water	Total Cyanide		11/21/2013	11/21/2013
1311B36-008I	SW 006	11/13/2013 12:30:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		11/15/2013	11/15/2013
1311B36-008J	SW 006	11/13/2013 12:30:00PM	Surface Water	Phenolics, Total Recoverable		11/15/2013	11/15/2013
1311B36-009A	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/20/2013
1311B36-009A	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/21/2013
1311B36-009A	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	TOTAL MERCURY		11/20/2013	11/20/2013
1311B36-009B	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Acidity			11/20/2013
1311B36-009C	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Alkalinity			11/20/2013
1311B36-009D	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-009E	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Inorganic Anions by IC			11/19/2013
1311B36-009F	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-009G	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Residue, Suspended (TSS)		11/19/2013	11/19/2013
1311B36-009H	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Total Cyanide		11/21/2013	11/21/2013
1311B36-009I	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		11/15/2013	11/15/2013
1311B36-009J	SWTC DOWN	11/13/2013 1:15:00PM	Surface Water	Phenolics, Total Recoverable		11/15/2013	11/15/2013
1311B36-010A	SW 005	11/13/2013 3:30:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/20/2013
1311B36-010A	SW 005	11/13/2013 3:30:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/21/2013
1311B36-010A	SW 005	11/13/2013 3:30:00PM	Surface Water	TOTAL MERCURY		11/20/2013	11/20/2013
1311B36-010B	SW 005	11/13/2013 3:30:00PM	Surface Water	Acidity			11/20/2013
1311B36-010C	SW 005	11/13/2013 3:30:00PM	Surface Water	Alkalinity			11/20/2013
1311B36-010D	SW 005	11/13/2013 3:30:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-010E	SW 005	11/13/2013 3:30:00PM	Surface Water	Inorganic Anions by IC			11/19/2013
1311B36-010F	SW 005	11/13/2013 3:30:00PM	Surface Water	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-010G	SW 005	11/13/2013 3:30:00PM	Surface Water	Residue, Suspended (TSS)		11/19/2013	11/19/2013
1311B36-010H	SW 005	11/13/2013 3:30:00PM	Surface Water	Total Cyanide		11/22/2013	11/22/2013
1311B36-010I	SW 005	11/13/2013 3:30:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		11/15/2013	11/15/2013
1311B36-010J	SW 005	11/13/2013 3:30:00PM	Surface Water	Phenolics, Total Recoverable		11/15/2013	11/15/2013
1311B36-011A	SW 001	11/14/2013 12:00:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/20/2013

Analytical Environmental Services, Inc

Date: 3-Dec-13

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1311B36

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1311B36-011A	SW 001	11/14/2013 12:00:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/21/2013
1311B36-011A	SW 001	11/14/2013 12:00:00PM	Surface Water	TOTAL MERCURY		11/20/2013	11/20/2013
1311B36-011B	SW 001	11/14/2013 12:00:00PM	Surface Water	Acidity			11/20/2013
1311B36-011C	SW 001	11/14/2013 12:00:00PM	Surface Water	Alkalinity			11/20/2013
1311B36-011D	SW 001	11/14/2013 12:00:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-011E	SW 001	11/14/2013 12:00:00PM	Surface Water	Inorganic Anions by IC			11/19/2013
1311B36-011F	SW 001	11/14/2013 12:00:00PM	Surface Water	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-011G	SW 001	11/14/2013 12:00:00PM	Surface Water	Residue, Suspended (TSS)		11/19/2013	11/19/2013
1311B36-011H	SW 001	11/14/2013 12:00:00PM	Surface Water	Total Cyanide		11/22/2013	11/22/2013
1311B36-011I	SW 001	11/14/2013 12:00:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		11/15/2013	11/15/2013
1311B36-011J	SW 001	11/14/2013 12:00:00PM	Surface Water	Phenolics, Total Recoverable		11/15/2013	11/15/2013
1311B36-012A	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/20/2013
1311B36-012A	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Trace Elements by ICP/MS		11/18/2013	11/21/2013
1311B36-012A	SWTC UP	11/14/2013 1:00:00PM	Surface Water	TOTAL MERCURY		11/20/2013	11/20/2013
1311B36-012B	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Acidity			11/20/2013
1311B36-012C	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Alkalinity			11/20/2013
1311B36-012D	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			11/20/2013
1311B36-012E	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Inorganic Anions by IC			11/19/2013
1311B36-012F	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Residue, Dissolved (TDS)		11/19/2013	11/19/2013
1311B36-012G	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Residue, Suspended (TSS)		11/19/2013	11/19/2013
1311B36-012H	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Total Cyanide		11/22/2013	11/22/2013
1311B36-012I	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		11/15/2013	11/15/2013
1311B36-012J	SWTC UP	11/14/2013 1:00:00PM	Surface Water	Phenolics, Total Recoverable		11/15/2013	11/15/2013

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183749

Sample ID: **MB-183749** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256214**
SampleType: **MBLK** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **183749** Analysis Date: **11/15/2013** Seq No: **5381727**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	BRL	0.2									

Sample ID: **LCS-183749** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256214**
SampleType: **LCS** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **183749** Analysis Date: **11/15/2013** Seq No: **5381728**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	216.0	5.0	198.0		109	85	115				

Sample ID: **LCSD-183749** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256214**
SampleType: **LCSD** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **183749** Analysis Date: **11/15/2013** Seq No: **5381754**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	215.0	5.0	198.0		109	85	115	216.0	0.464	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183791

Sample ID: **MB-183791** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383216**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	10.0									
Antimony	0.08931	5.00									J
Arsenic	BRL	5.00									
Chromium	BRL	5.00									
Copper	BRL	5.00									
Iron	BRL	100									
Lead	BRL	1.00									
Manganese	0.2000	5.00									J
Nickel	BRL	5.00									
Selenium	BRL	5.00									
Silver	0.2698	1.00									J
Thallium	0.2655	1.00									J
Zinc	BRL	10.0									

Sample ID: **MB-183791** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/21/2013** Seq No: **5385217**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Beryllium	BRL	1.00									
Cadmium	BRL	0.700									

Sample ID: **LCS-183791** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383215**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1065	10.0	1000		106	85	115				
Antimony	106.1	5.00	100.0	0.08931	106	85	115				
Arsenic	111.6	5.00	100.0		112	85	115				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183791

Sample ID: **LCS-183791** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383215**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chromium	107.5	5.00	100.0		108	85	115				
Iron	1115	100	1000		111	85	115				
Lead	107.7	1.00	100.0		108	85	115				
Manganese	110.1	5.00	100.0	0.2000	110	85	115				
Nickel	113.7	5.00	100.0		114	85	115				
Selenium	106.0	5.00	100.0		106	85	115				
Silver	11.54	1.00	10.00	0.2698	113	85	115				
Thallium	97.44	1.00	100.0	0.2655	97.2	85	115				

Sample ID: **LCS-183791** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/21/2013** Seq No: **5385216**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Beryllium	113.9	1.00	100.0		114	85	115				
Cadmium	97.86	0.700	100.0		97.9	85	115				
Copper	101.5	5.00	100.0		101	85	115				
Zinc	99.80	10.0	100.0		99.8	85	115				

Sample ID: **1311B84-001CMS** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383224**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1002	10.0	1000	29.66	97.3	70	130				
Antimony	101.1	5.00	100.0	0.3344	101	70	130				
Arsenic	107.0	5.00	100.0	0.5175	107	70	130				
Chromium	106.4	5.00	100.0	0.4042	106	70	130				
Copper	111.2	5.00	100.0	3.066	108	70	130				
Iron	1035	100	1000		104	70	130				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183791

Sample ID: **1311B84-001CMS** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383224**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	97.00	1.00	100.0	0.1745	96.8	70	130				
Manganese	103.6	5.00	100.0	3.982	99.7	70	130				
Nickel	104.1	5.00	100.0	0.7393	103	70	130				
Selenium	100.2	5.00	100.0	0.7004	99.5	70	130				
Silver	10.19	1.00	10.00	0.07093	101	70	130				
Thallium	92.33	1.00	100.0		92.3	70	130				
Zinc	164.8	10.0	100.0	60.86	104	70	130				

Sample ID: **1311B84-001CMS** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/21/2013** Seq No: **5385219**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Beryllium	111.8	1.00	100.0		112	70	130				
Cadmium	93.04	0.700	100.0	0.02215	93.0	70	130				

Sample ID: **1311B84-001CMSD** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383227**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1015	10.0	1000	29.66	98.5	70	130	1002	1.27	20	
Antimony	103.2	5.00	100.0	0.3344	103	70	130	101.1	2.03	20	
Arsenic	107.5	5.00	100.0	0.5175	107	70	130	107.0	0.467	20	
Chromium	109.4	5.00	100.0	0.4042	109	70	130	106.4	2.84	20	
Copper	113.7	5.00	100.0	3.066	111	70	130	111.2	2.22	20	
Iron	1053	100	1000		105	70	130	1035	1.75	20	
Lead	99.89	1.00	100.0	0.1745	99.7	70	130	97.00	2.94	20	
Manganese	105.0	5.00	100.0	3.982	101	70	130	103.6	1.33	20	
Nickel	106.4	5.00	100.0	0.7393	106	70	130	104.1	2.16	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183791

Sample ID: **1311B84-001CMSD** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/20/2013** Seq No: **5383227**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Selenium	100.3	5.00	100.0	0.7004	99.6	70	130	100.2	0.082	20	
Silver	10.44	1.00	10.00	0.07093	104	70	130	10.19	2.42	20	
Thallium	92.74	1.00	100.0		92.7	70	130	92.33	0.448	20	
Zinc	166.5	10.0	100.0	60.86	106	70	130	164.8	1.03	20	

Sample ID: **1311B84-001CMSD** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256287**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **183791** Analysis Date: **11/21/2013** Seq No: **5385222**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Beryllium	111.9	1.00	100.0		112	70	130	111.8	0.150	20	
Cadmium	91.11	0.700	100.0	0.02215	91.1	70	130	93.04	2.10	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183792

Sample ID: **MB-183792** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256513**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **183792** Analysis Date: **11/22/2013** Seq No: **5387924**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	8.003	10.0									J
Iron	BRL	100									
Manganese	1.638	5.00									J

Sample ID: **LCS-183792** Client ID: Units: **ug/L** Prep Date: **11/18/2013** Run No: **256513**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **183792** Analysis Date: **11/22/2013** Seq No: **5387922**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1006	10.0	1000	8.003	99.8	80	120				
Iron	1012	100	1000		101	80	120				
Manganese	107.0	5.00	100.0	1.638	105	80	120				

Sample ID: **1311B36-001AMS** Client ID: **MWX15** Units: **ug/L** Prep Date: **11/18/2013** Run No: **256513**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **183792** Analysis Date: **11/22/2013** Seq No: **5387927**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1024	10.0	1000	26.45	99.8	75	125				
Iron	4853	100	1000	3664	119	75	125				
Manganese	277.7	5.00	100.0	170.0	108	75	125				

Sample ID: **1311B36-001AMSD** Client ID: **MWX15** Units: **ug/L** Prep Date: **11/18/2013** Run No: **256513**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **183792** Analysis Date: **11/22/2013** Seq No: **5387932**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1054	10.0	1000	26.45	103	75	125	1024	2.91	20	
Iron	5008	100	1000	3664	134	75	125	4853	3.14	20	S
Manganese	285.7	5.00	100.0	170.0	116	75	125	277.7	2.83	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183881

Sample ID: **MB-183881** Client ID: Units: **mg/L** Prep Date: **11/20/2013** Run No: **256157**
SampleType: **MBLK** TestCode: **Total Mercury E245.1** BatchID: **183881** Analysis Date: **11/20/2013** Seq No: **5381251**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	BRL	0.00020									

Sample ID: **LCS-183881** Client ID: Units: **mg/L** Prep Date: **11/20/2013** Run No: **256157**
SampleType: **LCS** TestCode: **Total Mercury E245.1** BatchID: **183881** Analysis Date: **11/20/2013** Seq No: **5381254**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004635	0.00020	0.0050		92.7	85	115				

Sample ID: **1311B36-008AMS** Client ID: **SW 006** Units: **mg/L** Prep Date: **11/20/2013** Run No: **256157**
SampleType: **MS** TestCode: **Total Mercury E245.1** BatchID: **183881** Analysis Date: **11/20/2013** Seq No: **5381324**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004114	0.00020	0.0050		82.3	70	130				

Sample ID: **1311B36-008AMSD** Client ID: **SW 006** Units: **mg/L** Prep Date: **11/20/2013** Run No: **256157**
SampleType: **MSD** TestCode: **Total Mercury E245.1** BatchID: **183881** Analysis Date: **11/20/2013** Seq No: **5381326**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004021	0.00020	0.0050		80.4	70	130	0.004114	2.29	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183912

Sample ID: **MB-183912** Client ID: Units: **mg/L** Prep Date: **11/19/2013** Run No: **256184**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **183912** Analysis Date: **11/19/2013** Seq No: **5381054**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0									

Sample ID: **1311A78-010ADUP** Client ID: Units: **mg/L** Prep Date: **11/19/2013** Run No: **256184**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **183912** Analysis Date: **11/19/2013** Seq No: **5381385**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	2.500	5.0						2.500	0	5	J

Sample ID: **1311B08-004ADUP** Client ID: Units: **mg/L** Prep Date: **11/19/2013** Run No: **256184**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **183912** Analysis Date: **11/19/2013** Seq No: **5381398**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	11.00	5.0						10.50	4.65	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 183997

Sample ID: **MB-183997** Client ID: Units: **mg/L** Prep Date: **11/19/2013** Run No: **256326**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **183997** Analysis Date: **11/19/2013** Seq No: **5384104**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1311B36-001FDUP** Client ID: **MWX15** Units: **mg/L** Prep Date: **11/19/2013** Run No: **256326**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **183997** Analysis Date: **11/19/2013** Seq No: **5384106**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	63.00	10						63.00	0	5	

Sample ID: **1311B36-011FDUP** Client ID: **SW 001** Units: **mg/L** Prep Date: **11/19/2013** Run No: **256326**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **183997** Analysis Date: **11/19/2013** Seq No: **5384117**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	9.000	10						7.000	0	5	J

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 184030

Sample ID: **MB-184030** Client ID: Units: **mg/L** Prep Date: **11/21/2013** Run No: **256341**
SampleType: **MBLK** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184030** Analysis Date: **11/21/2013** Seq No: **5384322**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	BRL	0.010									

Sample ID: **LCS-184030** Client ID: Units: **mg/L** Prep Date: **11/21/2013** Run No: **256341**
SampleType: **LCS** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184030** Analysis Date: **11/21/2013** Seq No: **5384323**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2623	0.010	0.2500		105	90	110				

Sample ID: **1311A67-003AMS** Client ID: Units: **mg/L** Prep Date: **11/21/2013** Run No: **256341**
SampleType: **MS** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184030** Analysis Date: **11/21/2013** Seq No: **5384325**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2648	0.010	0.2500	0.01750	98.9	90	110				

Sample ID: **1311A67-003AMSD** Client ID: Units: **mg/L** Prep Date: **11/21/2013** Run No: **256341**
SampleType: **MSD** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184030** Analysis Date: **11/21/2013** Seq No: **5384326**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2674	0.010	0.2500	0.01750	100.0	90	110	0.2648	0.977	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 184106

Sample ID: **MB-184106** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256452**
SampleType: **MBLK** TestCode: **Phenolics, Total Recoverable E420.1** BatchID: **184106** Analysis Date: **11/15/2013** Seq No: **5386792**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	BRL	0.05									

Sample ID: **LCS-184106** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256452**
SampleType: **LCS** TestCode: **Phenolics, Total Recoverable E420.1** BatchID: **184106** Analysis Date: **11/15/2013** Seq No: **5386793**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.4141	0.05	0.4000		104	80	120				

Sample ID: **1311A55-001AMS** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256452**
SampleType: **MS** TestCode: **Phenolics, Total Recoverable E420.1** BatchID: **184106** Analysis Date: **11/15/2013** Seq No: **5386795**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.4106	0.05	0.4000	0.1153	73.8	80	120				S

Sample ID: **1311A55-001AMSD** Client ID: Units: **mg/L** Prep Date: **11/15/2013** Run No: **256452**
SampleType: **MSD** TestCode: **Phenolics, Total Recoverable E420.1** BatchID: **184106** Analysis Date: **11/15/2013** Seq No: **5386796**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.4245	0.05	0.4000	0.1153	77.3	80	120	0.4106	3.33	30	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: 184184

Sample ID: **MB-184184** Client ID: Units: **mg/L** Prep Date: **11/22/2013** Run No: **256582**
SampleType: **MBLK** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184184** Analysis Date: **11/22/2013** Seq No: **5389284**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	BRL	0.010									

Sample ID: **LCS-184184** Client ID: Units: **mg/L** Prep Date: **11/22/2013** Run No: **256582**
SampleType: **LCS** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184184** Analysis Date: **11/22/2013** Seq No: **5389285**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2626	0.010	0.2500		105	90	110				

Sample ID: **1311B49-001EMS** Client ID: Units: **mg/L** Prep Date: **11/22/2013** Run No: **256582**
SampleType: **MS** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184184** Analysis Date: **11/22/2013** Seq No: **5389289**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2478	0.010	0.2500		99.1	90	110				

Sample ID: **1311B49-001EMSD** Client ID: Units: **mg/L** Prep Date: **11/22/2013** Run No: **256582**
SampleType: **MSD** TestCode: **Total Cyanide (SM4500 CN-C, E)** BatchID: **184184** Analysis Date: **11/22/2013** Seq No: **5389291**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2579	0.010	0.2500		103	90	110	0.2478	3.99	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: **R256173**

Sample ID: **MB-R256173** Client ID: Units: **mg/L** Prep Date: Run No: **256173**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R256173** Analysis Date: **11/20/2013** Seq No: **5380826**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R256173** Client ID: Units: **mg/L** Prep Date: Run No: **256173**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R256173** Analysis Date: **11/20/2013** Seq No: **5380828**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	259.0	10.0	250.0		104	75	125				

Sample ID: **1311B36-006CDUP** Client ID: **MWX10** Units: **mg/L** Prep Date: Run No: **256173**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R256173** Analysis Date: **11/20/2013** Seq No: **5380941**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	219.0	10.0						220.0	0.456	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: **R256278**

Sample ID: **MB-R256278** Client ID: Units: **mg/L** Prep Date: Run No: **256278**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R256278** Analysis Date: **11/19/2013** Seq No: **5382956**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R256278** Client ID: Units: **mg/L** Prep Date: Run No: **256278**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R256278** Analysis Date: **11/19/2013** Seq No: **5382957**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	23.33	1.00	25.00		93.3	90	110				

Sample ID: **1311B36-006EMS** Client ID: **MWX10** Units: **mg/L** Prep Date: Run No: **256278**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R256278** Analysis Date: **11/19/2013** Seq No: **5382994**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	26.64	1.00	25.00	4.144	90.0	90	110				

Sample ID: **1311D78-002DMS** Client ID: Units: **mg/L** Prep Date: Run No: **256278**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R256278** Analysis Date: **11/19/2013** Seq No: **5382961**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	405.2	10.0	250.0	163.4	96.7	90	110				

Sample ID: **1311D78-002DMSD** Client ID: Units: **mg/L** Prep Date: Run No: **256278**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R256278** Analysis Date: **11/19/2013** Seq No: **5382962**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	404.9	10.0	250.0	163.4	96.6	90	110	405.2	0.077	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: R256339

Sample ID: **LCS-R256339** Client ID: Units: **pH Units** Prep Date: Run No: **256339**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R256339** Analysis Date: **11/20/2013** Seq No: **5384300**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.990	0.01	7.000		99.9	90	110				

Sample ID: **1311A72-001BDUP** Client ID: Units: **pH Units** Prep Date: Run No: **256339**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R256339** Analysis Date: **11/20/2013** Seq No: **5384314**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	9.760	0.01						9.750	0.103	10	H

Sample ID: **1311B36-012DDUP** Client ID: **SWTC UP** Units: **pH Units** Prep Date: Run No: **256339**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R256339** Analysis Date: **11/20/2013** Seq No: **5384315**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.550	0.01						7.530	0.265	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1311B36

ANALYTICAL QC SUMMARY REPORT

BatchID: R256678

Sample ID: **MB-R256678** Client ID: Units: **mg/L** Prep Date: Run No: **256678**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R256678** Analysis Date: **11/20/2013** Seq No: **5391610**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R256678** Client ID: Units: **mg/L** Prep Date: Run No: **256678**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R256678** Analysis Date: **11/20/2013** Seq No: **5391611**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	97.97	10.0	100.0		98.0	80	120				

Sample ID: **1311B36-001BDUP** Client ID: **MWX15** Units: **mg/L** Prep Date: Run No: **256678**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R256678** Analysis Date: **11/20/2013** Seq No: **5391629**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

February 15, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1402379

Analytical Environmental Services, Inc. received 6 samples on 2/5/2014 1:38:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

AES

CHAIN OF CUSTODY

Work Order: 1402379

Date: 2/4/14 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston TX 77014

PHONE:

FAX:

SAMPLED BY: J McKenney

SIGNATURE:

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	Cl	Fe	SO4	TDS	REMARKS	No # of Containers
							PRESERVATION (See codes)							
							I	I	I	N	I	I		
1	MWX15	2/4/14	0830	X		GW	X	X	X	X	X	X		6
2	MWX14	2/4/14	0945	X		GW	X	X	X	X	X	X		6
3	MWX10	2/4/14	1115	X		GW	X	X	X	X	X	X		6
4	MWX3B	2/4/14	1245	X		GW	X	X	X	X	X	X		6
5	MWX9R	2/4/14	1500	X		GW	X	X	X	X	X	X		6
6	MWX1	2/4/14	1600	X		GW	X	X	X	X	X	X		6
7														
8														
9														
10														
11														
12														
13														
14														

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	2/5/14 1000	1:	2-5-14 12:30
2:	2-5-14 12:38	2:	2/5/14 1:38
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD

OUT / / VIA:

IN 2/5/14 VIA: AES

CLIENT FedEx UPS MAIL COURIER

GREYHOUND OTHER_____

PROJECT INFORMATION

PROJECT NAME: Ridgeholm

PROJECT #: 02.20120195.00

SITE ADDRESS:

SEND REPORT TO: Bob Decker

INVOICE TO:
(IF DIFFERENT FROM ABOVE)

QUOTE #:_____ PO#:_____

RECEIPT

Total # of Containers

Turnaround Time Request

- ☒ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other _____

STATE PROGRAM (if any): _____

E-mail? Y / N; Fax? Y / N

DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.

SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1402379

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX15
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 8:30:00 AM
Lab ID:	1402379-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	3780	100		ug/L	186759	1	02/10/2014 21:51	MR
Manganese	170	5.00		ug/L	186759	1	02/10/2014 21:51	MR
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	70	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	3.94	1.00		mg/L	R261167	1	02/07/2014 15:28	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.31	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	51.4	10.0		mg/L	R261076	1	02/11/2014 12:19	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX14
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 9:45:00 AM
Lab ID:	1402379-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	851	100		ug/L	186759	1	02/10/2014 21:57	MR
Manganese	53.1	5.00		ug/L	186759	1	02/10/2014 21:57	MR
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	117	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	2.30	1.00		mg/L	R261167	1	02/07/2014 15:44	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.07	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	116	10.0		mg/L	R261076	1	02/11/2014 12:20	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX10
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 11:15:00 AM
Lab ID:	1402379-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	9110	100		ug/L	186759	1	02/10/2014 22:02	MR
Manganese	547	5.00		ug/L	186759	1	02/10/2014 22:02	MR
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	17	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	4.70	1.00		mg/L	R261167	1	02/07/2014 16:15	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.78	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	23.5	10.0		mg/L	R261076	1	02/11/2014 12:21	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX3B
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 12:45:00 PM
Lab ID:	1402379-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	53100	10000		ug/L	186759	100	02/14/2014 16:05	MR
Manganese	790	500		ug/L	186759	100	02/14/2014 16:05	MR
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	38	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	2.24	1.00		mg/L	R261167	1	02/07/2014 17:34	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	4.85	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:25	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX9R
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 1:00:00 PM
Lab ID:	1402379-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	11000	100		ug/L	186759	1	02/10/2014 22:12	MR
Manganese	1220	5.00		ug/L	186759	1	02/10/2014 22:12	MR
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	108	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	15.0	1.00		mg/L	R261167	1	02/07/2014 18:03	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.55	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	31.1	10.0		mg/L	R261076	1	02/11/2014 12:26	TL
Acidity (E305.1/SM2310 B)								
Acidity	53.0	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX1
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 4:00:00 PM
Lab ID:	1402379-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	18500	100		ug/L	186759	1	02/10/2014 22:18	MR
Manganese	692	5.00		ug/L	186759	1	02/10/2014 22:18	MR
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	23	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	1.02	1.00		mg/L	R261167	1	02/07/2014 18:18	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.91	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	32.9	10.0		mg/L	R261076	1	02/11/2014 12:27	TL
Acidity (E305.1/SM2310 B)								
Acidity	30.5	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earthcon Work Order Number 1402379

Checklist completed by [signature] 2/5/14
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shipping container/cooler?	Yes ✓	No __	Not Present __
Custody seals intact on sample bottles?	Yes __	No __	Not Present ✓
Container/Temp Blank temperature in compliance? (4°C±2)*	Yes ✓	No __	

Cooler #1 3.1° Cooler #2 3.3° Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present?	Yes ✓	No __	
Chain of custody signed when relinquished and received?	Yes ✓	No __	
Chain of custody agrees with sample labels?	Yes ✓	No __	
Samples in proper container/bottle?	Yes ✓	No __	
Sample containers intact?	Yes ✓	No __	
Sufficient sample volume for indicated test?	Yes ✓	No __	
All samples received within holding time?	Yes __	No ✓	
Was TAT marked on the COC?	Yes ✓	No __	
Proceed with Standard TAT as per project history?	Yes __	No __	Not Applicable ✓
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes __	No __
Water - pH acceptable upon receipt?	Yes ✓	No __	Not Applicable __

Adjusted? _____ Checked by MT

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1402379

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1402379-001A	MWX15	2/4/2014 8:30:00AM	Groundwater	Total Metals by ICP/MS		02/07/2014	02/10/2014
1402379-001B	MWX15	2/4/2014 8:30:00AM	Groundwater	Acidity			02/10/2014
1402379-001C	MWX15	2/4/2014 8:30:00AM	Groundwater	Alkalinity			02/11/2014
1402379-001D	MWX15	2/4/2014 8:30:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			02/07/2014
1402379-001E	MWX15	2/4/2014 8:30:00AM	Groundwater	Inorganic Anions by IC			02/07/2014
1402379-001F	MWX15	2/4/2014 8:30:00AM	Groundwater	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402379-002A	MWX14	2/4/2014 9:45:00AM	Groundwater	Total Metals by ICP/MS		02/07/2014	02/10/2014
1402379-002B	MWX14	2/4/2014 9:45:00AM	Groundwater	Acidity			02/10/2014
1402379-002C	MWX14	2/4/2014 9:45:00AM	Groundwater	Alkalinity			02/11/2014
1402379-002D	MWX14	2/4/2014 9:45:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			02/07/2014
1402379-002E	MWX14	2/4/2014 9:45:00AM	Groundwater	Inorganic Anions by IC			02/07/2014
1402379-002F	MWX14	2/4/2014 9:45:00AM	Groundwater	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402379-003A	MWX10	2/4/2014 11:15:00AM	Groundwater	Total Metals by ICP/MS		02/07/2014	02/10/2014
1402379-003B	MWX10	2/4/2014 11:15:00AM	Groundwater	Acidity			02/10/2014
1402379-003C	MWX10	2/4/2014 11:15:00AM	Groundwater	Alkalinity			02/11/2014
1402379-003D	MWX10	2/4/2014 11:15:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			02/07/2014
1402379-003E	MWX10	2/4/2014 11:15:00AM	Groundwater	Inorganic Anions by IC			02/07/2014
1402379-003F	MWX10	2/4/2014 11:15:00AM	Groundwater	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402379-004A	MWX3B	2/4/2014 12:45:00PM	Groundwater	Total Metals by ICP/MS		02/07/2014	02/14/2014
1402379-004B	MWX3B	2/4/2014 12:45:00PM	Groundwater	Acidity			02/10/2014
1402379-004C	MWX3B	2/4/2014 12:45:00PM	Groundwater	Alkalinity			02/11/2014
1402379-004D	MWX3B	2/4/2014 12:45:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			02/07/2014
1402379-004E	MWX3B	2/4/2014 12:45:00PM	Groundwater	Inorganic Anions by IC			02/07/2014
1402379-004F	MWX3B	2/4/2014 12:45:00PM	Groundwater	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402379-005A	MWX9R	2/4/2014 1:00:00PM	Groundwater	Total Metals by ICP/MS		02/07/2014	02/10/2014
1402379-005B	MWX9R	2/4/2014 1:00:00PM	Groundwater	Acidity			02/10/2014
1402379-005C	MWX9R	2/4/2014 1:00:00PM	Groundwater	Alkalinity			02/11/2014
1402379-005D	MWX9R	2/4/2014 1:00:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			02/07/2014
1402379-005E	MWX9R	2/4/2014 1:00:00PM	Groundwater	Inorganic Anions by IC			02/07/2014

Analytical Environmental Services, Inc

Date: 15-Feb-14

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1402379

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1402379-005F	MWX9R	2/4/2014 1:00:00PM	Groundwater	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402379-006A	MWX1	2/4/2014 4:00:00PM	Groundwater	Total Metals by ICP/MS		02/07/2014	02/10/2014
1402379-006B	MWX1	2/4/2014 4:00:00PM	Groundwater	Acidity			02/10/2014
1402379-006C	MWX1	2/4/2014 4:00:00PM	Groundwater	Alkalinity			02/11/2014
1402379-006D	MWX1	2/4/2014 4:00:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			02/07/2014
1402379-006E	MWX1	2/4/2014 4:00:00PM	Groundwater	Inorganic Anions by IC			02/07/2014
1402379-006F	MWX1	2/4/2014 4:00:00PM	Groundwater	Residue, Dissolved (TDS)		02/10/2014	02/10/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402379

ANALYTICAL QC SUMMARY REPORT

BatchID: **186759**

Sample ID: **MB-186759** Client ID: Units: **ug/L** Prep Date: **02/07/2014** Run No: **261074**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **186759** Analysis Date: **02/10/2014** Seq No: **5487709**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **LCS-186759** Client ID: Units: **ug/L** Prep Date: **02/07/2014** Run No: **261074**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **186759** Analysis Date: **02/10/2014** Seq No: **5487707**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1012	100	1000	7.468	100	80	120				
Manganese	98.82	5.00	100.0		98.8	80	120				

Sample ID: **1402345-001DMS** Client ID: Units: **ug/L** Prep Date: **02/07/2014** Run No: **261074**
SampleType: **MS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **186759** Analysis Date: **02/10/2014** Seq No: **5487714**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	7658	100	1000	6305	135	75	125				S
Manganese	226.3	5.00	100.0	118.4	108	75	125				

Sample ID: **1402345-001DMSD** Client ID: Units: **ug/L** Prep Date: **02/07/2014** Run No: **261074**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **186759** Analysis Date: **02/10/2014** Seq No: **5487716**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	7423	100	1000	6305	112	75	125	7658	3.11	20	
Manganese	220.0	5.00	100.0	118.4	102	75	125	226.3	2.78	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402379

ANALYTICAL QC SUMMARY REPORT

BatchID: 186982

Sample ID: **MB-186982** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **261156**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **186982** Analysis Date: **02/10/2014** Seq No: **5489550**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1402379-001FDUP** Client ID: **MWX15** Units: **mg/L** Prep Date: **02/10/2014** Run No: **261156**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **186982** Analysis Date: **02/10/2014** Seq No: **5489565**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	69.00	10						70.00	1.44	5	

Sample ID: **1402380-005FDUP** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **261156**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **186982** Analysis Date: **02/10/2014** Seq No: **5489566**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	25.00	10						26.00	3.92	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402379

ANALYTICAL QC SUMMARY REPORT

BatchID: R260884

Sample ID: **LCS-R260884** Client ID: Units: **pH Units** Prep Date: Run No: **260884**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R260884** Analysis Date: **02/07/2014** Seq No: **5483768**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.010	0.01	7.000		100	90	110				

Sample ID: **1402379-001DDUP** Client ID: **MWX15** Units: **pH Units** Prep Date: Run No: **260884**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R260884** Analysis Date: **02/07/2014** Seq No: **5483796**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.320	0.01						6.310	0.158	10	H

Sample ID: **1402380-005DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **260884**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R260884** Analysis Date: **02/07/2014** Seq No: **5483805**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.090	0.01						6.080	0.164	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402379

ANALYTICAL QC SUMMARY REPORT

BatchID: **R260977**

Sample ID: **MB-R260977** Client ID: Units: **mg/L** Prep Date: Run No: **260977**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R260977** Analysis Date: **02/10/2014** Seq No: **5485699**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R260977** Client ID: Units: **mg/L** Prep Date: Run No: **260977**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R260977** Analysis Date: **02/10/2014** Seq No: **5485700**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	81.70	10.0	100.0		81.7	80	120				

Sample ID: **1402379-001BDUP** Client ID: **MWX15** Units: **mg/L** Prep Date: Run No: **260977**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R260977** Analysis Date: **02/10/2014** Seq No: **5485716**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402379

ANALYTICAL QC SUMMARY REPORT

BatchID: R261076

Sample ID: **MB-R261076** Client ID: Units: **mg/L** Prep Date: Run No: **261076**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R261076** Analysis Date: **02/11/2014** Seq No: **5487810**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R261076** Client ID: Units: **mg/L** Prep Date: Run No: **261076**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R261076** Analysis Date: **02/11/2014** Seq No: **5487813**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	267.0	10.0	250.0		107	75	125				

Sample ID: **1402291-002FDUP** Client ID: Units: **mg/L** Prep Date: Run No: **261076**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R261076** Analysis Date: **02/11/2014** Seq No: **5487917**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	123.0	10.0						124.0	0.810	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402379

ANALYTICAL QC SUMMARY REPORT

BatchID: **R261167**

Sample ID: **MB-R261167** Client ID: Units: **mg/L** Prep Date: Run No: **261167**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R261167** Analysis Date: **02/07/2014** Seq No: **5489732**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R261167** Client ID: Units: **mg/L** Prep Date: Run No: **261167**
SampleType: **LCS** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R261167** Analysis Date: **02/07/2014** Seq No: **5489734**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	26.50	1.00	25.00		106	90	110				

Sample ID: **1402413-002EMS** Client ID: Units: **mg/L** Prep Date: Run No: **261167**
SampleType: **MS** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R261167** Analysis Date: **02/07/2014** Seq No: **5489737**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	28.24	1.00	25.00	1.110	109	90	110				

Sample ID: **1402413-002EMSD** Client ID: Units: **mg/L** Prep Date: Run No: **261167**
SampleType: **MSD** TestCode: **Inorganic Anions by IC** **E300.0** BatchID: **R261167** Analysis Date: **02/07/2014** Seq No: **5489740**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	27.20	1.00	25.00	1.110	104	90	110	28.24	3.75	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

March 25, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1403C29

Analytical Environmental Services, Inc. received 5 samples on 3/13/2014 2:25:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1403629

Date: 3/12/14 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: Acidity, Alkalinity, pH, Fe, Mn, SO4, TDS

PRESERVATION (See codes): I, I, I, N, I, I

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	pH	Fe, Mn	SO4	TDS	REMARKS	No # of Containers
1	MW X15	3/12/14	1045	X		GW	1	1	1	1	1	1		6
2	MW X14	3/12/14	1200	X		GW	1	1	1	1	1	1		6
3	MW X10	3/12/14	1330	X		GW	1	1	1	1	1	1		6
4	MW X 3B	3/12/14	1620	X		GW	1	1	1	1	1	1		6
5	MW X 1	3/12/14	1730	X		GW	1	1	1	1	1	1		6
6														
7														
8														
9														
10														
11														
12														
13														
14														

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	3/13/14 0900	1:	3-13-14 11:45
2:	3-13-14 14:25	2:	3/13/14 2:25
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 3/13/14 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers 30

Turnaround Time Request
☒ Standard 5 Business Days
○ 2 Business Day Rush
○ Next Business Day Rush
○ Same Day Rush (auth req.)
○ Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1403C29

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 25-Mar-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX15
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 10:45:00 AM
Lab ID:	1403C29-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	3640	100		ug/L	188420	1	03/24/2014 14:00	TA
Manganese	166	5.00		ug/L	188420	1	03/21/2014 03:07	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	73	10		mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0								
Sulfate	3.05	1.00		mg/L	R263567	1	03/18/2014 17:48	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.31	0.01	H	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	43.7	10.0		mg/L	R263252	1	03/14/2014 12:33	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Mar-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX14
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 12:00:00 PM
Lab ID:	1403C29-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	811	100		ug/L	188420	1	03/24/2014 14:06	TA
Manganese	50.6	5.00		ug/L	188420	1	03/21/2014 03:14	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	120	10		mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0								
Sulfate	1.87	1.00		mg/L	R263567	1	03/18/2014 18:03	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.21	0.01	H	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	106	10.0		mg/L	R263252	1	03/14/2014 12:23	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Mar-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX10
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 1:30:00 PM
Lab ID:	1403C29-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	7360	100		ug/L	188420	1	03/24/2014 14:12	TA
Manganese	416	5.00		ug/L	188420	1	03/21/2014 03:20	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	39	10		mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0								
Sulfate	3.25	1.00		mg/L	R263567	1	03/18/2014 18:19	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.93	0.01	H	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	13.5	10.0		mg/L	R263252	1	03/14/2014 12:24	TL
Acidity (E305.1/SM2310 B)								
Acidity	15.9	10.0		mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Mar-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX3B
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 4:20:00 PM
Lab ID:	1403C29-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	5500	100		ug/L	188420	1	03/24/2014 14:18	TA
Manganese	192	5.00		ug/L	188420	1	03/21/2014 03:45	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	46	10		mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0								
Sulfate	1.71	1.00		mg/L	R263603	1	03/19/2014 09:44	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.14	0.01	H	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R263252	1	03/14/2014 12:32	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Mar-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX1
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 5:30:00 PM
Lab ID:	1403C29-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	13000	100		ug/L	188420	1	03/24/2014 14:25	TA
Manganese	814	5.00		ug/L	188420	1	03/21/2014 03:51	TA
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	35	10		mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0								
Sulfate	1.10	1.00		mg/L	R263603	1	03/19/2014 09:59	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.21	0.01	H	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	34.7	10.0		mg/L	R263252	1	03/14/2014 12:34	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth Co. Work Order Number 1403C29

Checklist completed by M 3/13/14
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1° Cooler #2 3.9° Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1403C29

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1403C29-001A	MWX15	3/12/2014 10:45:00AM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/21/2014
1403C29-001A	MWX15	3/12/2014 10:45:00AM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/24/2014
1403C29-001B	MWX15	3/12/2014 10:45:00AM	Groundwater	Acidity			03/19/2014
1403C29-001C	MWX15	3/12/2014 10:45:00AM	Groundwater	Alkalinity			03/14/2014
1403C29-001D	MWX15	3/12/2014 10:45:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C29-001E	MWX15	3/12/2014 10:45:00AM	Groundwater	Inorganic Anions by IC			03/18/2014
1403C29-001F	MWX15	3/12/2014 10:45:00AM	Groundwater	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C29-002A	MWX14	3/12/2014 12:00:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/21/2014
1403C29-002A	MWX14	3/12/2014 12:00:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/24/2014
1403C29-002B	MWX14	3/12/2014 12:00:00PM	Groundwater	Acidity			03/19/2014
1403C29-002C	MWX14	3/12/2014 12:00:00PM	Groundwater	Alkalinity			03/14/2014
1403C29-002D	MWX14	3/12/2014 12:00:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C29-002E	MWX14	3/12/2014 12:00:00PM	Groundwater	Inorganic Anions by IC			03/18/2014
1403C29-002F	MWX14	3/12/2014 12:00:00PM	Groundwater	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C29-003A	MWX10	3/12/2014 1:30:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/21/2014
1403C29-003A	MWX10	3/12/2014 1:30:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/24/2014
1403C29-003B	MWX10	3/12/2014 1:30:00PM	Groundwater	Acidity			03/19/2014
1403C29-003C	MWX10	3/12/2014 1:30:00PM	Groundwater	Alkalinity			03/14/2014
1403C29-003D	MWX10	3/12/2014 1:30:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C29-003E	MWX10	3/12/2014 1:30:00PM	Groundwater	Inorganic Anions by IC			03/18/2014
1403C29-003F	MWX10	3/12/2014 1:30:00PM	Groundwater	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C29-004A	MWX3B	3/12/2014 4:20:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/21/2014
1403C29-004A	MWX3B	3/12/2014 4:20:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/24/2014
1403C29-004B	MWX3B	3/12/2014 4:20:00PM	Groundwater	Acidity			03/19/2014
1403C29-004C	MWX3B	3/12/2014 4:20:00PM	Groundwater	Alkalinity			03/14/2014
1403C29-004D	MWX3B	3/12/2014 4:20:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C29-004E	MWX3B	3/12/2014 4:20:00PM	Groundwater	Inorganic Anions by IC			03/19/2014
1403C29-004F	MWX3B	3/12/2014 4:20:00PM	Groundwater	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C29-005A	MWX1	3/12/2014 5:30:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/21/2014

Analytical Environmental Services, Inc

Date: 26-Mar-14

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1403C29

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1403C29-005A	MWX1	3/12/2014 5:30:00PM	Groundwater	Total Metals by ICP/MS		03/19/2014	03/24/2014
1403C29-005B	MWX1	3/12/2014 5:30:00PM	Groundwater	Acidity			03/19/2014
1403C29-005C	MWX1	3/12/2014 5:30:00PM	Groundwater	Alkalinity			03/14/2014
1403C29-005D	MWX1	3/12/2014 5:30:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C29-005E	MWX1	3/12/2014 5:30:00PM	Groundwater	Inorganic Anions by IC			03/19/2014
1403C29-005F	MWX1	3/12/2014 5:30:00PM	Groundwater	Residue, Dissolved (TDS)		03/18/2014	03/18/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: 188420

Sample ID: **MB-188420** Client ID: Units: **ug/L** Prep Date: **03/19/2014** Run No: **263792**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **188420** Analysis Date: **03/21/2014** Seq No: **5550170**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **LCS-188420** Client ID: Units: **ug/L** Prep Date: **03/19/2014** Run No: **263792**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **188420** Analysis Date: **03/21/2014** Seq No: **5550169**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1111	100	1000		111	80	120				
Manganese	100.9	5.00	100.0		101	80	120				

Sample ID: **1403B13-040AMS** Client ID: Units: **ug/L** Prep Date: **03/19/2014** Run No: **263792**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **188420** Analysis Date: **03/21/2014** Seq No: **5550173**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1160	100	1000	115.6	104	75	125				
Manganese	101.2	5.00	100.0	2.256	98.9	75	125				

Sample ID: **1403B13-040AMSD** Client ID: Units: **ug/L** Prep Date: **03/19/2014** Run No: **263792**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **188420** Analysis Date: **03/21/2014** Seq No: **5550177**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1106	100	1000	115.6	99.0	75	125	1160	4.77	20	
Manganese	96.96	5.00	100.0	2.256	94.7	75	125	101.2	4.28	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: 188490

Sample ID: **MB-188490** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263639**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **188490** Analysis Date: **03/18/2014** Seq No: **5546555**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1403B72-002ADUP** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263639**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **188490** Analysis Date: **03/18/2014** Seq No: **5546557**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	1060	10						1056	0.378	5	

Sample ID: **1403C17-001FDUP** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263639**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **188490** Analysis Date: **03/18/2014** Seq No: **5546568**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	40.00	10						41.00	2.47	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: R263252

Sample ID: **MB-R263252** Client ID: Units: **mg/L** Prep Date: Run No: **263252**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R263252** Analysis Date: **03/14/2014** Seq No: **5536672**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R263252** Client ID: Units: **mg/L** Prep Date: Run No: **263252**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R263252** Analysis Date: **03/14/2014** Seq No: **5536674**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	244.0	10.0	250.0		97.6	75	125				

Sample ID: **1403C29-002CDUP** Client ID: **MWX14** Units: **mg/L** Prep Date: Run No: **263252**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R263252** Analysis Date: **03/14/2014** Seq No: **5542160**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	106.0	10.0						106.0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: R263567

Sample ID: **MB-R263567** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544813**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R263567** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544810**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	25.09	1.00	25.00		100	90	110				

Sample ID: **1403F04-001BMS** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544851**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	520.0	20.0	500.0	67.91	90.4	90	110				

Sample ID: **1403F51-004AMS** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544909**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	23.61	1.00	25.00	1.955	86.6	90	110				S

Sample ID: **1403F04-001BMSD** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544864**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	519.9	20.0	500.0	67.91	90.4	90	110	520.0	0.014	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: R263603

Sample ID: **MB-R263603** Client ID: Units: **mg/L** Prep Date: Run No: **263603**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263603** Analysis Date: **03/19/2014** Seq No: **5545668**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R263603** Client ID: Units: **mg/L** Prep Date: Run No: **263603**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263603** Analysis Date: **03/19/2014** Seq No: **5545665**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	23.32	1.00	25.00		93.3	90	110				

Sample ID: **1403G09-002FMS** Client ID: Units: **mg/L** Prep Date: Run No: **263603**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263603** Analysis Date: **03/19/2014** Seq No: **5545691**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	129.1	5.00	125.0	12.30	93.4	90	110				

Sample ID: **1403G09-002FMSD** Client ID: Units: **mg/L** Prep Date: Run No: **263603**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263603** Analysis Date: **03/19/2014** Seq No: **5545693**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	127.9	5.00	125.0	12.30	92.5	90	110	129.1	0.911	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: R263630

Sample ID: **LCS-R263630** Client ID: Units: **pH Units** Prep Date: Run No: **263630**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R263630** Analysis Date: **03/19/2014** Seq No: **5546363**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.990	0.01	7.000		99.9	90	110				

Sample ID: **1403C11-001DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **263630**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R263630** Analysis Date: **03/19/2014** Seq No: **5546385**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.550	0.01						6.530	0.306	10	H

Sample ID: **1403C29-002DDUP** Client ID: **MWX14** Units: **pH Units** Prep Date: Run No: **263630**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R263630** Analysis Date: **03/19/2014** Seq No: **5546386**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.220	0.01						7.210	0.139	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C29

ANALYTICAL QC SUMMARY REPORT

BatchID: R263733

Sample ID: **MB-R263733** Client ID: Units: **mg/L** Prep Date: Run No: **263733**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R263733** Analysis Date: **03/19/2014** Seq No: **5548685**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R263733** Client ID: Units: **mg/L** Prep Date: Run No: **263733**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R263733** Analysis Date: **03/19/2014** Seq No: **5548686**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	96.90	10.0	100.0		96.9	80	120				

Sample ID: **1403C11-001BDUP** Client ID: Units: **mg/L** Prep Date: Run No: **263733**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R263733** Analysis Date: **03/19/2014** Seq No: **5548701**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	15.90	10.0						14.95	6.16	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

April 24, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1404B85

Analytical Environmental Services, Inc. received 6 samples on 4/10/2014 3:00:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

AES

CHAIN OF CUSTODY

Work Order: 1404B85

Date: 4/10/14 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J. McKinney

SIGNATURE:

ANALYSIS REQUESTED: Acidity, Alkalinity, pH, Fe, Mn, SO4, TDS

PRESERVATION (See codes): I, I, I, N, I, I

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	pH	Fe, Mn	SO4	TDS	REMARKS	No # of Containers
1	MWX15	4/9/14	1025	X		GW	1	1	1	1	1	1		6
2	MWX14	4/9/14	1115	X		GW	1	1	1	1	1	1		6
3	MWX10	4/9/14	1215	X		GW	1	1	1	1	1	1		6
4	MWX3B	4/9/14	1445	X		GW	1	1	1	1	1	1		6
5	MWX1	4/9/14	1535	X		GW	1	1	1	1	1	1		6
6	MWX9R	4/9/14	1710	X		GW	1	1	1	1	1	1		6
7														
8														
9														
10														
11														
12														
13														
14														

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	4/10/14 0900	1: [signature]	4-10-14 12:00
2: [signature]	4-10-14 15:00	2: [signature]	4/10/14 3:00PM
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 4/10/14 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02-20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Deckar
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers: 36

Turnaround Time Request
- X Standard 5 Business Days
- O 2 Business Day Rush
- O Next Business Day Rush
- O Same Day Rush (auth req.)
- O Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1404B85

Case Narrative

pH Analysis by Method SM4500 H+ B:

Samples for pH analysis by Method SM4500 H+ B were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 24-Apr-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX15
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 10:25:00 AM
Lab ID:	1404B85-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	4360	100		ug/L	189695	1	04/16/2014 23:31	TA
Manganese	171	5.00		ug/L	189695	1	04/16/2014 23:31	TA
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	104	10		mg/L	189751	1	04/14/2014 17:05	LB
ION SCAN SW9056A								
Sulfate	3.4	1.0		mg/L	R265688	1	04/15/2014 12:36	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	6.28	0.0100	H	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	46.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, Total (As CaCO3)	46.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Acidity by SM2310B								
Acidity	171	10.0		mg/L	R265764	1	04/18/2014 10:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Apr-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX14
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 11:15:00 AM
Lab ID:	1404B85-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	874	100		ug/L	189695	1	04/16/2014 23:37	TA
Manganese	54.9	5.00		ug/L	189695	1	04/16/2014 23:37	TA
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	139	10		mg/L	189751	1	04/14/2014 17:05	LB
ION SCAN SW9056A								
Sulfate	2.1	1.0		mg/L	R265688	1	04/15/2014 12:51	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	7.20	0.0100	H	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	103	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, Total (As CaCO3)	103	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R265764	1	04/18/2014 10:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 24-Apr-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX10
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 12:15:00 PM
Lab ID:	1404B85-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	8000	100		ug/L	189695	1	04/16/2014 23:43	TA
Manganese	396	5.00		ug/L	189695	1	04/16/2014 23:43	TA
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	57	10		mg/L	189751	1	04/14/2014 17:05	LB
ION SCAN SW9056A								
Sulfate	3.2	1.0		mg/L	R265688	1	04/15/2014 13:06	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	5.76	0.0100	H	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	20.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, Total (As CaCO3)	20.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R265764	1	04/18/2014 10:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 24-Apr-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX3B
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 2:45:00 PM
Lab ID:	1404B85-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	7340	100		ug/L	189695	1	04/16/2014 23:49	TA
Manganese	134	5.00		ug/L	189695	1	04/16/2014 23:49	TA
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	30	10		mg/L	189751	1	04/14/2014 17:05	LB
ION SCAN SW9056A								
Sulfate	1.7	1.0		mg/L	R265688	1	04/15/2014 13:21	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	5.18	0.0100	H	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	8.00	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, Total (As CaCO3)	8.00	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R265764	1	04/18/2014 10:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Apr-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX1
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 3:35:00 PM
Lab ID:	1404B85-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	18000	100		ug/L	189695	1	04/16/2014 23:55	TA
Manganese	724	5.00		ug/L	189695	1	04/16/2014 23:55	TA
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	127	10		mg/L	189751	1	04/14/2014 17:05	LB
ION SCAN SW9056A								
Sulfate	BRL	1.0		mg/L	R265688	1	04/15/2014 14:53	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	5.71	0.0100	H	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	34.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, Total (As CaCO3)	34.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R265764	1	04/18/2014 10:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 24-Apr-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX9R
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 5:10:00 PM
Lab ID:	1404B85-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	1740	100		ug/L	189695	1	04/17/2014 00:02	TA
Manganese	1030	5.00		ug/L	189695	1	04/17/2014 00:02	TA
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	118	10		mg/L	189751	1	04/14/2014 17:05	LB
ION SCAN SW9056A								
Sulfate	20	1.0		mg/L	R265688	1	04/15/2014 15:08	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	6.10	0.0100	H	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	44.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Alkalinity, Total (As CaCO3)	44.0	3.00		mg/L	R265559	1	04/15/2014 11:20	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R265764	1	04/18/2014 10:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earthcon Work Order Number 1404B85

Checklist completed by Stephen Mulphing 4/10/14
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shipping container/cooler?	Yes ✓	No __	Not Present __
Custody seals intact on sample bottles?	Yes __	No __	Not Present ✓
Container/Temp Blank temperature in compliance? (4°C±2)*	Yes ✓	No __	

Cooler #1 3.2°C Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present?	Yes ✓	No __	
Chain of custody signed when relinquished and received?	Yes ✓	No __	
Chain of custody agrees with sample labels?	Yes ✓	No __	
Samples in proper container/bottle?	Yes ✓	No __	
Sample containers intact?	Yes ✓	No __	
Sufficient sample volume for indicated test?	Yes ✓	No __	
All samples received within holding time?	Yes __	No ✓	
Was TAT marked on the COC?	Yes ✓	No __	
Proceed with Standard TAT as per project history?	Yes __	No __	Not Applicable ✓
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes __	No __
Water - pH acceptable upon receipt?	Yes ✓	No __	Not Applicable __

Adjusted? _____ Checked by SM

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1404B85

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1404B85-001A	MWX15	4/9/2014 10:25:00AM	Groundwater	Total Metals by ICP/MS		04/15/2014	04/16/2014
1404B85-001B	MWX15	4/9/2014 10:25:00AM	Groundwater	Acidity by SM2310B			04/18/2014
1404B85-001C	MWX15	4/9/2014 10:25:00AM	Groundwater	Alkalinity by SM2320B			04/15/2014
1404B85-001D	MWX15	4/9/2014 10:25:00AM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B85-001E	MWX15	4/9/2014 10:25:00AM	Groundwater	ION SCAN			04/15/2014
1404B85-001F	MWX15	4/9/2014 10:25:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B85-002A	MWX14	4/9/2014 11:15:00AM	Groundwater	Total Metals by ICP/MS		04/15/2014	04/16/2014
1404B85-002B	MWX14	4/9/2014 11:15:00AM	Groundwater	Acidity by SM2310B			04/18/2014
1404B85-002C	MWX14	4/9/2014 11:15:00AM	Groundwater	Alkalinity by SM2320B			04/15/2014
1404B85-002D	MWX14	4/9/2014 11:15:00AM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B85-002E	MWX14	4/9/2014 11:15:00AM	Groundwater	ION SCAN			04/15/2014
1404B85-002F	MWX14	4/9/2014 11:15:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B85-003A	MWX10	4/9/2014 12:15:00PM	Groundwater	Total Metals by ICP/MS		04/15/2014	04/16/2014
1404B85-003B	MWX10	4/9/2014 12:15:00PM	Groundwater	Acidity by SM2310B			04/18/2014
1404B85-003C	MWX10	4/9/2014 12:15:00PM	Groundwater	Alkalinity by SM2320B			04/15/2014
1404B85-003D	MWX10	4/9/2014 12:15:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B85-003E	MWX10	4/9/2014 12:15:00PM	Groundwater	ION SCAN			04/15/2014
1404B85-003F	MWX10	4/9/2014 12:15:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B85-004A	MWX3B	4/9/2014 2:45:00PM	Groundwater	Total Metals by ICP/MS		04/15/2014	04/16/2014
1404B85-004B	MWX3B	4/9/2014 2:45:00PM	Groundwater	Acidity by SM2310B			04/18/2014
1404B85-004C	MWX3B	4/9/2014 2:45:00PM	Groundwater	Alkalinity by SM2320B			04/15/2014
1404B85-004D	MWX3B	4/9/2014 2:45:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B85-004E	MWX3B	4/9/2014 2:45:00PM	Groundwater	ION SCAN			04/15/2014
1404B85-004F	MWX3B	4/9/2014 2:45:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B85-005A	MWX1	4/9/2014 3:35:00PM	Groundwater	Total Metals by ICP/MS		04/15/2014	04/16/2014
1404B85-005B	MWX1	4/9/2014 3:35:00PM	Groundwater	Acidity by SM2310B			04/18/2014
1404B85-005C	MWX1	4/9/2014 3:35:00PM	Groundwater	Alkalinity by SM2320B			04/15/2014
1404B85-005D	MWX1	4/9/2014 3:35:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B85-005E	MWX1	4/9/2014 3:35:00PM	Groundwater	ION SCAN			04/15/2014

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1404B85

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1404B85-005F	MWX1	4/9/2014 3:35:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B85-006A	MWX9R	4/9/2014 5:10:00PM	Groundwater	Total Metals by ICP/MS		04/15/2014	04/17/2014
1404B85-006B	MWX9R	4/9/2014 5:10:00PM	Groundwater	Acidity by SM2310B			04/18/2014
1404B85-006C	MWX9R	4/9/2014 5:10:00PM	Groundwater	Alkalinity by SM2320B			04/15/2014
1404B85-006D	MWX9R	4/9/2014 5:10:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B85-006E	MWX9R	4/9/2014 5:10:00PM	Groundwater	ION SCAN			04/15/2014
1404B85-006F	MWX9R	4/9/2014 5:10:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B85

ANALYTICAL QC SUMMARY REPORT

BatchID: **189695**

Sample ID: **MB-189695** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265749**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **189695** Analysis Date: **04/16/2014** Seq No: **5599561**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **LCS-189695** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265749**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **189695** Analysis Date: **04/16/2014** Seq No: **5599559**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1050	100	1000		105	80	120				
Manganese	98.31	5.00	100.0		98.3	80	120				

Sample ID: **1404935-001BMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265749**
SampleType: **MS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **189695** Analysis Date: **04/16/2014** Seq No: **5599563**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	10130	100	1000	10910	-78.0	75	125				S
Manganese	183.0	5.00	100.0	89.35	93.6	75	125				

Sample ID: **1404935-001BMSD** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265749**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **189695** Analysis Date: **04/16/2014** Seq No: **5599564**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	9513	100	1000	10910	-140	75	125	10130	6.28	20	S
Manganese	185.2	5.00	100.0	89.35	95.8	75	125	183.0	1.20	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B85

ANALYTICAL QC SUMMARY REPORT

BatchID: 189751

Sample ID: **MB-189751** Client ID: Units: **mg/L** Prep Date: **04/14/2014** Run No: **265624**
SampleType: **MBLK** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **189751** Analysis Date: **04/14/2014** Seq No: **5596667**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1404B11-015DDUP** Client ID: Units: **mg/L** Prep Date: **04/14/2014** Run No: **265624**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **189751** Analysis Date: **04/14/2014** Seq No: **5596669**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	105.0	10						104.0	0.957	5	

Sample ID: **1404C24-011DDUP** Client ID: Units: **mg/L** Prep Date: **04/14/2014** Run No: **265624**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **189751** Analysis Date: **04/14/2014** Seq No: **5596680**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	77.00	10						78.00	1.29	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B85

ANALYTICAL QC SUMMARY REPORT

BatchID: R265559

Sample ID: **MB-R265559** Client ID: Units: **mg/L** Prep Date: Run No: **265559**
SampleType: **MBLK** TestCode: **Alkalinity by SM2320B** BatchID: **R265559** Analysis Date: **04/15/2014** Seq No: **5595215**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	3.00									

Sample ID: **LCS-R265559** Client ID: Units: **mg/L** Prep Date: Run No: **265559**
SampleType: **LCS** TestCode: **Alkalinity by SM2320B** BatchID: **R265559** Analysis Date: **04/15/2014** Seq No: **5595216**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	119.0	3.00	125.0	1.000	94.4	75	125				

Sample ID: **1404931-002ADUP** Client ID: Units: **mg/L** Prep Date: Run No: **265559**
SampleType: **DUP** TestCode: **Alkalinity by SM2320B** BatchID: **R265559** Analysis Date: **04/15/2014** Seq No: **5595218**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	21.00	3.00						20.00	4.88	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B85

ANALYTICAL QC SUMMARY REPORT

BatchID: R265688

Sample ID: **MB-R265688** Client ID: Units: **mg/L** Prep Date: Run No: **265688**
SampleType: **MBLK** TestCode: **ION SCAN SW9056A** BatchID: **R265688** Analysis Date: **04/15/2014** Seq No: **5597984**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.0									

Sample ID: **LCS-R265688** Client ID: Units: **mg/L** Prep Date: Run No: **265688**
SampleType: **LCS** TestCode: **ION SCAN SW9056A** BatchID: **R265688** Analysis Date: **04/15/2014** Seq No: **5597982**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	25.67	1.0	25.00		103	90	110				

Sample ID: **1404B85-004EMS** Client ID: **MWX3B** Units: **mg/L** Prep Date: Run No: **265688**
SampleType: **MS** TestCode: **ION SCAN SW9056A** BatchID: **R265688** Analysis Date: **04/15/2014** Seq No: **5597997**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	26.89	1.0	25.00	1.726	101	90	110				

Sample ID: **1404B85-004EMSD** Client ID: **MWX3B** Units: **mg/L** Prep Date: Run No: **265688**
SampleType: **MSD** TestCode: **ION SCAN SW9056A** BatchID: **R265688** Analysis Date: **04/15/2014** Seq No: **5597999**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	26.25	1.0	25.00	1.726	98.1	90	110	26.89	2.40	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B85

ANALYTICAL QC SUMMARY REPORT

BatchID: R265691

Sample ID: **LCS-R265691** Client ID: Units: **pH Units** Prep Date: Run No: **265691**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265691** Analysis Date: **04/16/2014** Seq No: **5598035**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.030	0.0100	7.000		100	90	110				

Sample ID: **1404B84-007DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **265691**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265691** Analysis Date: **04/16/2014** Seq No: **5598054**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.220	0.0100						6.210	0.161	20	H

Sample ID: **1404C23-002ADUP** Client ID: Units: **pH Units** Prep Date: Run No: **265691**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265691** Analysis Date: **04/16/2014** Seq No: **5598055**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.690	0.0100						7.680	0.130	20	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B85

ANALYTICAL QC SUMMARY REPORT

BatchID: **R265764**

Sample ID: **MB-R265764** Client ID: Units: **mg/L** Prep Date: Run No: **265764**
SampleType: **MBLK** TestCode: **Acidity by SM2310B** BatchID: **R265764** Analysis Date: **04/18/2014** Seq No: **5599875**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R265764** Client ID: Units: **mg/L** Prep Date: Run No: **265764**
SampleType: **LCS** TestCode: **Acidity by SM2310B** BatchID: **R265764** Analysis Date: **04/18/2014** Seq No: **5599876**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	96.90	10.0	100.0		96.9	80	120				

Sample ID: **1404B85-001BDUP** Client ID: **MWX15** Units: **mg/L** Prep Date: Run No: **265764**
SampleType: **DUP** TestCode: **Acidity by SM2310B** BatchID: **R265764** Analysis Date: **04/18/2014** Seq No: **5599884**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	170.8	10.0						170.8	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 20, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1405764

Analytical Environmental Services, Inc. received 5 samples on May 8, 2014 2:15 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

1405764 MJ 5/8/14

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: ~~1405765~~

Date: 5/8/14 Page 1 of 1

COMPANY: Earth Con

ADDRESS: 14405 Walters Rd Ste 700 Houston TX 77014

PHONE:

FAX:

SAMPLED BY: JB McKinney

SIGNATURE:

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	pH	Fe, Mn	SO4	TDS	REMARKS	No # of Containers
PRESERVATION (See codes)							I	I	I	N	I	I		
1	MW X14	5/7/14	1015	X		GW	X	X	X	X	X	X		6
2	MW X10	5/7/14	1130	X		GW	X	X	X	X	X	X		6
3	MW X3B	5/7/14	1425	X		GW	X	X	X	X	X	X		6
4	MW X1	5/7/14	1525	X		GW	X	X	X	X	X	X		6
5	MW X15	5/7/14	1620	X		GW	X	X	X	X	X	X		6
6														
7														
8														
9														
10														
11														
12														
13														
14														

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5/8/14 1000	1:	5/8/14 13:30
2:	5/8/14 1415	2:	5/8/14 2:15
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD

OUT / / VIA:

IN 5/8/14 VIA:

CLIENT FedEx UPS MAIL COURIER

GREYHOUND OTHER

PROJECT INFORMATION

PROJECT NAME:

PROJECT #: 02.20120195.00

SITE ADDRESS:

SEND REPORT TO: Bob Decker

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE #: PO#:

RECEIPT

Total # of Containers 30

Turnaround Time Request

- ☒ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):

E-mail? Y / N; Fax? Y / N

DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 20-May-14

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1405764

Case Narrative

pH Analysis by Method SM4500 H+ B:

Samples for pH analysis by Method SM4500 H+ B were received and analyzed outside of the holding time requirement of "immediate or 15 minutes".

The project name was reported as "Ridgeholm" per history.

Analytical Environmental Services, Inc

Date: 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX14
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 10:15:00 AM
Lab ID:	1405764-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Iron	791	100		ug/L	190919	1	05/14/2014 16:30	MR
Manganese	51.3	5.00		ug/L	190919	1	05/14/2014 16:30	MR
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	167	10		mg/L	191003	1	05/13/2014 10:00	OM
ION SCAN SW9056A								
Sulfate	2.5	1.0		mg/L	R267518	1	05/12/2014 09:46	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	7.02	0.0100	H	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	104	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	104	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX10
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 11:30:00 AM
Lab ID:	1405764-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	11000	100		ug/L	190919	1	05/14/2014 16:35	MR
Manganese	481	5.00		ug/L	190919	1	05/14/2014 16:35	MR
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	82	10		mg/L	191003	1	05/13/2014 10:00	OM
ION SCAN SW9056A								
Sulfate	3.6	1.0		mg/L	R267518	1	05/12/2014 10:01	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	5.78	0.0100	H	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	34.0	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	34.0	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX3B
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 2:25:00 PM
Lab ID:	1405764-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	5510	100		ug/L	190919	1	05/14/2014 16:41	MR
Manganese	121	5.00		ug/L	190919	1	05/14/2014 16:41	MR
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	64	10		mg/L	191003	1	05/13/2014 10:00	OM
ION SCAN SW9056A								
Sulfate	1.7	1.0		mg/L	R267518	1	05/12/2014 10:16	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	4.99	0.0100	H	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	3.00	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	3.00	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX1
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 3:25:00 PM
Lab ID:	1405764-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	16700	100		ug/L	190919	1	05/14/2014 16:46	MR
Manganese	705	5.00		ug/L	190919	1	05/14/2014 16:46	MR
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	112	10		mg/L	191003	1	05/13/2014 10:00	OM
ION SCAN SW9056A								
Sulfate	BRL	1.0		mg/L	R267518	1	05/12/2014 10:31	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	6.01	0.0100	H	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	25.0	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	25.0	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MWX15
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 4:20:00 PM
Lab ID:	1405764-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	4120	100		ug/L	190919	1	05/14/2014 16:51	MR
Manganese	181	5.00		ug/L	190919	1	05/14/2014 16:51	MR
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	97	10		mg/L	191003	1	05/13/2014 10:00	OM
ION SCAN SW9056A								
Sulfate	3.8	1.0		mg/L	R267518	1	05/12/2014 10:46	GR
Hydrogen Ion (pH) by SM4500 H+ B								
pH	6.27	0.0100	H	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B								
Alkalinity, M (pH 4.5) (CaCO3)	37.0	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	37.0	3.00		mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B								
Acidity	BRL	10.0		mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth Con Work Order Number 1405764

Checklist completed by [signature] 5/8/14
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __ tarsled

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.6 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MI

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1405764

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1405764-001A	MWX14	5/7/2014 10:15:00AM	Groundwater	Total Metals by ICP/MS		05/12/2014	05/14/2014
1405764-001B	MWX14	5/7/2014 10:15:00AM	Groundwater	Acidity by SM2310B			05/14/2014
1405764-001C	MWX14	5/7/2014 10:15:00AM	Groundwater	Alkalinity by SM2320B			05/16/2014
1405764-001D	MWX14	5/7/2014 10:15:00AM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405764-001E	MWX14	5/7/2014 10:15:00AM	Groundwater	ION SCAN			05/12/2014
1405764-001F	MWX14	5/7/2014 10:15:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405764-002A	MWX10	5/7/2014 11:30:00AM	Groundwater	Total Metals by ICP/MS		05/12/2014	05/14/2014
1405764-002B	MWX10	5/7/2014 11:30:00AM	Groundwater	Acidity by SM2310B			05/14/2014
1405764-002C	MWX10	5/7/2014 11:30:00AM	Groundwater	Alkalinity by SM2320B			05/16/2014
1405764-002D	MWX10	5/7/2014 11:30:00AM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405764-002E	MWX10	5/7/2014 11:30:00AM	Groundwater	ION SCAN			05/12/2014
1405764-002F	MWX10	5/7/2014 11:30:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405764-003A	MWX3B	5/7/2014 2:25:00PM	Groundwater	Total Metals by ICP/MS		05/12/2014	05/14/2014
1405764-003B	MWX3B	5/7/2014 2:25:00PM	Groundwater	Acidity by SM2310B			05/14/2014
1405764-003C	MWX3B	5/7/2014 2:25:00PM	Groundwater	Alkalinity by SM2320B			05/16/2014
1405764-003D	MWX3B	5/7/2014 2:25:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405764-003E	MWX3B	5/7/2014 2:25:00PM	Groundwater	ION SCAN			05/12/2014
1405764-003F	MWX3B	5/7/2014 2:25:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405764-004A	MWX1	5/7/2014 3:25:00PM	Groundwater	Total Metals by ICP/MS		05/12/2014	05/14/2014
1405764-004B	MWX1	5/7/2014 3:25:00PM	Groundwater	Acidity by SM2310B			05/14/2014
1405764-004C	MWX1	5/7/2014 3:25:00PM	Groundwater	Alkalinity by SM2320B			05/16/2014
1405764-004D	MWX1	5/7/2014 3:25:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405764-004E	MWX1	5/7/2014 3:25:00PM	Groundwater	ION SCAN			05/12/2014
1405764-004F	MWX1	5/7/2014 3:25:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405764-005A	MWX15	5/7/2014 4:20:00PM	Groundwater	Total Metals by ICP/MS		05/12/2014	05/14/2014
1405764-005B	MWX15	5/7/2014 4:20:00PM	Groundwater	Acidity by SM2310B			05/14/2014
1405764-005C	MWX15	5/7/2014 4:20:00PM	Groundwater	Alkalinity by SM2320B			05/16/2014
1405764-005D	MWX15	5/7/2014 4:20:00PM	Groundwater	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405764-005E	MWX15	5/7/2014 4:20:00PM	Groundwater	ION SCAN			05/12/2014

Analytical Environmental Services, Inc

Date: 19-May-14

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1405764

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1405764-005F	MWX15	5/7/2014 4:20:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405764

ANALYTICAL QC SUMMARY REPORT

BatchID: **190919**

Sample ID: **MB-190919** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267535**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **190919** Analysis Date: **05/13/2014** Seq No: **5641226**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **LCS-190919** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267535**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **190919** Analysis Date: **05/13/2014** Seq No: **5641225**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1010	100	1000		101	80	120				
Manganese	99.49	5.00	100.0		99.5	80	120				

Sample ID: **1405595-001AMS** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267535**
SampleType: **MS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **190919** Analysis Date: **05/13/2014** Seq No: **5641228**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1917	100	1000	984.8	93.3	75	125				
Manganese	232.1	5.00	100.0	132.8	99.2	75	125				

Sample ID: **1405595-001AMSD** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267535**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **190919** Analysis Date: **05/13/2014** Seq No: **5641229**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	2059	100	1000	984.8	107	75	125	1917	7.11	20	
Manganese	239.5	5.00	100.0	132.8	107	75	125	232.1	3.15	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405764

ANALYTICAL QC SUMMARY REPORT

BatchID: 191003

Sample ID: **MB-191003** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267624**
SampleType: **MBLK** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **191003** Analysis Date: **05/13/2014** Seq No: **5643175**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1405764-001FDUP** Client ID: **MWX14** Units: **mg/L** Prep Date: **05/13/2014** Run No: **267624**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **191003** Analysis Date: **05/13/2014** Seq No: **5643198**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	168.0	10						167.0	0.597	5	

Sample ID: **1405765-006FDUP** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267624**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **191003** Analysis Date: **05/13/2014** Seq No: **5643200**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	55.00	10						53.00	3.70	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405764

ANALYTICAL QC SUMMARY REPORT

BatchID: **R267290**

Sample ID: **LCS-R267290** Client ID: Units: **pH Units** Prep Date: Run No: **267290**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R267290** Analysis Date: **05/09/2014** Seq No: **5634951**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.030	0.0100	7.000		100	90	110				

Sample ID: **1405670-001DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **267290**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R267290** Analysis Date: **05/09/2014** Seq No: **5634980**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	11.62	0.0100						11.60	0.172	20	H

Sample ID: **1405765-005DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **267290**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R267290** Analysis Date: **05/09/2014** Seq No: **5634983**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.370	0.0100						6.320	0.788	20	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405764

ANALYTICAL QC SUMMARY REPORT

BatchID: **R267518**

Sample ID: **MB-R267518** Client ID: Units: **mg/L** Prep Date: Run No: **267518**
SampleType: **MBLK** TestCode: **ION SCAN SW9056A** BatchID: **R267518** Analysis Date: **05/12/2014** Seq No: **5640902**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.0									

Sample ID: **LCS-R267518** Client ID: Units: **mg/L** Prep Date: Run No: **267518**
SampleType: **LCS** TestCode: **ION SCAN SW9056A** BatchID: **R267518** Analysis Date: **05/12/2014** Seq No: **5640896**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	27.46	1.0	25.00		110	90	110				

Sample ID: **1405764-001EMS** Client ID: **MWX14** Units: **mg/L** Prep Date: Run No: **267518**
SampleType: **MS** TestCode: **ION SCAN SW9056A** BatchID: **R267518** Analysis Date: **05/12/2014** Seq No: **5640934**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	28.58	1.0	25.00	2.516	104	90	110				

Sample ID: **1405764-001EMSD** Client ID: **MWX14** Units: **mg/L** Prep Date: Run No: **267518**
SampleType: **MSD** TestCode: **ION SCAN SW9056A** BatchID: **R267518** Analysis Date: **05/12/2014** Seq No: **5640951**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	28.58	1.0	25.00	2.516	104	90	110	28.58	0.019	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405764

ANALYTICAL QC SUMMARY REPORT

BatchID: R267745

Sample ID: **MB-R267745** Client ID: Units: **mg/L** Prep Date: Run No: **267745**
SampleType: **MBLK** TestCode: **Acidity by SM2310B** BatchID: **R267745** Analysis Date: **05/14/2014** Seq No: **5645697**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R267745** Client ID: Units: **mg/L** Prep Date: Run No: **267745**
SampleType: **LCS** TestCode: **Acidity by SM2310B** BatchID: **R267745** Analysis Date: **05/14/2014** Seq No: **5645698**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	97.90	10.0	100.0		97.9	80	120				

Sample ID: **1405764-001BDUP** Client ID: **MWX14** Units: **mg/L** Prep Date: Run No: **267745**
SampleType: **DUP** TestCode: **Acidity by SM2310B** BatchID: **R267745** Analysis Date: **05/14/2014** Seq No: **5645711**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 19-May-14

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405764

ANALYTICAL QC SUMMARY REPORT

BatchID: R267769

Sample ID: **MB-R267769** Client ID: Units: **mg/L** Prep Date: Run No: **267769**
SampleType: **MBLK** TestCode: **Alkalinity by SM2320B** BatchID: **R267769** Analysis Date: **05/16/2014** Seq No: **5646109**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	3.00									

Sample ID: **LCS-R267769** Client ID: Units: **mg/L** Prep Date: Run No: **267769**
SampleType: **LCS** TestCode: **Alkalinity by SM2320B** BatchID: **R267769** Analysis Date: **05/16/2014** Seq No: **5646110**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	123.0	3.00	125.0	1.000	97.6	75	125				

Sample ID: **1405764-001CDUP** Client ID: **MWX14** Units: **mg/L** Prep Date: Run No: **267769**
SampleType: **DUP** TestCode: **Alkalinity by SM2320B** BatchID: **R267769** Analysis Date: **05/16/2014** Seq No: **5646116**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, M (pH 4.5) (CaCO3)	103.0	3.00						104.0	0.966	30	
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00						0	0	30	
Alkalinity, Total (As CaCO3)	103.0	3.00						104.0	0.966	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

GROUNDWATER FIELD SAMPLING RECORDS

EARTHCON®

Groundwater Sampling Record

WELL No. MWX1	PROJECT # 02.020120195.0	LOCATION DeKalb Co., AL	DATE 4/20/13
SAMPLE No. MWX1	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY J. McKinney, EarthCon	
SAMPLE TIME: 1140	SITE	FIELD CONDITIONS/WEATHER Clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 69.45
Depth of Well (feet): 106.45
Water Column (feet): 37
Casing Volume (gallons/liters): 6.0
Calculated Purge Volume (gallons/liters): 18
Actual Purge Volume (gallons/liters): 19

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: No thickness: ____
DNAPL present: No thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1036	0						PURGE START
1045	4	15.72	6.47	0.071	1020		
1055	7	15.80	6.50	0.072	200	69.85	
1110	13.0	15.94	6.39	0.072	140		
1118	15	16.31	6.40	0.073	131		
1140	19	16.53	6.09	0.076	186	69.48	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
Water Quality	YSI	6920/650	4/20/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX1	Total Fe, Mn	250 ml plastic/HNO3	
MWX1	pH	250 ml plastic/Ice	
MWX1	TDS	500 ml plastic/Ice	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX3B	PROJECT # 02.020120195.0	LOCATION DeKalb Co., AL	DATE 4/20/13
SAMPLE No. MWX3B	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY J. McKinney, EarthCon	
SAMPLE TIME: 1310	SITE	FIELD CONDITIONS/WEATHER clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: (good) fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) (2") 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 31.75
Depth of Well (feet): 49.75
Water Column (feet): 18.0
Casing Volume (gallons/liters): 2.9
Calculated Purge Volume (gallons/liters): 9
Actual Purge Volume (gallons/liters): 13

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: NO thickness: ____
DNAPL present: NO thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate (fast) Bailed dry: yes (no)

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1207	0						PURGE START
1222	4	15.43	5.30	0.023	1017		
1232	6	16.70	5.08	0.023	1026		
1252	10	17.62	5.20	0.024	1033		
1310	13	18.17	5.28	0.026	650	32.35	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
Water Quality	YSI	6920 / 650	4/20/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX3B	Total Fe, Mn	250 ml plastic/HNO3	
MWX3B	pH	250 ml plastic/Ice	
MWX3B	TDS	500 ml plastic/Ice	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX9R2	PROJECT # 02.020120195.0	LOCATION DeKalb Co., AL	DATE 4/20/13
SAMPLE No. MWX9R2	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY J. McKinney, EarthCon	
SAMPLE TIME: 1747	SITE	FIELD CONDITIONS/WEATHER clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 46.70
Depth of Well (feet): ~~75~~ 77.80
Water Column (feet): 31.1
Casing Volume (gallons/liters): 5.1
Calculated Purge Volume (gallons/liters): 15.2
Actual Purge Volume (gallons/liters): 15

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: No thickness: ____
DNAPL present: No thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1708	0						PURGE START
1722	5	15.47	6.44	0.189	16.6		
1733	10	15.18	6.35	0.174	22.2		
1747	15	15.06	6.35	0.159	23.5	56.40	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
WaterQual	YSI	6920/650	4/20/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX9R2	Total Fe, Mn	250 ml plastic/HNO3	
MWX9R2	pH	250 ml plastic/Ice	
MWX9R2	TDS	500 ml plastic/Ice	

EARTHCON®

Groundwater Sampling Record

WELL No. MW X10	PROJECT # 02.020120195.0	LOCATION DeKalb Co., AL	DATE 4/20/13
SAMPLE No. MW X10	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY J. McKinney, EarthCon	
SAMPLE TIME: 1820	SITE	FIELD CONDITIONS/WEATHER Clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 37.05 (not equilibrated)
Depth of Well (feet): assume 29.9 58.75
Water Column (feet): 29
Casing Volume (gallons/liters): 4.7
Calculated Purge Volume (gallons/liters): 14.2
Actual Purge Volume (gallons/liters):

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: No thickness:
DNAPL present: No thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1337	0						PURGE START
1347	4	15.44	6.43	0.307	97		
1400	7						DRY
1410						55.75	
1820							Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
Water Quality	YSI	6920/650	4/20/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X10	Total Fe, Mn	250 ml plastic/HNO3	
MW X10	pH	250 ml plastic/Ice	
MW X10	TDS	500 ml plastic/Ice	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX14	PROJECT # 02.020120195.0	LOCATION DeKalb Co., AL	DATE 4/26/13
SAMPLE No. MWX14	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY J. McKinney, EarthCon	
SAMPLE TIME: 1645	SITE	FIELD CONDITIONS/WEATHER clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter:
(circle one)
2" 4"
6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 36.42
Depth of Well (feet): 97.35
Water Column (feet): 60.93
Casing Volume (gallons/liters): 10
Calculated Purge Volume (gallons/liters): 30
Actual Purge Volume (gallons/liters): 30

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: NO thickness: ____
DNAPL present: NO thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1542	0						PURGE START
1600	10	16.06	6.72	0.184	1.2		
1618	20	16.08	6.80	0.183	2.3		
1645	30	15.94	6.83	0.185	30.6	42.80	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
Water Qual	YSI	6920/650	4/20/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX14	Total Fe, Mn	250 ml plastic/HNO3	
MWX14	pH	250 ml plastic/Ice	
MWX14	TDS	500 ml plastic/Ice	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX15	PROJECT # 02.020120195.0	LOCATION DeKalb Co., AL	DATE 4/20/13
SAMPLE No. MWX15	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY J. McKinney, EarthCon	
SAMPLE TIME: 1515	SITE	FIELD CONDITIONS/WEATHER clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 33.97
Depth of Well (feet): 93.10
Water Column (feet): 59.13
Casing Volume (gallons/liters): 9.6
Calculated Purge Volume (gallons/liters): 28.9
Actual Purge Volume (gallons/liters): 35

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: NO thickness: ____
DNAPL present: NO thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1440	0						PURGE START
1511	30	15.30	6.44	0.093	1.3		
1515	35	15.30	6.32	0.093	1.4	33.98	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
Water Quality	YSI	6920/650	4/20/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX15	Total Fe, Mn	250 ml plastic/HNO3	
MWX15	pH	250 ml plastic/Ice	
MWX15	TDS	500 ml plastic/Ice	

EARTHCON®

Groundwater Sampling Record

WELL No. mwx1	PROJECT #	LOCATION DeKalb County, AL	DATE 7/23/13
SAMPLE No. mwx1	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1620	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter:
(circle one)
2" 4"
6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 71.35
Depth of Well (feet): 106.45
Water Column (feet): 35.1
Casing Volume (gallons/liters): 5.7
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 8.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1545	0						PURGE START
1610	6.0	16.01	6.28	0.084	0		
1615	7.0	16.12	6.17	0.083	0		
1620	8.0	16.03	6.16	0.083	0		

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI 650			7/23/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
mwx1	metals	250ml pl., HNO_3	
mwx1	pH, acidity, ~~[illegible]~~	250 ml pl, none	
mwx1	TDS, SO_4, Alk	500 ml pl, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MW X3B	PROJECT #	LOCATION DeKalb County, AL	DATE 7/23/13
SAMPLE No. MW X3B	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1700	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 28.80
Depth of Well (feet): 49.70
Water Column (feet): 20.9
Casing Volume (gallons/liters): 3.4
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 10.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1650	6.0	15.23	5.57	0.032	65		
	8.0	15.15	5.45	0.031	72		
	10.0	14.88	5.43	0.032	58		
1700					sample		

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI 650			7/23/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X3B	metals	250 ml pl, HNO3	relatively unturbid
MW X3B	pH, acidity	250 ml pl, none	TURBID
MW X3B	TDS, SO4, Alk	500 ml pl, none	TURBID

EARTHCON®

Groundwater Sampling Record

WELL No. MW X 9R	PROJECT #	LOCATION DeKalb County, AL	DATE 7/23/13
SAMPLE No. MW X9R	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1535	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 41.50
Depth of Well (feet): 77.90
Water Column (feet): 36.4
Casing Volume (gallons/liters): 6.0
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 8.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1500	0						PURGE START
1525	6.0	15.96	6.45	0.173	3.0		
1530	7.0	16.01	6.21	0.164	0		
1535	8.0	15.83	6.17	0.160	0		

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI 650			7/23/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
~~metals~~ MW X9R	metals	250 ml pl, HNO_3	
MW X9R	pH, conductivity	250 ml pl, none	
MW X9R	TDS, SO_4, Alk	500 ml pl, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MW X10	PROJECT #	LOCATION DeKalb County, AL	DATE
SAMPLE No. MW X10	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1720	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter:
(circle one)
2" 4"
6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 37.35
Depth of Well (feet): 58.75
Water Column (feet): 21.40
Casing Volume (gallons/liters): 3.5
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 5

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1500	5	14.94	6.37	0.181	124		dry

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI 650			7/23/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X10	metals	250ml plastic (HNO3)	relatively unturbid
MW X10	pH, acidity	250ml pl, none	" "
MW X10	~~SO4, alk~~ TDS, Alk SO4	500ml pl, none	TURBID

EARTHCON®

Groundwater Sampling Record

WELL No. MWX14	PROJECT #	LOCATION DeKalb County, AL	DATE 7/23/13
SAMPLE No. MWX14	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1145	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 39.37'
Depth of Well (feet): 97.30'
Water Column (feet): 57.93
Casing Volume (gallons/liters): 9.4
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 12.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1130	10.0	16.06	7.35	0.188	14.0		
1135	11.0	16.13	7.04	0.186	6.9		
1140	12.0	16.05	7.00	0.184	4.4		
1145							Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI 650			7/23/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX14	metals	250 ml pl, HNO_3	
MWX14	pH, acidity	250 ml pl, none	
MWX14	TDS, SO_4, Alk	500 ml pl, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX15	PROJECT #	LOCATION DeKalb County, AL	DATE 7/23/13
SAMPLE No. MWX15	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 0905	SITE	FIELD CONDITIONS/WEATHER cloudy, sprinkle/showers	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 34.8
Depth of Well (feet): 93.75
Water Column (feet): 58.95
Casing Volume (gallons/liters): 9.6
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): 12.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate (fast) Bailed dry: yes (no)

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
0851	10.00	15.58	8.20	0.065	0		
0855	11.0	15.16	7.10	0.101	0		
0900	12.0	15.01	6.72	0.103	0		
0905							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI 650			7/23/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX15	total metals	250 ml plastic/HNO3	
MWX15	pH, acidity	250 ml plast/none	
MWX15	TDS, SO4, Alkalinity	500 ml plast/none	

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: _____

Date: 7/23/13 Page 1 of 1

COMPANY: Earthcon
ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014
PHONE: 281-240-5200
FAX:
SAMPLED BY: J McKinney
SIGNATURE:

ANALYSIS REQUESTED: BOD, pH, acidity, Total Al, Fe, Mn, TDS, alkalinity, TSS

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	BOD	pH, acidity	Total Al, Fe, Mn	TDS, alkalinity	TSS	REMARKS	No # of Containers
							PRESERVATION (See codes)	I	I	N	I	I	
1	SW006	7/23/13	1030	X		SW	X	X	X	X	X		5
2	SW005	7/23/13	1205	X		SW	X	X	X	X	X		5
3	SW004	7/23/13	1320	X		SW	X	X	X	X	X		5
4	SW003	7/23/13	1410	X		SW	X	X	X	X	X		5
5	SW002	7/23/13	1430	X		SW	X	X	X	X	X		5
6	SW001	7/23/13	1445	X		SW	X	X	X	X	X		5
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	7/24/13 1100	1: [signature]	7/24/13 11:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA
IN 7/24/13 VIA
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02-2012-0195.08
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO (IF DIFFERENT FROM ABOVE):
QUOTE #: _____ PO#: _____

RECEIPT
Total # of Containers: 30

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any)
E-mail? Y / N, Fax? Y / N
DATA PACKAGE I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

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ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: _____

Date: 7/24/13 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Westheimer Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: BOD, phenolics, pH, acidity, cyanide, TDS, alkalinity, TSS, metals

PRESERVATION (See codes): H, S+I, I, O, I, I, N

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	BOD	phenolics	pH, acidity	cyanide	TDS, alkalinity	TSS	metals	REMARKS	No # of Containers
1	SW001P	7/23/13	1000	X		SW	X	X	X	X	X	X	X		7
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1	7/24/13 1100	1	7/24/13
2		2	1120
3		3	

SPECIAL INSTRUCTIONS/COMMENTS

SHIPMENT METHOD
OUT / / VIA
IN 7/24/13 VIA
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO (IF DIFFERENT FROM ABOVE):
QUOTE #:_____ PO#_____

RECEIPT
Total # of Containers: 7

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N, Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air, GW = Groundwater, SE = Sediment, SO = Soil, SW = Surface Water, W = Water (Blanks), DW = Drinking Water (Blanks), O = Other (specify), WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice, I = Ice only, N = Nitric acid, S+I = Sulfuric acid + ice, S/M+I = Sodium Bisulfate/Methanol + ice, O = Other (specify), NA = None

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ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: _____

Date: 7/23/13 Page 1 of 1

COMPANY: Enthicom
ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014
PHONE: 281-240-5200
FAX:
SAMPLED BY: J Hickmary
SIGNATURE:

ANALYSIS REQUESTED: Total Fe, Mn; pH, acidity; TDS, SO4, Alkalinity

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Total Fe, Mn	pH, acidity	TDS, SO4, Alkalinity	REMARKS	No # of Containers
							PRESERVATION (See codes) N	I	I		
1	MWX15	7/23/13	0905	X		GW	X	X	X		3
2	MWX14	7/23/13	1145	X		GW	X	X	X		3
3	MWX9R	7/23/13	1535	X		GW	X	X	X		3
4	MWX1	7/23/13	1620	X		GW	X	X	X		3
5	MWX3B	7/23/13	1700	X		GW	X	X	X		3
6	MWX10	7/23/13	1720	X		GW	X	X	X		3
7											
8											
9											
10											
11											
12											
13											
14											

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1 [signature]	7/24/13 1100	1 [signature]	7/24/13 11:00
2		2	
3		3	

SPECIAL INSTRUCTIONS/COMMENTS

SHIPMENT METHOD
OUT / / VIA
IN 7/24/13 VIA
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO (IF DIFFERENT FROM ABOVE):
QUOTE # _____ PO# _____

RECEIPT
Total # of Containers: 18

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any) _____
E-mail? Y / N, Fax? Y / N
DATA PACKAGE I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

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EARTHCON®

Groundwater Sampling Record

WELL No. MWX1	PROJECT #	LOCATION DeKalb County, AL	DATE 11/14/13
SAMPLE No. MWX1	PROJECT NAME Bidgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 0910	SITE Poe Mine	FIELD CONDITIONS/WEATHER clear, mild	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 74.18
Depth of Well (feet): 106.45
Water Column (feet): 32.27
Casing Volume (gallons/liters): 5.3
Calculated Purge Volume (gallons/liters): 5.5 / 16.5
Actual Purge Volume (gallons/liters): 10.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
0815	0						PURGE START
0830	2.5	15.34	6.49	81	220	74.32	
0845	5.0	15.42	6.35	77	90	74.41	
0905	9.0	15.48	6.26	77	48	74.95	
0910	10.0	15.49	6.30	78	9	74.72	sample
0910	sample						

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
	YSI	6920	11/14/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX1	Al, Fe, Mn	250ml pla, HNO_3	
MWX1	pH, Acidity, Alkalinity	3x250ml pla, none	
MWX1	sulfate, TDS	2x500ml pla, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX3B	PROJECT #	LOCATION DeKalb County, AL	DATE 11/14/13
SAMPLE No. MWX3B	PROJECT NAME Bidgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1000	SITE Pell Mine	FIELD CONDITIONS/WEATHER Clear, mild	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 31.18
Depth of Well (feet): 49.80
Water Column (feet): 18.62
Casing Volume (gallons/liters): 3.0
Calculated Purge Volume (gallons/liters): 3.19
Actual Purge Volume (gallons/liters): 10.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
0915	0						PURGE START
0925	3.0	15.01	6.10	28	350	31.30	turbid
0940	6.0	15.71	6.17	28	287	31.62	turbid
0955	9.0	15.69	6.19	32	192	32.11	turbid
1000	10.0	15.70	6.19	31	78	32.08	sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
	YSI	6920	11/14/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX3B	Al, Fe, Mn	250 ml pla, HNO_3	
MWX3B	pH, Acidity, Alkalinity	3x250ml pla, none	
MWX3B	sulfate, TDS	2x500ml pla, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX9R	PROJECT #	LOCATION DeKalb County, AL	DATE 11/14/13
SAMPLE No. MWX9R	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1100	SITE Poe Mine	FIELD CONDITIONS/WEATHER Clear, mild	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1 47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 45.37
Depth of Well (feet): 77.90
Water Column (feet): 32.53
Casing Volume (gallons/liters): 5.3
Calculated Purge Volume (gallons/liters): 5.5 / 16.5
Actual Purge Volume (gallons/liters): 6.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1020	0						PURGE START
1035	2.5	16.07	6.14	121	34	45.41	
1040	3.5	15.96	5.96	152	24	45.43	
1050	5.5	15.92	5.94	157	18	45.52	
1100	6.0	15.92	5.94	156	7	45.62	Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
	YSI	6920	11/14/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX9R	Al, Fe, Mn	250 ml pls, HNO3	
MWX9R	pH, Acidity, Alkalinity	3x 250 ml pls, none	
MWX9R	Sulfate, TDS	2x500 ml pls, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MW X10	PROJECT #	LOCATION DeKalb County, AL	DATE 11/13 - 11/14
SAMPLE No. MW X10	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1120 11/14	SITE PGP Mine	FIELD CONDITIONS/WEATHER clear, cold	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 39.50
Depth of Well (feet): 58.35
Water Column (feet): 18.85
Casing Volume (gallons/liters): 3.1
Calculated Purge Volume (gallons/liters): 3/9
Actual Purge Volume (gallons/liters): 5.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1615	4.5	15.12	6.17	312	841	39.40	dry
1120	5.0	15.09	6.02	312	500	—	sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
	YSI	6920	11/13 & 11/14/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X10	Al, Fe, Mn	250ml pla, HNO3	
MW X10	pH, Acidity, Alkalinity	3x250ml pla, none	
MW X10	sulfate, TDS	2x500ml pla, none	

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Groundwater Sampling Record

WELL No. MW X14	PROJECT #	LOCATION DeKalb County, AL	DATE 11/13/13
SAMPLE No. MWX14	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1500	SITE Pge Mere	FIELD CONDITIONS/WEATHER Clear, cold	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet):	40.30	Measuring Point Elevation (feet):	
Depth of Well (feet):	97.25	Groundwater Surface Elevation:	
Water Column (feet):	56.95	LNAPL present:	thickness:
Casing Volume (gallons/liters):	9.3	DNAPL present:	thickness:
Calculated Purge Volume (gallons/liters):	9.5 / 28.5	Remarks:	
Actual Purge Volume (gallons/liters):	10.0		

Well Evacuation

Water level recovery is: very slow slow moderate fast Bailed dry: yes no

47.28

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1415	0						PURGE START
1430	3.0	15.46	7.31	174	2.5	40.47	
1445	6.0	15.44	7.25	174	3.4	40.55	
1500	9.0	15.47	7.20	174	0.5	41.09	
1500	10	15.49 sample	7.22	174	0.5	41.02	sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
	YSI	6920	11/13/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X14	Al, Fe, Mn	250ml pla, HNO_3	
MWX14	pH, Acidity, Alkalinity	3x250ml pla, none	
MWX14	Sulfate, TDS	2x500ml pla, none	

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Groundwater Sampling Record

WELL No. MWX15	PROJECT #	LOCATION DeKalb County, AL	DATE 11/13/13
SAMPLE No. MWX15	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1100	SITE Poe Mine	FIELD CONDITIONS/WEATHER Clear, cold	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 36.07'
Depth of Well (feet): ~~96.72'~~ 93.72'
Water Column (feet): 57.65'
Casing Volume (gallons/liters): 9.4
Calculated Purge Volume (gallons/liters): 9.5 / 28.5
Actual Purge Volume (gallons/liters): 10.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation

Water level recovery is: very slow slow moderate fast

Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1000	0						PURGE START
1015	3.0	14.96	6.54	84	5.2	36.09	
1030	6.0	14.82	6.69	91	1.5	36.10	
1045	9.0	14.89	6.64	92	2.4	36.10	
1100	Sample	14.89	6.64	93	3.7	36.09	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
YSI	YSI	6920	11/13/13

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX15	Al, Fe, Mn	PL 250ml, HNO_3	
MWX15	pH, Acidity, Alkalinity	3X 250ml pla, none	
MWX15	sulfate, TDS	2X 500ml pl, none	

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Groundwater Sampling Record

WELL No. MWX1	PROJECT #	LOCATION DeKalb County, AL	DATE 2/4/14
SAMPLE No. MWX1	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1600	SITE Poe Mine	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 69.66
Depth of Well (feet): 106.45
Water Column (feet): 36.85
Casing Volume (gallons/liters): 6.0
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): ____

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1515	0						PURGE START
1530	3	13.98	6.11	159	364	69.72	
1545	6	13.99	6.15	139	4.7	69.74	
1600	9	13.99	6.18	132	5.1	69.67	
1600							Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
U53	Horiba		2/4/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX1	Fe, Mn	250 ml plastic HNO3	
MWX1	pH, Acidity, Alkalinity	3x250 ml plastic, none	
MWX1	Sulfate, TDS	2x500 ml plastic, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MW X3B	PROJECT #	LOCATION DeKalb County, AL	DATE 2/4/14
SAMPLE No. MW X3B	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1245	SITE Poe Mine	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter:
(circle one)
2" 4"
6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 24.69
Depth of Well (feet): 48.70
Water Column (feet): 24.01
Casing Volume (gallons/liters): 3.9
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): ____

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1205	0						PURGE START
1215	4	12.21	5.13	37	171	24.81	
1230	8	12.12	5.20	42	87	24.89	
1245	12	12.05	5.22	45	18	25.09	
1245							Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
U53	Horiba		2/4/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X3B	Fe, Mn	250 ml plastic HNO_3	
MW X3B	Acidity, Alkalinity, pH	3x250 ml pla, none	
MW X3B	Sulfate, TDS	2x500 ml pla, none	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX9R	PROJECT #	LOCATION DeKalb County, AL	DATE 2/4/14
SAMPLE No. MWX9R	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1500	SITE Poe Mine	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 34.20
Depth of Well (feet): 77.90
Water Column (feet): 43.70
Casing Volume (gallons/liters): 7.1
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): ____

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1430	0						PURGE START
1440	3	12.79	5.76	201	151	34.33	
1450	6	13.56	5.83	184	147	34.41	
1500	9	14.02	5.81	175	13	34.50	
1500							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
U53	Horiba		2/4/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX9R	Fe, Mn	250ml pla., HNO3	
MWX9R	Acidity, Alkalinity, pH	3x250ml pla., none	
MWX9R	Sulfate, TDS	2x500ml pla., none	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX10	PROJECT #	LOCATION DeKalb County, AL	DATE 2/4/14
SAMPLE No. MWX10	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1115	SITE Poe Mine	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 35.70
Depth of Well (feet): 58.68
Water Column (feet): 22.98
Casing Volume (gallons/liters): 3.7
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): ____

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1020	0						PURGE START
1035	4	12.38	6.62	239	>scale	37.32	very turbid
1050	8	13.71	6.41	209	>scale	39.18	"
1105	12	13.13	6.46	173	>scale	40.77	"
1115							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
453	Horiba		2/4/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX10	Fe, Mn	250 ml pla., HNO_3	
MWX10	Acidity, Alkalinity pH	2x250 ml pla., none	
MWX10	sulfate, TDS	2x500 ml pla., none	

EARTHCON®

Groundwater Sampling Record

WELL No. MW-14	PROJECT #	LOCATION DeKalb County, AL	DATE 2/4/14
SAMPLE No. MW-14	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 0945	SITE Poe Mine	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 36.42
Depth of Well (feet): 97.15
Water Column (feet): 60.73
Casing Volume (gallons/liters): 9.9
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): ____

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
900	0						PURGE START
915	3	12.27	6.64	303	6.78	36.46	
930	6	13.92	7.01	295	4.07	36.48	
0945	10	13.99	7.03	296	9.10	36.48	
0945							Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
U53	Horiba		2/4/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW-14	Fe, Mn	250 mL pla., HNO3	
MW-14	Acidity, Alkalinity, pH	3x250 ml pla., none	
MW-14	sulfate, TDS	2x500 ml pla., none	

EARTHCON®

Groundwater Sampling Record

WELL No. mwX15	PROJECT #	LOCATION DeKalb County, AL	DATE 2/4/14
SAMPLE No. mwX15	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 0830	SITE Poe Mine	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter:
(circle one)
2" 4"
6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 33.81
Depth of Well (feet): 93.70
Water Column (feet): 59.89
Casing Volume (gallons/liters): 9.76
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): ____

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
0745	0						PURGE START
0800	3	11.37	6.33	154	9.79	33.94	
0815	6	12.90	6.39	158	9.79	34.00	
0830	10	13.14	6.41	159	3.92	34.02	
0830							Sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
U 53	Horiba		2/4/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
mwX15	Fe, Mn	250 ml pla., HNO_3	
mwX15	Acidity, Alkalinity, pH	3x250ml pla., none	
mwX15	Sulfate, TDS	2x500ml pla., none	

EARTHCON®

Groundwater Sampling Record

WELL No. MWX1	PROJECT # 02.20120195.00	LOCATION DeKalb County, AL	DATE 3/12/14
SAMPLE No. MWX1	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1730	SITE Poe mine	FIELD CONDITIONS/WEATHER windy, cold	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 68.89
Depth of Well (feet): 106.45
Water Column (feet): 37.56
Casing Volume (gallons/liters): 6.1
Calculated Purge Volume (gallons/liters): 6.1
Actual Purge Volume (gallons/liters): 9.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1645	0						
1700	3.0	14.62	6.03	84	227	68.92	PURGE START
1715	6.0	14.84	6.17	92	194	68.94	
1730	9.0	14.93	6.21	94	87	68.94	
1730	~~1730~~						sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	3/12/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX1	acidity, alkalinity pH	3x250 mL plast.	unpreserved
MWX1	Fe, Mn	1x250 mL plast	HNO_3
MWX1	SO_4, TDS	2x500 mL plast.	unpreserved

EARTHCON®

Groundwater Sampling Record

WELL No. MWX3B	PROJECT # 02-20120195.00	LOCATION DeKalb County, AL	DATE 3/12/14
SAMPLE No. MWX3B	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1620	SITE Poe Mine	FIELD CONDITIONS/WEATHER cloudy, windy, cold	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 25.52
Depth of Well (feet): 48.68
Water Column (feet): 23.16
Casing Volume (gallons/liters): 3.8
Calculated Purge Volume (gallons/liters): 12.0
Actual Purge Volume (gallons/liters): 12.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1550	0						PURGE START
1600	4.0	12.35	5.04	23	214	25.82	
1610	8.0	13.11	4.44	23	>1000	25.91	
1620	12.0	13.39	4.92	22	31	25.93	
1620							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	3/12/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX3B	Acidity, Alkalinity pH	3x250 ml plastic	unpreserved
MWX3B	Fe, Mn	1x250 ml plastic	HNO3
MWX3B	SO4, TDS	2x500 ml plast.	unpreserved

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Groundwater Sampling Record

WELL No. MWX9R	PROJECT # 02.20.20195.00	LOCATION DeKalb County, AL	DATE 3/12/14
SAMPLE No.	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME:	SITE Poe mine	FIELD CONDITIONS/WEATHER windy, cold	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): no access
Depth of Well (feet):
Water Column (feet):
Casing Volume (gallons/liters):
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters):

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
	could not access well						

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS

EARTHCON®

Groundwater Sampling Record

WELL No. MWX10	PROJECT # 02.20120195.00	LOCATION DeKalb County, AL	DATE 3/12/14
SAMPLE No. MWX10	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1330	SITE Doe Mine	FIELD CONDITIONS/WEATHER Cloudy, windy	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 35.15
Depth of Well (feet): 57.87 57.87
Water Column (feet): 22.72
Casing Volume (gallons/liters): 3.7
Calculated Purge Volume (gallons/liters): 4.0
Actual Purge Volume (gallons/liters): 12

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1240	0						PURGE START
1250	4.0	15.11	6.54	113	>Range	35.47	V. turbid
1310	8.0	15.22	6.16	65	>range	35.98	turbid
1325	12.0	15.26	6.03	71	>range	36.42	turbid
1330							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	3/12/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX10	Acidity, Alkalinity, pH	3X250mL plastic	unpreserved
MWX10	Fe, Mn	1X250mL plastic	HNO_3
MWX10	SO_4, TDS	2X500mL plastic	unpreserved

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Groundwater Sampling Record

WELL No. MWX14	PROJECT # 02.20120195.00	LOCATION DeKalb County, AL	DATE 3/12/14
SAMPLE No. MWX14	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1200	SITE Poe Mere	FIELD CONDITIONS/WEATHER cloudy, windy	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter:
(circle one)
2" 4"
6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 36.54
Depth of Well (feet): 97.20
Water Column (feet): 60.66
Casing Volume (gallons/liters): 9.9
Calculated Purge Volume (gallons/liters): 10
Actual Purge Volume (gallons/liters): 12

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1115	0						PURGE START
1130	4.0	16.72	6.90	198	84.4	37.01	
1145	8.0	16.53	7.03	204	14.1	37.62	
1200	12.0	16.33	7.11	202	4.66	37.94	
1200							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	3/12/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX14	Alkalinity, Acidity, pH	3X 250ml plastic	unpreserved
MWX14	Fe, Mn	1X 250ml plastic	HNO_3
MWX14	SO4, TDS	2X 500ml plastic	none

EARTHCON®

Groundwater Sampling Record

WELL No. MWX15	PROJECT # Ridgeholm	LOCATION DeKalb County, AL	DATE 3/12/14
SAMPLE No. MWX15	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1045	SITE Pee mine	FIELD CONDITIONS/WEATHER Cloudy	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 34.16
Depth of Well (feet): 93.60
Water Column (feet): 59.44
Casing Volume (gallons/liters): 9.7
Calculated Purge Volume (gallons/liters): 10
Actual Purge Volume (gallons/liters): 12

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
1000	0						PURGE START
1015	4.0	16.04	5.88	49	51	34.18	
1030	8.0	15.98	6.01	~~[illegible]~~.67	20.8	34.19	
1045	12.0	15.88	6.28	98	8.92	34.19	
1045							sample

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	3/12/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX15	alkalinity, Acidity, pH	3X250mL plastic	unpreserved
MWX15	Fe, Mn	1X250mL plastic	HNO3
MWX15	SO4, TDS	2X500mL plastic	unpreserved

EARTHCON®

Groundwater Sampling Record

WELL No. MWX1	PROJECT # 02.20120195	LOCATION DeKalb County, AL	DATE 4/9/14
SAMPLE No. MWX1	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1535	SITE	FIELD CONDITIONS/WEATHER clear, warm	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 69.40
Depth of Well (feet): 106.45
Water Column (feet): 37.05
Casing Volume (gallons/liters): 6.0
Calculated Purge Volume (gallons/liters): 6.0
Actual Purge Volume (gallons/liters): 12.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1505	4	15.99	6.16	120	495	69.40	
1520	8	16.00	6.25	120	470	69.41	
1535	12	16.32	6.37	121	345	69.41	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	4/9/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX1	Acidity, Alkalinity, pH	3X250 ml plast.	unpreserved
MWX1	Fe, Mn	1X250ml plast,	HNO3
MWX1	SO4, TDS	2X500 ml plast.,	unpreserved

EARTHCON®

Groundwater Sampling Record

WELL No MWX3B	PROJECT # 02.20120195	LOCATION DeKalb County, AL	DATE 4/9/14
SAMPLE No. MWX3B	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1445	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 24.22
Depth of Well (feet): 48.64
Water Column (feet): 24.42
Casing Volume (gallons/liters): 3.9
Calculated Purge Volume (gallons/liters): 12.0
Actual Purge Volume (gallons/liters): 12.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1425	4	14.00	5.11	24	601	24.72	
1435	8	13.94	5.13	24	718	24.91	
1445	12	13.93	5.14	24	427	25.03	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	4/9/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX3B	Acidity, Alkalinity, pH	3X250 ml plast	unpreserved
MWX3B	Fe, Mn	1X250 ml plast	HNO3
MWX3B	SO4, TDS	2X500 ml plast	unpreserved

EARTHCON®

Groundwater Sampling Record

WELL No. MW X9R	PROJECT # 02.20120195	LOCATION DeKalb County, AL	DATE
SAMPLE No. MW X9R	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1710	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 37.25
Depth of Well (feet): 77.87
Water Column (feet): 40.62
Casing Volume (gallons/liters): 6.6
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): 14.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1640	5	15.32	5.93	242	187	37.40	
1655	10	15.41	5.96	214	72	37.45	
1710	14	15.47	5.97	219	31	37.52	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	4/9/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MW X9R	Acidity, Alkalinity, pH	3 X 250 ml plast	unpreserved
MW X9R	Fe, Mn	1 X 250 ml plast	HNO3
MW X9R	SO4, TDS	2 X 500 ml plast	unpreserved

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Groundwater Sampling Record

WELL No. MWX10	PROJECT # 02-20120195	LOCATION DeKalb County, AL	DATE 4/9/14
SAMPLE No. MWX10	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1215	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 35.18
Depth of Well (feet): 57.84
Water Column (feet): 22.69
Casing Volume (gallons/liters): 3.7
Calculated Purge Volume (gallons/liters): ____
Actual Purge Volume (gallons/liters): 12.0

Measuring Point Elevation (feet): ____
Groundwater Surface Elevation: ____
LNAPL present: ____ thickness: ____
DNAPL present: ____ thickness: ____
Remarks: ____

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1155	4	15.13	6.65	129	>scale	35.69	
1205	8	15.06	6.49	108	516	36.11	
1215	12	15.02	6.47	101	232	36.12	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	4/9/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX10	Acidity, Alkalinity, pH	3X250 ml plast	unpreserved
MWX10	Fe, Mn	1X250 ml plast	HNO3
MWX10	SO4, TDS	2X500 ml plast	unpreserved

EARTHCON®

Groundwater Sampling Record

WELL No. MWX14	PROJECT # 02 2012 0195	LOCATION DeKalb County, AL	DATE 4/9/14
SAMPLE No. MWX14	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1115	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover: locked not locked
number: legible not legible
outer casing: good fair poor
inner casing: good fair poor
well photographed: yes no

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 36.86
Depth of Well (feet): 97.21
Water Column (feet): 60.35
Casing Volume (gallons/liters): 9.8
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 10.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1055	3	15.80	6.91	267	1.78	37.21	
1105	6	15.81	7.18	271	1.07	37.97	
1115	10	15.86	7.24	271	0.42	38.35	

Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
Horiba water quality	Horiba	U53	4/9/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX14	Acidity, Alkalinity, pH	3x250ml plast	unpreserved
MWX14	Fe, Mn	1x250ml plast	HNO3
MWX14	SO4, TDS	2x500ml plast	unpreserved

EARTHCON®

Groundwater Sampling Record

WELL No. MWX15	PROJECT # 82.2012 0195	LOCATION DeKalb County, AL	DATE 4/9/14
SAMPLE No. MWX15	PROJECT NAME Ridgeholm	FIELD PERSONNEL/COMPANY Joe McKinney, EarthCon	
SAMPLE TIME: 1025	SITE	FIELD CONDITIONS/WEATHER	

Well Condition Inspection (circle one)

cover:	locked	not locked	
number:	legible	not legible	
outer casing:	good	fair	poor
inner casing:	good	fair	poor
well photographed:	yes	no	

Equipment Cleaning Procedures

- potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled deionized
- solvent rinse: acetone hexane
- air dry

Casing Diameter: (circle one) 2" 4" 6" Other:____

Casing Volume Calculation: $(\pi r^2 h)(7.48\ gal/ft^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47
Casing Volume (liters/ft) for: 2" = 0.618; 4" = 2.47; 6" = 5.56

Depth to Water (feet): 34.07
Depth of Well (feet): 93.58
Water Column (feet): 59.51
Casing Volume (gallons/liters): 9.7
Calculated Purge Volume (gallons/liters):
Actual Purge Volume (gallons/liters): 10.0

Measuring Point Elevation (feet):
Groundwater Surface Elevation:
LNAPL present: thickness:
DNAPL present: thickness:
Remarks:

Well Evacuation
Water level recovery is: very slow slow moderate fast
Bailed dry: yes no

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMPERATURE (°C)	pH	CONDUCTIVITY (µs/cm)	TURBIDITY (NTU)	Depth to Water (Feet)	ODOR/COLOR/ REMARKS
	0						PURGE START
1000	3	14.58	6.39	137	3.90	34.41	
1015	6	14.65	6.57	143	3.18	34.41	
1025	10	14.69	6.57	143	2.99	34.41	

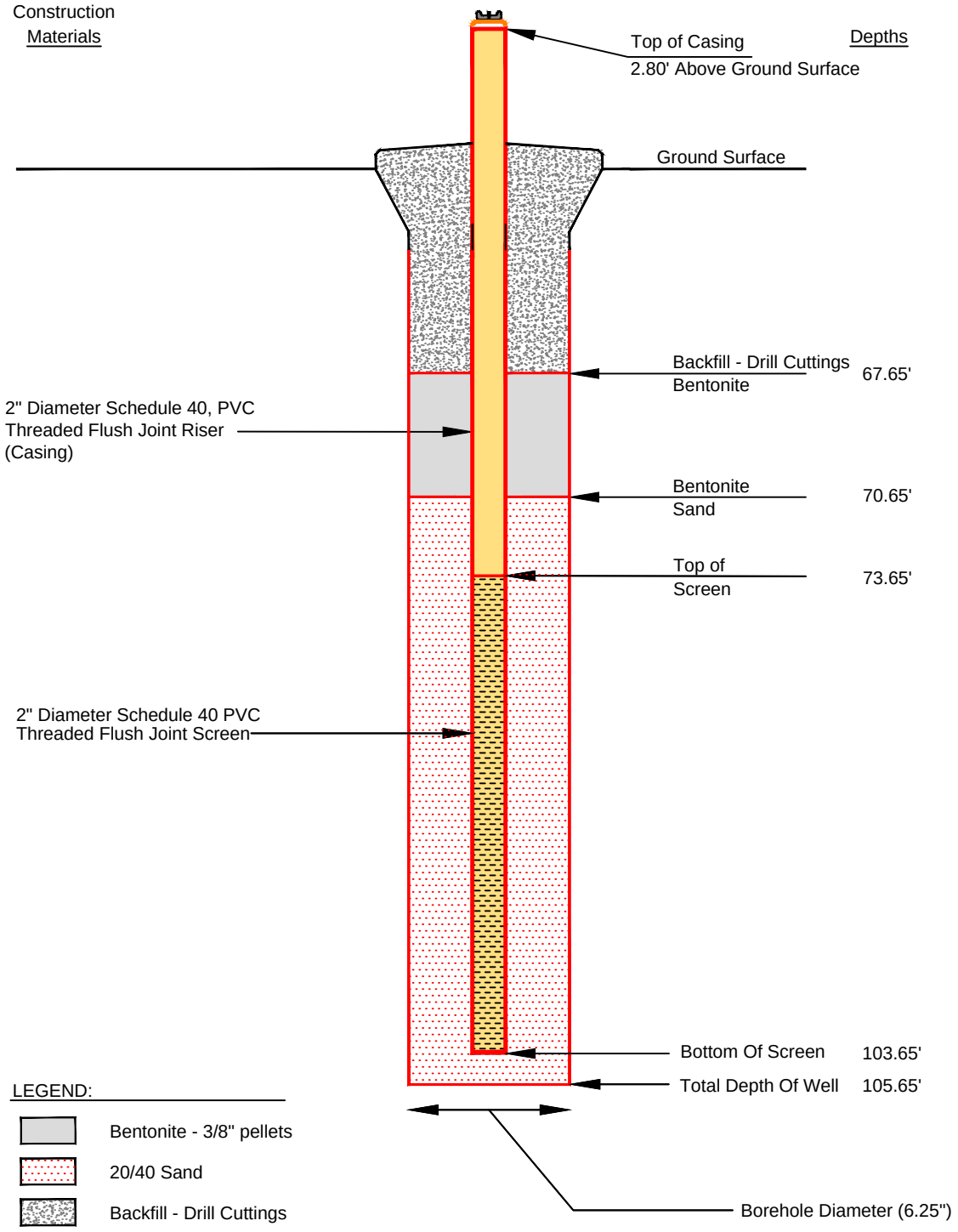
Measurement and Sampling Equipment

Type	Manufacturer	Model #	Calibration Date
water quality	Horiba	U53	4/9/14

SAMPLE NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
MWX15	Acidity, Alkalinity, pH	3X250 ml plast	unpreserved
MWX15	Fe, Mn	1X250 ml plast	HNO3
MWX15	SO4, TDS	2X500 ml plast	unpreserved

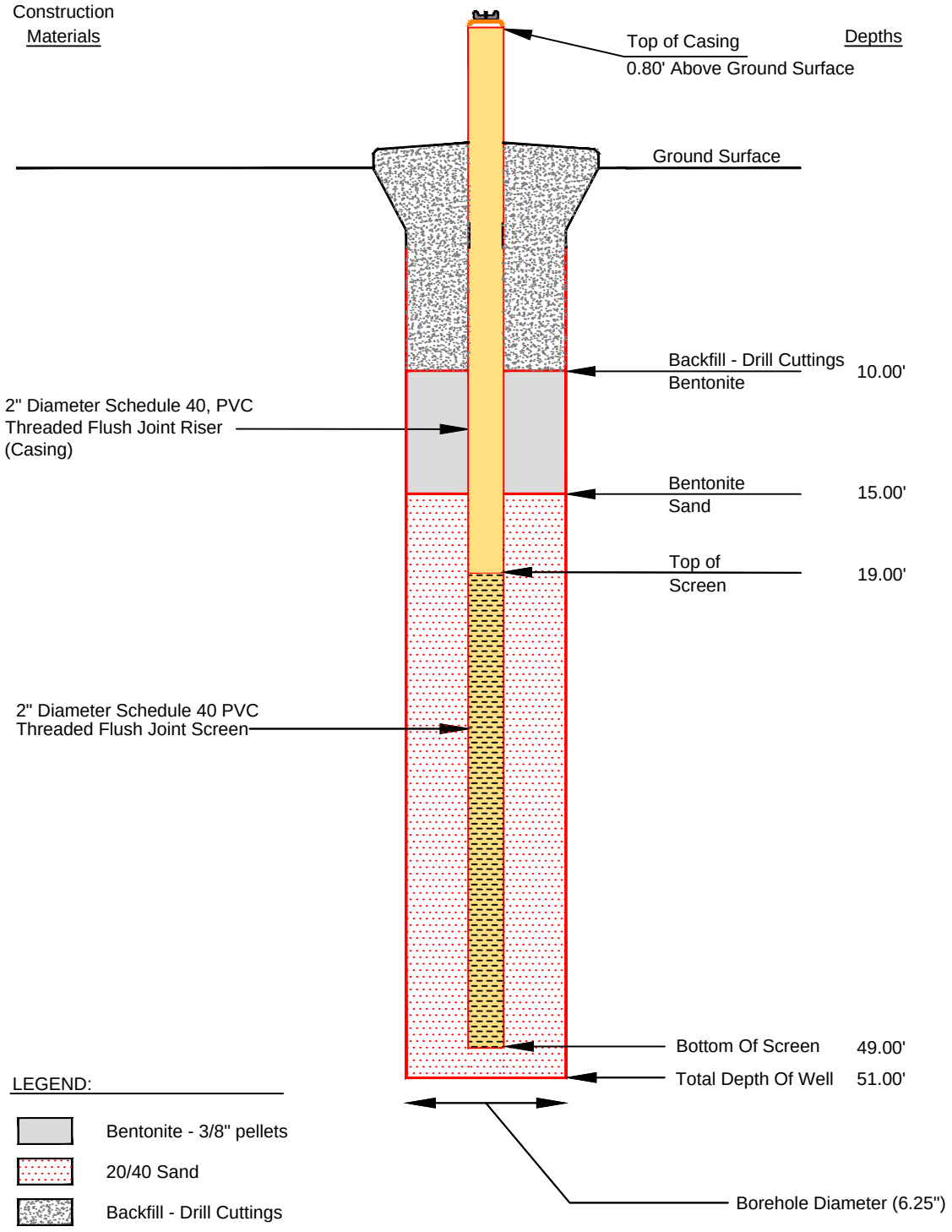
APPENDIX II.F-4

MONITORING WELL X-1 CONSTRUCTION DIAGRAM



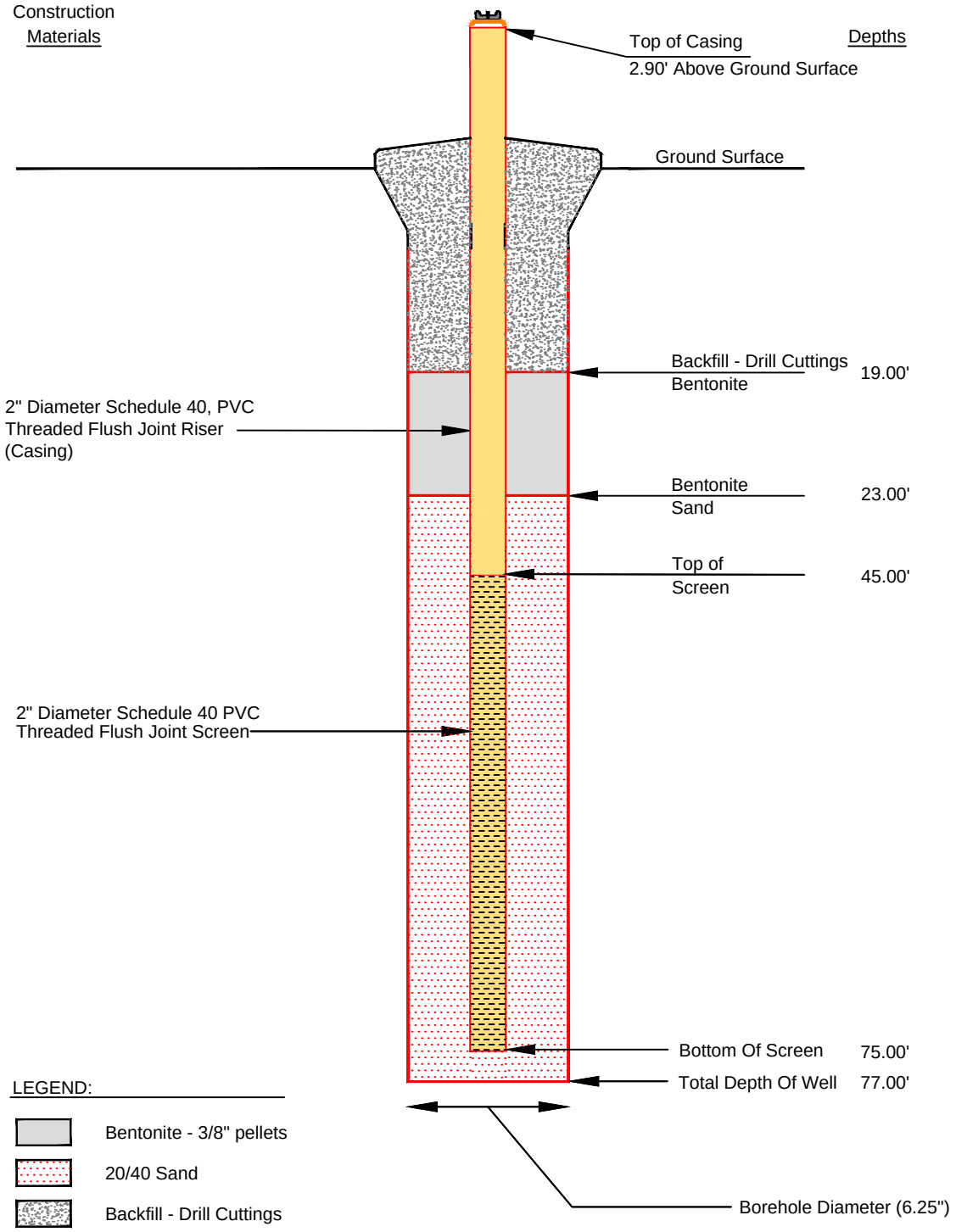
Driller: REP Geologist: JM Date Installed: 3-16-13	EarthCon Consultants, Inc. 14405 Walters Road, Suite 700, Houston, TX 77014				
DRAWN BY: C.Frost	CHECKED BY: R. Decker	SCALE: NTS	DATE: 1/3/2014	PROJECT NO: 02.20120195.00	
PROJECT: John Poe Mine, Dekalb County, Alabama					
TITLE: MONITORING WELL CONSTRUCTION DIAGRAM: X-1					Boring X-1

MONITORING WELL X-3B CONSTRUCTION DIAGRAM



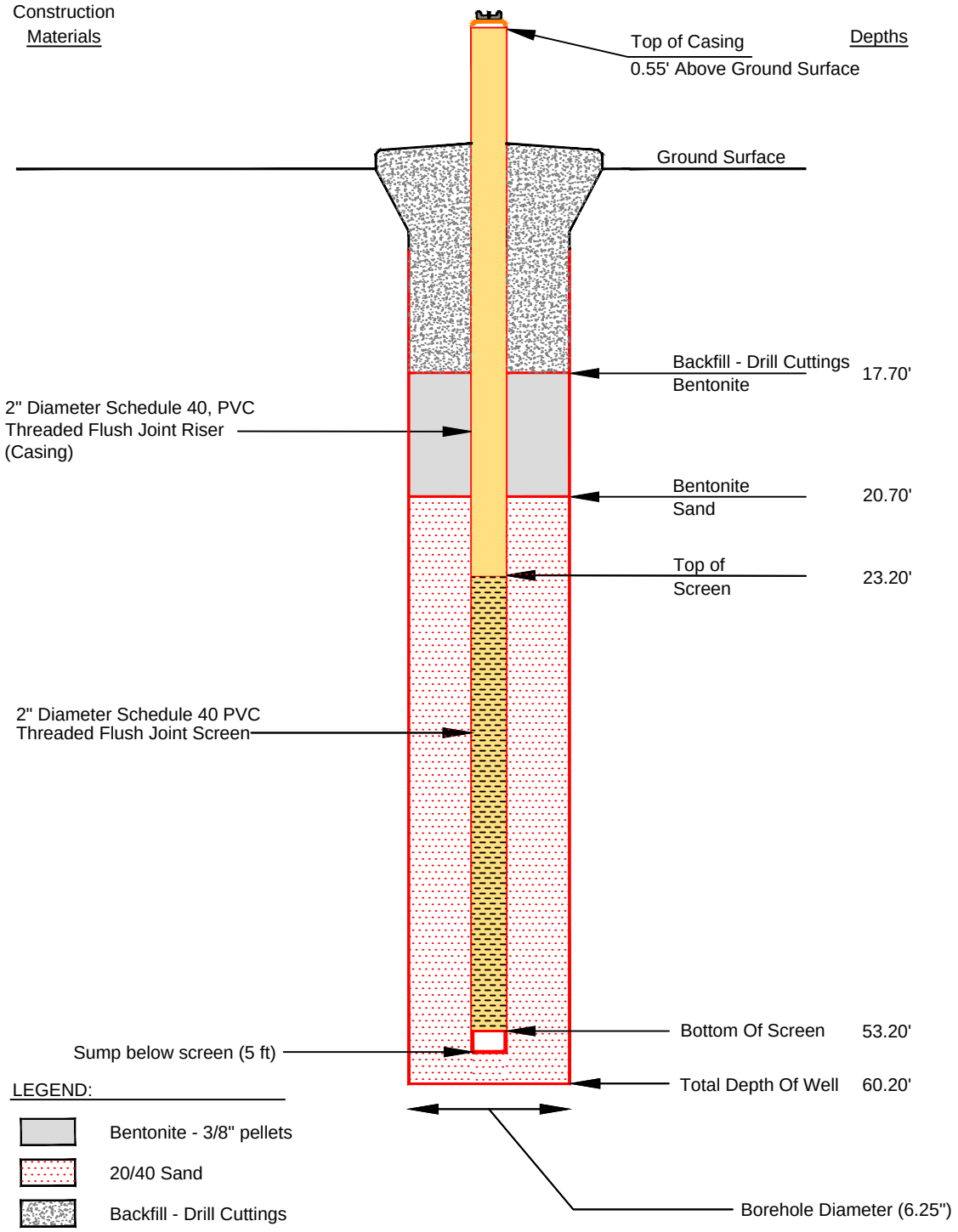
Driller: REP Geologist: JM Date Installed: 3-22-13	EarthCon Consultants, Inc. 14405 Walters Road, Suite 700, Houston, TX 77014				
DRAWN BY: C.Frost	CHECKED BY: R. Decker	SCALE: NTS	DATE: 1/3/2014	PROJECT NO: 02.20120195.00	
PROJECT: John Poe Mine, Dekalb County, Alabama					
TITLE: MONITORING WELL CONSTRUCTION DIAGRAM: X-3B					Boring X-3B

MONITORING WELL X-9R2 CONSTRUCTION DIAGRAM



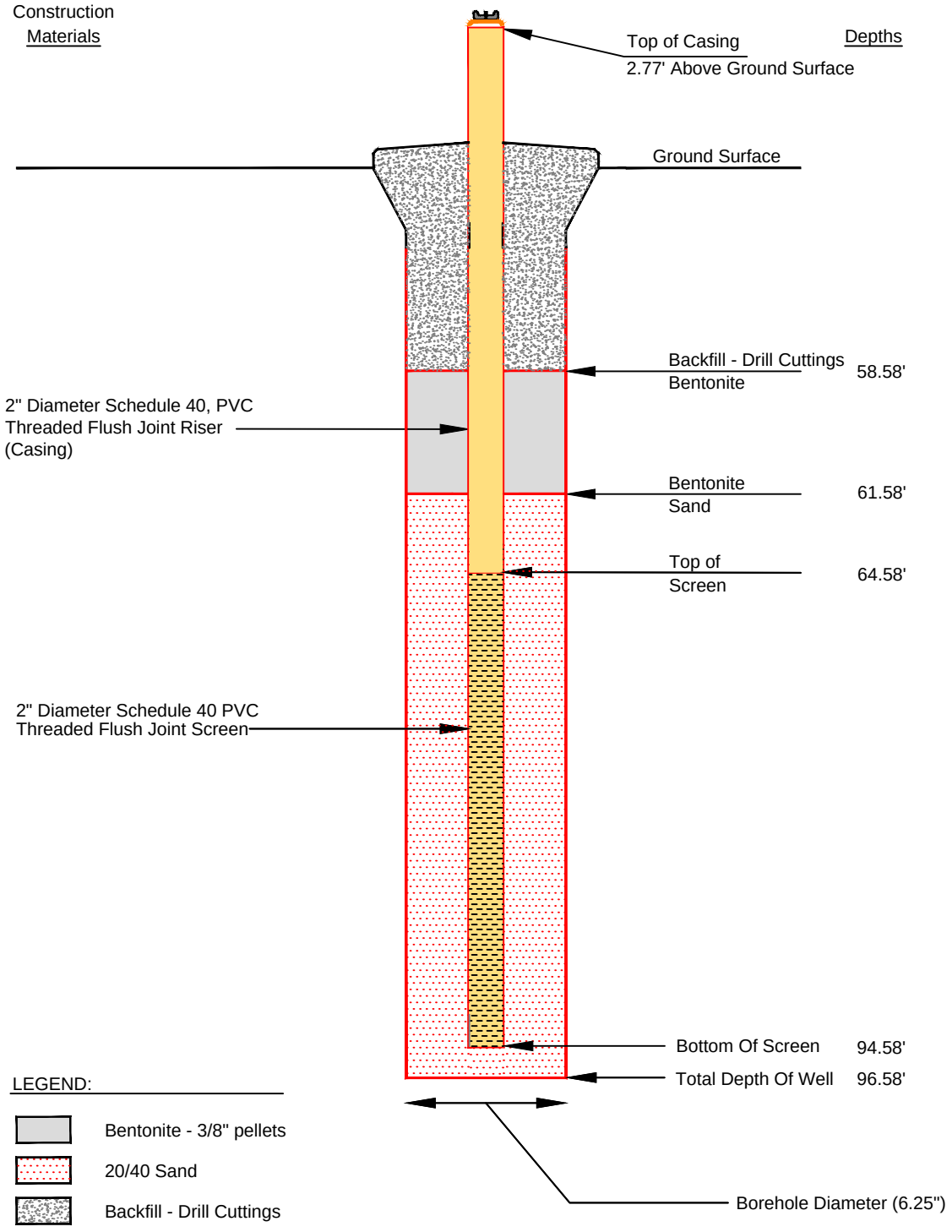
Driller: REP Geologist: JM Date Installed: 3-21-13	EarthCon Consultants, Inc. 14405 Walters Road, Suite 700, Houston, TX 77014				
DRAWN BY: C.Frost	CHECKED BY: R. Decker	SCALE: NTS	DATE: 1/3/2014	PROJECT NO: 02.20120195.00	
PROJECT: John Poe Mine, Dekalb County, Alabama					
TITLE: MONITORING WELL CONSTRUCTION DIAGRAM: X-9R2					Boring X-9R2

MONITORING WELL X-10 CONSTRUCTION DIAGRAM



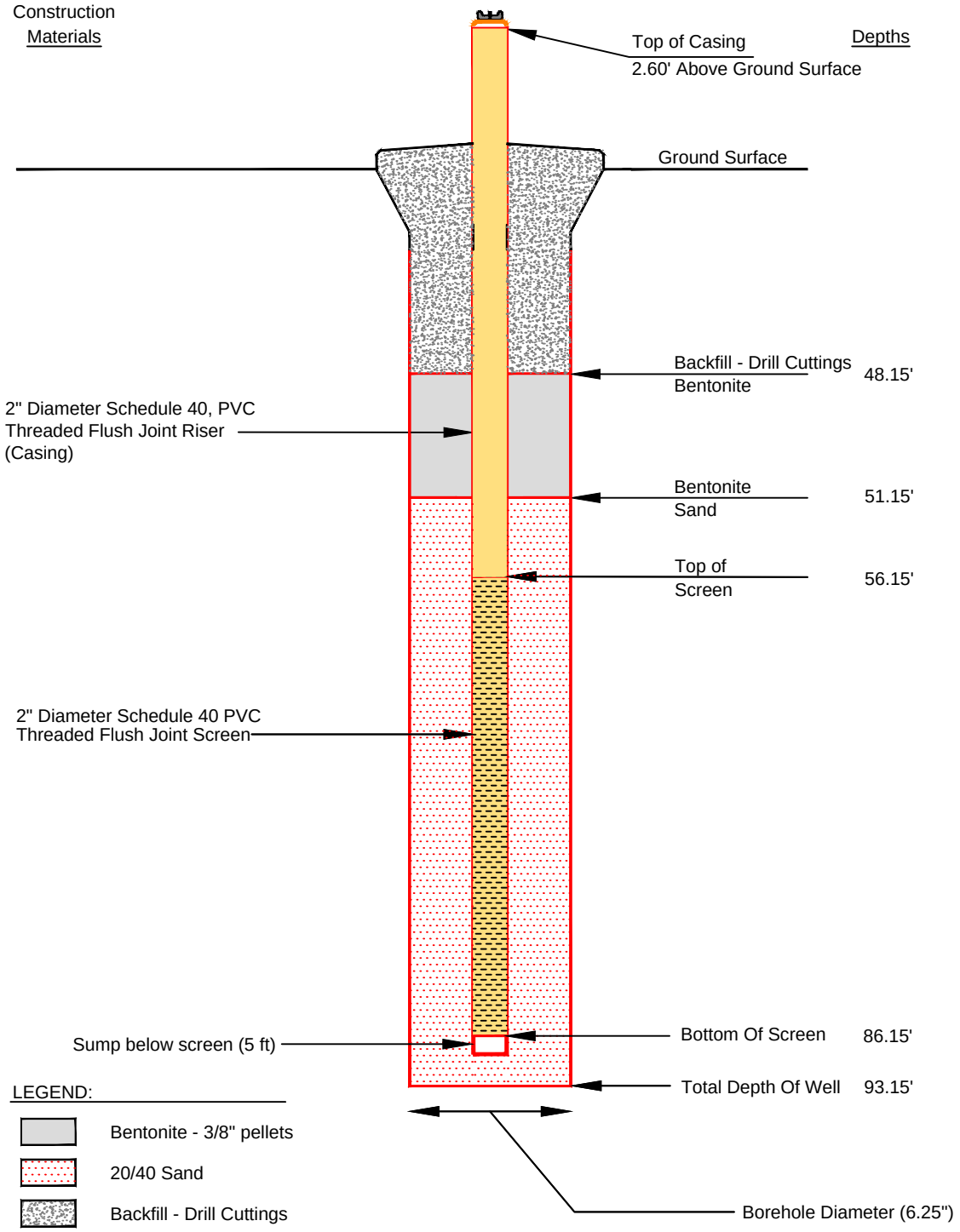
Driller: REP Geologist: JM Date Installed: 3-21-13	EarthCon Consultants, Inc. 14405 Walters Road, Suite 700, Houston, TX 77014				
DRAWN BY: C.Frost	CHECKED BY: R. Decker	SCALE: NTS	DATE: 1/3/2014	PROJECT NO: 02.20120195.00	
PROJECT: John Poe Mine, Dekalb County, Alabama					
TITLE: MONITORING WELL CONSTRUCTION DIAGRAM: X-10					Boring X-10

MONITORING WELL X-14 CONSTRUCTION DIAGRAM



EARTHCON®	Driller: REP Geologist: JM Date Installed: 3-22-2013	EarthCon Consultants, Inc. 14405 Walters Road, Suite 700, Houston, TX 77014			
	DRAWN BY: C.Frost	CHECKED BY: R. Decker	SCALE: NTS	DATE: 1/3/2014	PROJECT NO: 02.20120195.00
	PROJECT: John Poe Mine, Dekalb County, Alabama				
	TITLE: MONITORING WELL CONSTRUCTION DIAGRAM: X-14				Boring X-14

MONITORING WELL X-15 CONSTRUCTION DIAGRAM



Driller: REP Geologist: JM Date Installed: 3-16-13	EarthCon Consultants, Inc. 14405 Walters Road, Suite 700, Houston, TX 77014				
DRAWN BY: C.Frost	CHECKED BY: R. Decker	SCALE: NTS	DATE: 1/3/2014	PROJECT NO: 02.20120195.00	
PROJECT: John Poe Mine, Dekalb County, Alabama					
TITLE: MONITORING WELL CONSTRUCTION DIAGRAM: X-15					Boring X-15

ATTACHMENT II.G

SURFACE WATER HYDROLOGY

ATTACHMENT II.G
SURFACE WATER HYDROLOGY

General Description of Surface Water Hydrology

The John Poe Mine permit area is located within the Town Creek drainage basin. The permit area is drained by an unnamed tributary to Town Creek in Increment 1, an unnamed tributary to Biddle Spring Branch in Increment 2 and the southwest portion of Increment 3, and by Biddle Spring Branch in the northeast portion of Increment 3. Biddle Spring Branch drains in to Town Creek. The USGS Hydrologic Unit Code and U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) Sub-Watershed number for the immediate drainage area of the proposed increments is 06030001-250 as defined by the USDA SCS. No previous known mining activity has occurred within the proposed permit boundary.

Surface water discharging from the Increments will be from runoff due to precipitation falling within the drainage area, and/or from groundwater seepage into the perennial and intermittent streams within the permit area.

Surface Water Bodies

Several man-made agricultural impoundments along Biddle Spring Branch already exist beyond the increment boundaries. Additional temporary sediment control structures are proposed within the Increments. These sediment control structures will generally not be constructed in any stream, buffer or wetlands area. The exception will be the wetlands area designated as W-11 in Increment 1. A Preliminary Wetlands/Jurisdictional Waters Determination and a Functional Assessment have been submitted to the Corps of Engineers for approval. All the proposed sediment basins will be considered temporary and will be removed during the reclamation process. If at a later time in the process, the property owner desires to leave the sedimentation basins in-place, the appropriate revisions and information will be submitted. The proposed points of discharge for each Increment and proposed surface water monitoring stations are shown on the Surface Water Monitoring Map included as Figure II.G-1-1 in Appendix II.G-1.

Surface Water Uses

The uses for the existing impoundments are for agricultural and livestock watering. Town Creek is classified as “Fish and Wildlife” by the Alabama Department of Environmental Management (ADEM).

Surface Water Quality

Samples were obtained from SW-001, SW-002, SW-003, SW-004, SW-005, SW-006, as well as samples from upstream on Town Creek (TC-UP), downstream on Town Creek (TC-DN), and from an off-site pond (POND-1) located south of the permit boundary as indicated on the Surface Water Monitoring Map (Figure II.G-1-1. POND-1 is located approximately 1.5 miles south of Increment 1, and is associated with previous mining

activity for Permit P-1235. The Surface Water Baseline Analyses indicate the waters sampled were of good quality and within expected EPA limits. The results of the sampling and laboratory analyses are summarized in Appendix II.G-2.

Surface Water Quantity

Surface water quantity exiting from the permit boundary area will be variable and will be dependent on precipitation over the entire area, and on seepage from the water table.

Surface Water Sampling and Analytical Methods

Water quality analyses were conducted according to the methodology in 40 CFR Parts 136 and 434. Surface water sampling was performed following the guidance methods in U.S. Environmental Protection Agency Region 4 Science and Ecosystem Support Division Field Branches Quality System and Technical Procedures (http://www.epa.gov/region4/sesd/fbqstp/). Stream flow measurement was conducted following procedures in *EPA 841-B-97-003, Volunteer Stream Sampling: A Methods Manual*. All samples were grab samples. When streams were flowing during sampling events, flow measurements were obtained.

In accordance with ASMC requirements, samples were analyzed for pH (field), total dissolved solids (Method E160.1), total suspended solids (Method E160.2), total iron (Method E200.8), total manganese (Method E200.8), sulfates (Method E300.0), acidity (Method E305.1) and alkalinity (Method E310.2). Additional analyses were performed for ADEM, in support of the NPDES permit application previously submitted to ADEM. The additional analyses included EPA metals, mercury, total cyanide, total phenols, and 5-day Biochemical Oxygen Demand. All samples were grab samples that were poured into appropriate containers. All metals samples were preserved with nitric acid. All other samples had no preservatives added. All samples were placed in coolers and were iced down to maintain a temperature at or below 4° Celsius

Precipitation Modeling

No modeling or simulation methods were performed.

Surface Water Monitoring Locations(s)

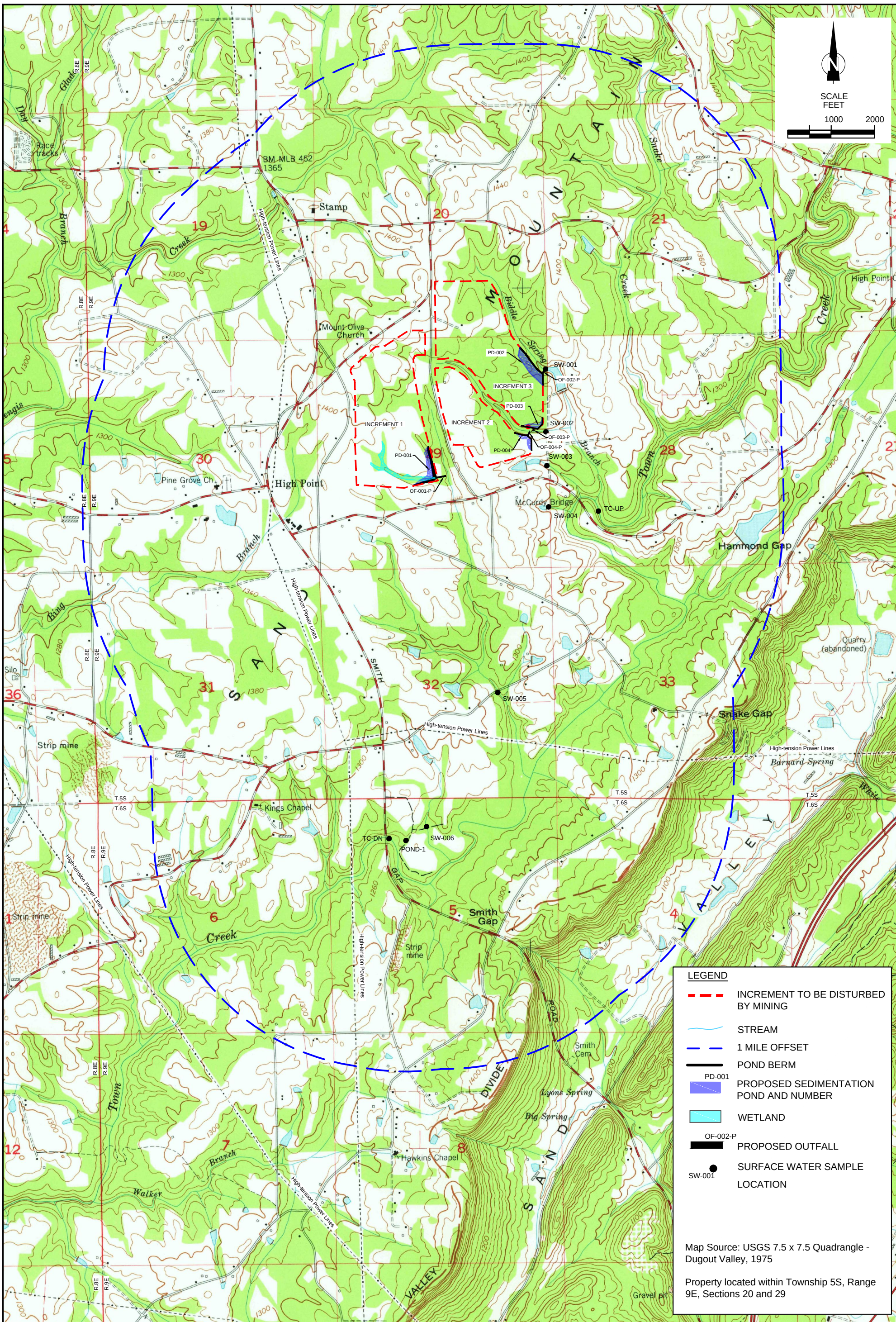
The surface water sampling locations are shown on Figure II.G.1-1, Surface Water Monitoring Points included in Appendix II.G.1.

Surface Water Sampling and Analytical Information

The methodologies for sampling and analysis are described above in the **Surface Water Sampling and Analytical Methods** section. All sampling and field measurements were performed by representatives of EarthCon Consultants, Inc. Laboratory analyses were performed by Analytical Environmental Services, Inc. Results of the analyses are included in Appendix II.G-3.

APPENDIX II.G-1

SURFACE WATER
MONITORING MAP



LEGEND

- INCREMENT TO BE DISTURBED BY MINING
- STREAM
- 1 MILE OFFSET
- POND BERM
- PD-001 PROPOSED SEDIMENTATION POND AND NUMBER
- WETLAND
- OF-002-P PROPOSED OUTFALL
- SW-001 SURFACE WATER SAMPLE LOCATION

Map Source: USGS 7.5 x 7.5 Quadrangle - Dugout Valley, 1975

Property located within Township 5S, Range 9E, Sections 20 and 29

Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

EARTHCON®

EarthCon Consultants Inc.
14405 Walters Rd, Suite 700
Houston, TX 77014

SURFACE WATER MONITORING POINTS
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/14	II.G.1.-1

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\052014\MONITORING POINTS.dwg, SURF_WAT, 6/30/2014 11:16:16 AM

APPENDIX II.G-2

SURFACE WATER BASELINE
ANALYSIS SUMMARY

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **SW-001**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
04-18-13	1.02	5.96	<5.0	8.0	0.168	0.0347	--	--	--
07-23-13	2.21	7.04	25	8.6	0.542	0.0493	--	<10.0	12.9
11-13-13	0.02	6.07	<5.0	20.5	2.870	0.144	2.53	<10.0	11.1
02-04-14	0.05	5.58	24	13.0	0.144	0.0516	3.84	<10.0	<10.0
03-12-14	0.05	6.69	14	7.0	0.522	0.136	3.02	<10.0	<10.0
04-09-14	0.05	5.98	55	<5.0	0.436	0.175	3.13	<10.0	8.00
05-07-14	0.05	5.73	42	188	0.992	0.191	3.73	<10.0	9.00

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Ni ug/l	Hg mg/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	104	0.0601	0.318	<1.00	0.0179	0.230	<5.00	0.199	0.716	0.00204	<5.00	<1.00	<1.00	12.7
04-09-14	145	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.216	<5.00	<0.00020	<5.00	<1.00	<1.00	<1.00
05-07-14	950	0.182	0.574	<1.00	0.0311	0.894	<5.00	1.09	1.34	<0.00020	<5.00	<1.00	<1.00	5.72

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **SW-002**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
04-18-13	0.73	5.96	18	<10	<0.100	0.522	--	--	--
07-23-13	1.02	7.10	91	5.5	<0.100	0.682	--	<10.0	<10.0
11-13-13	DRY	--	--	--	--	--	--	--	--
02-04-14	0.4401	5.20	81	12.0	0.147	0.0408	6.25	<10.0	<10.0
03-12-14	0.48	7.04	24	3.0	0.0628	0.0452	5.19	<10.0	<10.0
04-09-14	1.35	6.21	35	<5.0	<0.100	0.0458	5.55	<10.0	3.00
05-07-14	0.329	5.34	53	5.5	0.0681	0.0571	5.97	<10.0	3.00

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	123	0.0639	<5.00	<1.00	0.0286	0.182	<5.00	0.162	0.00082	0.728	0.431	<1.00	<1.00	6.95
04-09-14	198	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.480	<0.00020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	950	0.182	0.574	<1.00	0.0311	0.894	<5.00	1.09	<0.00020	1.34	<5.00	<1.00	<1.00	5.72

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **SW-003**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
4-18-2013	0.18	6.58	37	37	3.220	0.343	--	--	--
7-23-2013	0.13	7.15	<10	34.0	2.390	0.338	--	<10.0	21.6
11-13-2013	DRY	--	--	--	--	--	--	--	--
02-04-2014	0.22	6.56	28	13.5	0.732	0.0917	8.49	<10.0	15.8
03-12-2014	0.19	6.73	20	17.0	2.460	0.288	6.69	<10.0	13.3
04-09-2014	0.45	6.22	66	11.0	0.789	0.119	7.76	<10.0	30.0
05-07-2014	0.188	6.32	79	16.0	2.200	0.311	6.92	<10.0	35.0

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	93.4	0.0891	0.677	<1,00	<0.700	0.235	<5.00	0.178	0.00159	0.255	0.373	<1.00	<1.00	9.47
04-09-14	79.7	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.237	<0.00020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	198	0.196	1.03	<1.00	<0.700	0.263	2.15	0.358	<0.00020	0.363	0.310	<1.00	<1.00	<10.0

Notes:
1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **SW-004**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
4-18-2013	0.12	6.32	66	58.5	0.793	0.268	--	--	--
7-23-2013	0.12	7.09	86	106	2.980	1.080	--	<10.0	48.7
11-13-2013	DRY	--	--	--	--	--	--	--	--
02-04-2014	0.34	6.04	55	11.0	0.295	0.0834	13.0	<10.0	10.3
03-12-2014	0.16	6.44	52	7.5	0.379	0.0998	11.5	<10.0	11.9
04-09-2014	0.57	6.14	72	19.5	0.489	0.136	13.3	<10.0	23.0
05-07-2014	0.129	6.26	116	29.5	0.955	0.327	13.2	<10.0	20.0

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	233	0.0893	0.574	<1.00	<0.700	0.309	5.58	0.481	--	0.380	0.779	<1.00	<1.00	9.18
04-09-14	497	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.667	<0.0020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	413	0.308	1.33	<1.00	0.0764	0.384	1.88	1.19	<0.00020	0.616	1.31	<1.00	0.197	5.75

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **SW-005**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
4-18-2013	2.45	6.64	36	6	0.534	0.0456	--	--	--
7-23-2013	1.61	7.05	22	<5.0	0.824	0.149	--	<10.0	16.2
11-13-2013	0.16	7.04	15	<5.0	0.576	0.0555	3	<10.0	20.5
02-04-2014	5.96	6.29	41	5.5	0.406	0.0492	8.45	<10.0	<10.0
03-12-2014	3.17	6.61	20	3.0	0.395	0.0450	6.18	<10.0	5.8
04-09-2014	6.46	6.20	68	7.0	0.504	0.0613	6.33	<10.0	19.0
05-07-2014	4.05	6.34	53	1.5	0.687	0.0916	5.82	<10.0	19.0

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	107	0.0887	0.325	<1.00	<0.700	0.251	2.98	0.180	0.00089	1.66	0.447	<1.00	<1.00	6.12
04-09-14	207	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.424	<0.00020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	121	0.242	0.446	<1.00	<0.700	1.76	<5.00	0.274	<0.00020	2.70	0.326	<1.00	<1.00	<10.0

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **SW-006**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
4-18-2013	0.36	6.14	58	10.5	0.328	0.0821	--	--	--
7-23-2013	0.32	7.72	40	8.5	0.997	0.300	--	<10.0	16.2
11-13-2013	0.24	6.41	<5.0	9	3.580	1.360	1.64	<10.0	29.5
02-04-2014	1.95	6.27	14	15.0	0.593	0.0807	5.90	<10.0	<10.0
03-12-2014	0.68	6.04	17	9.0	0.550	0.128	5.25	<10.0	5.4
04-09-2014	1.13	6.14	187	20.5	0.656	0.148	4.80	<10.0	18.0
05-07-2014	0.377	6.39	57	9.5	0.860	0.150	4.99	<10.0	19.0

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	97.9	0.0710	0.335	<1.00	0.0149	0.185	<5.00	0.168	0.00054	0.632	0.570	<1.00	<1.00	6.66
04-09-14	209	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.456	<0.00020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	144	0.180	0.474	<1.00	<0.700	0.219	<5.00	0.295	<0.00020	0.611	<5.00	<1.00	<1.00	<10.0

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **POND-1 (off-site pond south of permit boundary on southern end)**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
7-23-2013	0	7.58	47	6.0	0.168	0.0065	--	<10.0	16.6
11-13-2013	0	6.47	14	<5.0	2.580	1.250	3.4	<10.0	33.4

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/L	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	90.6	0.109	0.487	<1.00	0.0211	0.183	<5.00	0.184	0.00103	0.770	1.13	<1.00	<1.00	8.43

Notes:
1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **TC-UP (Town Creek Upstream)**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
11-13-2013	4.64	6.93	18	<5.0	0.174	0.0198	3.63	<10.0	30.4
02-04-2014	118.13	6.08	26	154	0.584	0.0674	6.62	<10.0	<10.0
03-12-2014	90.87	5.90	13	<1.0	0.138	0.0276	5.48	<10.0	<10.0
04-09-2014	87.21	6.15	55	14.0	0.350	0.0500	5.70	<10.0	9.00
05-07-2014	15.79	6.43	60	1.0	0.210	0.0328	5.82	<10.0	15.0

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	5.58	0.0567	<5.00	<1.00	<0.700	0.206	<5.00	<1.00	0.00094	0.507	0.373	<1.00	<1.00	6.80
04-09-14	349	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.463	<0.00020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	72.2	0.192	0.299	<1.00	<0.700	0.180	<5.00	0.208	<0.00020	0.487	0.312	<1.00	<1.00	<10.0

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

TABLE II.G-2
SURFACE WATER BASELINE ANALYSIS SUMMARY

Sample Point: **TC-DN (Town Creek Downstream)**

Sample Date	Flow cfs	pH s.u.	TDS mg/l	TSS mg/l	Total Fe mg/l	Total Mn mg/l	SO_4 mg/l	Acidity mg/l	Alkalinity mg/l
11-13-2013	3.84	7.07	20	<5.0	0.543	0.0536	4.04	<10.0	29.1
02-04-2014	107.21	6.08	26	154	0.584	0.0674	6.62	<10.0	<10.0
03-12-2014	107.51	5.90	13	<1.0	0.138	0.0276	5.48	<10.0	<10.0
04-09-2014	87.21	6.15	55	14.0	0.350	0.0500	5.70	<10.0	9.00
05-07-2014	50.6	6.37	58	2.0	0.310	0.0606	6.11	<10.0	13.0

Sample Date	Al ug/l	Sb ug/l	As ug/l	Be ug/l	Cd ug/l	Cr ug/l	Cu ug/l	Pb ug/l	Hg mg/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	Zn ug/l
03-12-14	70.0	0.0986	<5.00	<1.00	0.0299	0.147	<5.00	0.143	0.00019	0.501	<5.00	<1.00	0.0834	5.01
04-09-14	566	<5.00	<5.00	<1.00	<0.700	<5.00	<5.00	0.702	<0.00020	<5.00	<5.00	<1.00	<1.00	<10.0
05-07-14	97.1	0.336	0.346	<1.00	0.0161	0.205	<5.00	0.217	<0.00020	0.657	0.431	<1.00	0.0539	<10.0

Notes:

1. cfs – cubic feet per second
2. s.u. – standard units
3. TDS – Total Dissolved Solids
4. TSS – Total Suspended Solids
5. Fe – iron
6. Mn – Manganese
7. SO_4 – sulfates
8. - - Not Performed

Source: EarthCon Consultants, Inc., 2014

APPENDIX II.G-3

SURFACE WATER
LABORATORY RESULTS

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

April 30, 2013

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1304K09

Analytical Environmental Services, Inc. received 7 samples on 4/22/2013 10:38:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3785 PRESIDENTIAL PARKWAY • ATLANTA, GEORGIA 30340 • TEL: (770) 457-8177 • FAX: (770)457-8188

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1304K09

Date: 4/20/13 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: Fe, Mn, AL (Dissolved); pH; TDS; TSS; Fe, Mn (Dissolved)

PRESERVATION (See codes): N; I; I; I; N

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Fe, Mn, AL (Dissolved)	pH	TDS	TSS	Fe, Mn (Dissolved)	REMARKS	No # of Containers
1	SW006	4/18/13	1300	X		SW	X	X	X	X			4
2	MWX1	4/20/13	1140	X		GW		X	X		X		3
3	MWX3B	4/20/13	1310	X		GW		X	X		X		3
4	MWX15	4/20/13	1515	X		GW		X	X		X		3
5	MWX14	4/20/13	1645	X		GW		X	X		X		3
6	MWX9R2	4/20/13	1747	X		GW		X	X		X		
7	MWX10	4/20/13	1820	X		GW		X	X		X		
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	4/22/13 1038	1:	4/22/13 10:38
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 4/22/13 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1304K09

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside of the holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 1:00:00 PM
Lab ID:	1304K09-001	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	10.5	5.0		mg/L	175175	1	04/23/2013 09:30	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	58	10		mg/L	175203	1	04/23/2013 16:30	DM
METALS, DISSOLVED E200.7				**(E200.7)**				
Aluminum	BRL	0.200		mg/L	175259	1	04/25/2013 19:56	MR
Iron	0.328	0.100		mg/L	175259	1	04/25/2013 19:56	MR
Manganese	0.0821	0.0150		mg/L	175259	1	04/25/2013 19:56	MR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.44	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 1
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 11:40:00 AM
Lab ID:	1304K09-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	41	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.20	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 13:15	JY
Manganese	422	5.00		ug/L	175253	1	04/25/2013 13:15	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 3B
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 1:10:00 PM
Lab ID:	1304K09-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	24	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.53	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:04	JY
Manganese	155	5.00		ug/L	175253	1	04/25/2013 14:04	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 15
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 3:15:00 PM
Lab ID:	1304K09-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	65	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.62	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:10	JY
Manganese	153	5.00		ug/L	175253	1	04/25/2013 14:10	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 14
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 4:45:00 PM
Lab ID:	1304K09-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	130	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.29	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:16	JY
Manganese	51.4	5.00		ug/L	175253	1	04/25/2013 14:16	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 9R2
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 5:47:00 PM
Lab ID:	1304K09-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	129	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.62	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:22	JY
Manganese	684	5.00		ug/L	175253	1	04/25/2013 14:22	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 30-Apr-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	MW X 10
Project Name:	Ridgeholm	**Collection Date:**	4/20/2013 6:20:00 PM
Lab ID:	1304K09-007	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	212	10		mg/L	175203	1	04/23/2013 16:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.93	0.01	H	pH Units	R242627	1	04/23/2013 13:00	DM
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Iron	BRL	100		ug/L	175253	1	04/25/2013 14:28	JY
Manganese	662	5.00		ug/L	175253	1	04/25/2013 14:28	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth G Work Order Number 1304K09

Checklist completed by MJ 4/22/13
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 30-Apr-13

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1304K09

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1304K09-001B	SW 006	4/18/2013 1:00:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-001C	SW 006	4/18/2013 1:00:00PM	Surface Water	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-001C	SW 006	4/18/2013 1:00:00PM	Surface Water	Residue, Suspended (TSS)		04/23/2013	04/23/2013
1304K09-001D	SW 006	4/18/2013 1:00:00PM	Surface Water	METALS, DISSOLVED		04/25/2013	04/25/2013
1304K09-002B	MW X 1	4/20/2013 11:40:00AM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-002C	MW X 1	4/20/2013 11:40:00AM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-002C	MW X 1	4/20/2013 11:40:00AM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-003B	MW X 3B	4/20/2013 1:10:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-003C	MW X 3B	4/20/2013 1:10:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-003C	MW X 3B	4/20/2013 1:10:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-004B	MW X 15	4/20/2013 3:15:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-004C	MW X 15	4/20/2013 3:15:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-004C	MW X 15	4/20/2013 3:15:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-005B	MW X 14	4/20/2013 4:45:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-005C	MW X 14	4/20/2013 4:45:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-005C	MW X 14	4/20/2013 4:45:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-006B	MW X 9R2	4/20/2013 5:47:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-006C	MW X 9R2	4/20/2013 5:47:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-006C	MW X 9R2	4/20/2013 5:47:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013
1304K09-007B	MW X 10	4/20/2013 6:20:00PM	Groundwater	Laboratory Hydrogen Ion (pH)			04/23/2013
1304K09-007C	MW X 10	4/20/2013 6:20:00PM	Groundwater	Residue, Dissolved (TDS)		04/23/2013	04/23/2013
1304K09-007C	MW X 10	4/20/2013 6:20:00PM	Groundwater	Dissolved Metals by ICP/MS		04/25/2013	04/25/2013

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: **175175**

Sample ID: **MB-175175** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242616**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175175** Analysis Date: **04/23/2013** Seq No: **5079971**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0	0	0	0	0	0	0	0	0	

Sample ID: **1304J15-001ADUP** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242616**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175175** Analysis Date: **04/23/2013** Seq No: **5079973**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	16.00	5.0	0	0	0	0	0	16.50	3.08	5	

Sample ID: **1304J17-007ADUP** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242616**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175175** Analysis Date: **04/23/2013** Seq No: **5080004**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	37.00	5.0	0	0	0	0	0	36.00	2.74	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: 175203

Sample ID: **MB-175203** Client ID: Units: **mg/L** Prep Date: **04/23/2013** Run No: **242758**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **175203** Analysis Date: **04/23/2013** Seq No: **5083136**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10	0	0	0	0	0	0	0	0	

Sample ID: **1304K09-001CDUP** Client ID: **SW 006** Units: **mg/L** Prep Date: **04/23/2013** Run No: **242758**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **175203** Analysis Date: **04/23/2013** Seq No: **5083138**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	60.00	10	0	0	0	0	0	58.00	3.39	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: **175253**

Sample ID: **MB-175253** Client ID: Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **MBLK** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084650**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100	0	0	0	0	0	0	0	0	
Manganese	BRL	5.00	0	0	0	0	0	0	0	0	

Sample ID: **LCS-175253** Client ID: Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **LCS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084649**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	960.7	100	1000	0	96.1	80	120	0	0	0	
Manganese	95.96	5.00	100.0	0.4010	95.6	80	120	0	0	0	

Sample ID: **1304K09-002CMS** Client ID: **MW X 1** Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **MS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084652**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	966.9	100	1000	0	96.7	75	125	0	0	0	
Manganese	512.0	5.00	100.0	422.4	89.6	75	125	0	0	0	

Sample ID: **1304K09-002CMSD** Client ID: **MW X 1** Units: **ug/L** Prep Date: **04/25/2013** Run No: **242821**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **175253** Analysis Date: **04/25/2013** Seq No: **5084654**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	956.3	100	1000	0	95.6	75	125	966.9	1.10	20	
Manganese	521.7	5.00	100.0	422.4	99.3	75	125	512.0	1.88	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: 175259

Sample ID: **MB-175259** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **MBLK** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085516**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	0.200	0	0	0	0	0	0	0	0	
Iron	BRL	0.100	0	0	0	0	0	0	0	0	
Manganese	BRL	0.0150	0	0	0	0	0	0	0	0	

Sample ID: **LCS-175259** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **LCS** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085515**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	10.39	0.200	10.00	0	104	85	115	0	0	0	
Iron	9.844	0.100	10.00	0	98.4	85	115	0	0	0	
Manganese	1.039	0.0150	1.000	0	104	85	115	0	0	0	

Sample ID: **1304K96-002AMS** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **MS** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085519**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	10.38	0.200	10.00	0.1483	102	70	130	0	0	0	
Iron	10.60	0.100	10.00	0.9295	96.7	70	130	0	0	0	
Manganese	1.037	0.0150	1.000	0.01252	102	70	130	0	0	0	

Sample ID: **1304K96-002AMSD** Client ID: Units: **mg/L** Prep Date: **04/25/2013** Run No: **242865**
SampleType: **MSD** TestCode: **METALS, DISSOLVED** **E200.7** BatchID: **175259** Analysis Date: **04/25/2013** Seq No: **5085522**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	10.57	0.200	10.00	0.1483	104	70	130	10.38	1.85	20	
Iron	10.79	0.100	10.00	0.9295	98.6	70	130	10.60	1.79	20	
Manganese	1.057	0.0150	1.000	0.01252	104	70	130	1.037	1.88	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304K09

ANALYTICAL QC SUMMARY REPORT

BatchID: **R242627**

Sample ID: **LCS-R242627** Client ID: Units: **pH Units** Prep Date: Run No: **242627**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R242627** Analysis Date: **04/23/2013** Seq No: **5080245**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.010	0.01	7.000	0	100	90	110	0	0	0	

Sample ID: **1304J97-001ADUP** Client ID: Units: **pH Units** Prep Date: Run No: **242627**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R242627** Analysis Date: **04/23/2013** Seq No: **5080248**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.310	0.01	0	0	0	0	0	7.330	0.273	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 01, 2013

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1304I26

Analytical Environmental Services, Inc. received 6 samples on 4/19/2013 11:40:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3785 PRESIDENTIAL PARKWAY • ATLANTA, GEORGIA 30340 • TEL: (770) 457-8177 • FAX: (770)457-8188

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1304I26

Date: 4/18/13 Page 1 of 1

COMPANY: Earth Con

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE: [signature]

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	BOD5	Fe, Mn, AL	pH	TDS	TSS	REMARKS	No # of Containers
							PRESERVATION (See codes)						
							NA	N	NA	NA	NA		
1	SW005	4/18/13	1000	X		SW	X	X	X	X	X		6
2	SW004	4/18/13	1100	X		SW	X	X	X	X	X		6
3	SW003	4/18/13	1130	X		SW	X	X	X	X	X		6
4	SW002	4/18/13	1200	X		SW	X	X	X	X	X		6
5	SW001	4/18/13	1230	X		SW	X	X	X	X	X		6
6	SW006	4/18/13	1300	X		SW	X						2
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature] J McKinney	4/18/13 1340	1: [signature]	4/19/13 1140
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 4/18/13 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers 32

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1304I26

Case Narrative

pH Analysis by Method E150.1:

Samples for pH analysis by Method E150.1 were received and analyzed outside of the holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 1-May-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW005
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 10:00:00 AM
Lab ID:	1304I26-001	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	116	10.0		ug/L	175149	1	04/23/2013 23:49	JY
Iron	534	100		ug/L	175149	1	04/24/2013 12:13	JY
Manganese	45.6	5.00		ug/L	175149	1	04/23/2013 23:49	JY
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	6.0	5.0		mg/L	175126	1	04/22/2013 13:50	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	36	10		mg/L	175140	1	04/22/2013 15:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.77	0.01	H	pH Units	R242523	1	04/22/2013 10:05	DM
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	175061	1	04/19/2013 14:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 1-May-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW004
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 11:00:00 AM
Lab ID:	1304I26-002	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	302	10.0		ug/L	175149	1	04/23/2013 23:55	JY
Iron	793	100		ug/L	175149	1	04/24/2013 12:19	JY
Manganese	268	5.00		ug/L	175149	1	04/23/2013 23:55	JY
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	58.5	5.0		mg/L	175126	1	04/22/2013 13:51	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	66	10		mg/L	175140	1	04/22/2013 15:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.50	0.01	H	pH Units	R242523	1	04/22/2013 10:10	DM
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	175061	1	04/19/2013 14:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 1-May-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW003
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 11:30:00 AM
Lab ID:	1304I26-003	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Aluminum	166	10.0		ug/L	175149	1	04/24/2013 00:00	JY
Iron	3220	100		ug/L	175149	1	04/24/2013 12:25	JY
Manganese	343	5.00		ug/L	175149	1	04/24/2013 00:00	JY
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	23.0	5.0		mg/L	175126	1	04/22/2013 13:51	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	37	10		mg/L	175140	1	04/22/2013 15:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.60	0.01	H	pH Units	R242523	1	04/22/2013 10:15	DM
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	175061	1	04/19/2013 14:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 1-May-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW002
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 12:00:00 PM
Lab ID:	1304I26-004	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	108	10.0		ug/L	175149	1	04/24/2013 00:05	JY
Iron	BRL	100		ug/L	175149	1	04/24/2013 00:05	JY
Manganese	52.2	5.00		ug/L	175149	1	04/24/2013 00:05	JY
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	BRL	5.0		mg/L	175126	1	04/22/2013 13:53	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	18	10		mg/L	175140	1	04/22/2013 15:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.72	0.01	H	pH Units	R242523	1	04/22/2013 10:20	DM
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	175061	1	04/19/2013 14:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 1-May-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW001
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 12:30:00 PM
Lab ID:	1304I26-005	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	123	10.0		ug/L	175149	1	04/24/2013 00:10	JY
Iron	169	100		ug/L	175149	1	04/24/2013 12:31	JY
Manganese	34.7	5.00		ug/L	175149	1	04/24/2013 00:10	JY
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	8.0	5.0		mg/L	175126	1	04/22/2013 13:53	DM
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	BRL	10		mg/L	175140	1	04/22/2013 15:30	DM
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.05	0.01	H	pH Units	R242523	1	04/22/2013 10:35	DM
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	175061	1	04/19/2013 14:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 1-May-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW006
Project Name:	Ridgeholm	**Collection Date:**	4/18/2013 1:00:00 PM
Lab ID:	1304I26-006	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	175061	1	04/19/2013 14:30	MG

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earthcon

Work Order Number 1304I26

Checklist completed by PP 4/19/13
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.5 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by PP

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 1-May-13

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1304I26

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1304I26-001A	SW005	4/18/2013 10:00:00AM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/23/2013
1304I26-001A	SW005	4/18/2013 10:00:00AM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/24/2013
1304I26-001B	SW005	4/18/2013 10:00:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			04/22/2013
1304I26-001C	SW005	4/18/2013 10:00:00AM	Surface Water	Residue, Dissolved (TDS)		04/22/2013	04/22/2013
1304I26-001D	SW005	4/18/2013 10:00:00AM	Surface Water	Residue, Suspended (TSS)		04/22/2013	04/22/2013
1304I26-001E	SW005	4/18/2013 10:00:00AM	Surface Water	Biochemical Oxygen Demand (BOD)		04/19/2013	04/19/2013
1304I26-002A	SW004	4/18/2013 11:00:00AM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/23/2013
1304I26-002A	SW004	4/18/2013 11:00:00AM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/24/2013
1304I26-002B	SW004	4/18/2013 11:00:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			04/22/2013
1304I26-002C	SW004	4/18/2013 11:00:00AM	Surface Water	Residue, Dissolved (TDS)		04/22/2013	04/22/2013
1304I26-002D	SW004	4/18/2013 11:00:00AM	Surface Water	Residue, Suspended (TSS)		04/22/2013	04/22/2013
1304I26-002E	SW004	4/18/2013 11:00:00AM	Surface Water	Biochemical Oxygen Demand (BOD)		04/19/2013	04/19/2013
1304I26-003A	SW003	4/18/2013 11:30:00AM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/24/2013
1304I26-003B	SW003	4/18/2013 11:30:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			04/22/2013
1304I26-003C	SW003	4/18/2013 11:30:00AM	Surface Water	Residue, Dissolved (TDS)		04/22/2013	04/22/2013
1304I26-003D	SW003	4/18/2013 11:30:00AM	Surface Water	Residue, Suspended (TSS)		04/22/2013	04/22/2013
1304I26-003E	SW003	4/18/2013 11:30:00AM	Surface Water	Biochemical Oxygen Demand (BOD)		04/19/2013	04/19/2013
1304I26-004A	SW002	4/18/2013 12:00:00PM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/24/2013
1304I26-004B	SW002	4/18/2013 12:00:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			04/22/2013
1304I26-004C	SW002	4/18/2013 12:00:00PM	Surface Water	Residue, Dissolved (TDS)		04/22/2013	04/22/2013
1304I26-004D	SW002	4/18/2013 12:00:00PM	Surface Water	Residue, Suspended (TSS)		04/22/2013	04/22/2013
1304I26-004E	SW002	4/18/2013 12:00:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		04/19/2013	04/19/2013
1304I26-005A	SW001	4/18/2013 12:30:00PM	Surface Water	Trace Elements by ICP/MS		04/23/2013	04/24/2013
1304I26-005B	SW001	4/18/2013 12:30:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			04/22/2013
1304I26-005C	SW001	4/18/2013 12:30:00PM	Surface Water	Residue, Dissolved (TDS)		04/22/2013	04/22/2013
1304I26-005D	SW001	4/18/2013 12:30:00PM	Surface Water	Residue, Suspended (TSS)		04/22/2013	04/22/2013
1304I26-005E	SW001	4/18/2013 12:30:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		04/19/2013	04/19/2013
1304I26-006A	SW006	4/18/2013 1:00:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		04/19/2013	04/19/2013

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304I26

ANALYTICAL QC SUMMARY REPORT

BatchID: 175061

Sample ID: **MB-175061** Client ID: Units: **mg/L** Prep Date: **04/19/2013** Run No: **242744**
SampleType: **MBLK** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **175061** Analysis Date: **04/19/2013** Seq No: **5082794**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	BRL	0.2	0	0	0	0	0	0	0	0	

Sample ID: **LCS-175061** Client ID: Units: **mg/L** Prep Date: **04/19/2013** Run No: **242744**
SampleType: **LCS** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **175061** Analysis Date: **04/19/2013** Seq No: **5082795**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	191.8	5.0	198.0	0	96.9	85	115	0	0	0	

Sample ID: **LCSD-175061** Client ID: Units: **mg/L** Prep Date: **04/19/2013** Run No: **242744**
SampleType: **LCSD** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **175061** Analysis Date: **04/19/2013** Seq No: **5082814**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	191.8	5.0	198.0	0	96.9	85	115	191.8	0	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304I26

ANALYTICAL QC SUMMARY REPORT

BatchID: **175126**

Sample ID: **MB-175126** Client ID: Units: **mg/L** Prep Date: **04/22/2013** Run No: **242530**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175126** Analysis Date: **04/22/2013** Seq No: **5077904**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0	0	0	0	0	0	0	0	0	

Sample ID: **1304G50-001CDUP** Client ID: Units: **mg/L** Prep Date: **04/22/2013** Run No: **242530**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175126** Analysis Date: **04/22/2013** Seq No: **5077907**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	7.500	5.0	0	0	0	0	0	7.500	0	5	

Sample ID: **1304I26-003DDUP** Client ID: **SW003** Units: **mg/L** Prep Date: **04/22/2013** Run No: **242530**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **175126** Analysis Date: **04/22/2013** Seq No: **5077935**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	22.00	5.0	0	0	0	0	0	23.00	4.44	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304I26

ANALYTICAL QC SUMMARY REPORT

BatchID: **175140**

Sample ID: **MB-175140** Client ID: Units: **mg/L** Prep Date: **04/22/2013** Run No: **242631**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **175140** Analysis Date: **04/22/2013** Seq No: **5080371**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10	0	0	0	0	0	0	0	0	

Sample ID: **1304H98-002ADUP** Client ID: Units: **mg/L** Prep Date: **04/22/2013** Run No: **242631**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **175140** Analysis Date: **04/22/2013** Seq No: **5080373**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	134.0	10	0	0	0	0	0	131.0	2.26	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304I26

ANALYTICAL QC SUMMARY REPORT

BatchID: 175149

Sample ID: **MB-175149** Client ID: Units: **ug/L** Prep Date: **04/23/2013** Run No: **242683**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **175149** Analysis Date: **04/23/2013** Seq No: **5081516**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	10.0	0	0	0	0	0	0	0	0	
Iron	BRL	100	0	0	0	0	0	0	0	0	
Manganese	BRL	5.00	0	0	0	0	0	0	0	0	

Sample ID: **LCS-175149** Client ID: Units: **ug/L** Prep Date: **04/23/2013** Run No: **242683**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **175149** Analysis Date: **04/23/2013** Seq No: **5081512**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	958.1	10.0	1000	0	95.8	85	115	0	0	0	
Iron	1064	100	1000	0	106	85	115	0	0	0	
Manganese	103.3	5.00	100.0	0	103	85	115	0	0	0	

Sample ID: **1304G60-001AMS** Client ID: Units: **ug/L** Prep Date: **04/23/2013** Run No: **242683**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **175149** Analysis Date: **04/23/2013** Seq No: **5081524**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	519.3	10.0	1000	205.2	31.4	70	130	0	0	0	S
Iron	406.9	100	1000	74.87	33.2	70	130	0	0	0	S
Manganese	38.82	5.00	100.0	5.514	33.3	70	130	0	0	0	S

Sample ID: **1304G60-001AMSD** Client ID: Units: **ug/L** Prep Date: **04/23/2013** Run No: **242683**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **175149** Analysis Date: **04/23/2013** Seq No: **5081528**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	519.5	10.0	1000	205.2	31.4	70	130	519.3	0.038	20	S
Iron	421.7	100	1000	74.87	34.7	70	130	406.9	3.57	20	S
Manganese	40.26	5.00	100.0	5.514	34.7	70	130	38.82	3.64	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1304I26

ANALYTICAL QC SUMMARY REPORT

BatchID: **R242523**

Sample ID: **LCS-R242523** Client ID: Units: **pH Units** Prep Date: Run No: **242523**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R242523** Analysis Date: **04/22/2013** Seq No: **5077723**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.040	0.01	7.000	0	101	90	110	0	0	0	

Sample ID: **1304H34-001BDUP** Client ID: Units: **pH Units** Prep Date: Run No: **242523**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R242523** Analysis Date: **04/22/2013** Seq No: **5077725**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.430	0.01	0	0	0	0	0	7.400	0.405	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

August 02, 2013

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1307J66

Analytical Environmental Services, Inc. received 6 samples on 7/24/2013 11:00:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1307J66

Date: 7/23/13 Page 1 of 1

COMPANY: Earthcon

ADDRESS: 14407 Walters Rd ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED: BOD; pH, acidity; Total Al, Fe, Mn; TDS, alkalinity; TSS

PRESERVATION (See codes): I; I; N; I; I

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	BOD (I)	pH, acidity (I)	Total Al, Fe, Mn (N)	TDS, alkalinity (I)	TSS (I)	REMARKS	No # of Containers
1	SW006	7/23/13	1030	X		SW	X	X	X	X	X		5
2	SW005	7/23/13	1205	X		SW	X	X	X	X	X		5
3	SW004	7/23/13	1320	X		SW	X	X	X	X	X		5
4	SW003	7/23/13	1410	X		SW	X	X	X	X	X		5
5	SW002	7/23/13	1430	X		SW	X	X	X	X	X		5
6	SW001	7/23/13	1445	X		SW	X	X	X	X	X		5
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	7/24/13 1100	1: [signature]	7/24/13 11:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS: Alkalinity to be preserved by lab

SHIPMENT METHOD
OUT / / VIA:
IN 7/24/13 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 30

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1307J66

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW006
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 10:30:00 AM
Lab ID:	1307J66-001	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Aluminum	144	10.0		ug/L	179034	1	08/01/2013 19:19	TA
Iron	997	100		ug/L	179034	1	08/01/2013 19:19	TA
Manganese	300	5.00		ug/L	179034	1	08/01/2013 19:19	TA
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	8.5	5.0		mg/L	179018	1	07/26/2013 09:40	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	40	10		mg/L	179118	1	07/26/2013 16:30	KB
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.02	0.01	H	pH Units	R248740	1	07/25/2013 16:00	KB
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	179025	1	07/25/2013 10:05	MG
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	16.2	10.0		mg/L	R248771	1	07/26/2013 10:50	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW005
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 12:05:00 PM
Lab ID:	1307J66-002	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	146	10.0		ug/L	179034	1	08/01/2013 19:26	TA
Iron	824	100		ug/L	179034	1	08/01/2013 19:26	TA
Manganese	149	5.00		ug/L	179034	1	08/01/2013 19:26	TA
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	BRL	5.0		mg/L	179018	1	07/26/2013 09:40	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	22	10		mg/L	179118	1	07/26/2013 16:30	KB
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	7.12	0.01	H	pH Units	R248740	1	07/25/2013 16:00	KB
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	179025	1	07/25/2013 10:05	MG
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	16.2	10.0		mg/L	R248771	1	07/26/2013 10:51	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW004
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 1:20:00 PM
Lab ID:	1307J66-003	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	1050	10.0		ug/L	179034	1	08/01/2013 19:32	TA
Iron	2980	100		ug/L	179034	1	08/01/2013 19:32	TA
Manganese	1080	5.00		ug/L	179034	1	08/01/2013 19:32	TA
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	106	10.0		mg/L	179018	1	07/26/2013 09:47	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	86	10		mg/L	179118	1	07/26/2013 16:30	KB
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.39	0.01	H	pH Units	R248740	1	07/25/2013 16:00	KB
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	30.2	5.0		mg/L	179025	1	07/25/2013 10:05	MG
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	48.7	10.0		mg/L	R248771	1	07/26/2013 10:52	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW003
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 2:10:00 PM
Lab ID:	1307J66-004	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Aluminum	53.7	10.0		ug/L	179034	1	08/01/2013 19:38	TA
Iron	2390	100		ug/L	179034	1	08/01/2013 19:38	TA
Manganese	338	5.00		ug/L	179034	1	08/01/2013 19:38	TA
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	34.0	10.0		mg/L	179018	1	07/26/2013 09:48	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	BRL	10		mg/L	179118	1	07/26/2013 16:30	KB
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.71	0.01	H	pH Units	R248740	1	07/25/2013 16:00	KB
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	179025	1	07/25/2013 10:05	MG
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	21.6	10.0		mg/L	R248771	1	07/26/2013 10:53	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW002
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 2:30:00 PM
Lab ID:	1307J66-005	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Aluminum	179	10.0		ug/L	179034	1	08/01/2013 19:45	TA
Iron	BRL	100		ug/L	179034	1	08/01/2013 19:45	TA
Manganese	68.2	5.00		ug/L	179034	1	08/01/2013 19:45	TA
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	5.5	5.0		mg/L	179018	1	07/26/2013 09:50	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	91	10		mg/L	179118	1	07/26/2013 16:30	KB
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.90	0.01	H	pH Units	R248740	1	07/25/2013 16:00	KB
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	179025	1	07/25/2013 10:05	MG
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R248771	1	07/26/2013 10:56	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 2-Aug-13

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW001
Project Name:	Ridgeholm	**Collection Date:**	7/23/2013 2:45:00 PM
Lab ID:	1307J66-006	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				**(E200.2)**				
Aluminum	98.7	10.0		ug/L	179034	1	08/01/2013 19:52	TA
Iron	542	100		ug/L	179034	1	08/01/2013 19:52	TA
Manganese	49.3	5.00		ug/L	179034	1	08/01/2013 19:52	TA
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	8.6	5.7		mg/L	179018	1	07/26/2013 09:51	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	25	10		mg/L	179118	1	07/26/2013 16:30	KB
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.52	0.01	H	pH Units	R248740	1	07/25/2013 16:00	KB
BOD (5 day) (E405.1/SM5210B)								
Biochemical Oxygen Demand	BRL	5.0		mg/L	179025	1	07/25/2013 10:05	MG
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	12.9	10.0		mg/L	R248771	1	07/26/2013 10:57	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R249070	1	07/31/2013 09:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earthcon Work Order Number 1307J66

Checklist completed by [signature] 7/24/13
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.8 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by [initials]

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1307J66

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1307J66-001A	SW006	7/23/2013 10:30:00AM	Surface Water	Biochemical Oxygen Demand (BOD)		07/25/2013	07/25/2013
1307J66-001B	SW006	7/23/2013 10:30:00AM	Surface Water	Laboratory Hydrogen Ion (pH)		07/25/2013	07/25/2013
1307J66-001B	SW006	7/23/2013 10:30:00AM	Surface Water	Acidity			07/31/2013
1307J66-001C	SW006	7/23/2013 10:30:00AM	Surface Water	Trace Elements by ICP/MS		07/26/2013	08/01/2013
1307J66-001D	SW006	7/23/2013 10:30:00AM	Surface Water	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307J66-001D	SW006	7/23/2013 10:30:00AM	Surface Water	Alkalinity			07/26/2013
1307J66-001E	SW006	7/23/2013 10:30:00AM	Surface Water	Residue, Suspended (TSS)		07/25/2013	07/26/2013
1307J66-002A	SW005	7/23/2013 12:05:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		07/25/2013	07/25/2013
1307J66-002B	SW005	7/23/2013 12:05:00PM	Surface Water	Laboratory Hydrogen Ion (pH)		07/25/2013	07/25/2013
1307J66-002B	SW005	7/23/2013 12:05:00PM	Surface Water	Acidity			07/31/2013
1307J66-002C	SW005	7/23/2013 12:05:00PM	Surface Water	Trace Elements by ICP/MS		07/26/2013	08/01/2013
1307J66-002D	SW005	7/23/2013 12:05:00PM	Surface Water	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307J66-002D	SW005	7/23/2013 12:05:00PM	Surface Water	Alkalinity			07/26/2013
1307J66-002E	SW005	7/23/2013 12:05:00PM	Surface Water	Residue, Suspended (TSS)		07/25/2013	07/26/2013
1307J66-003A	SW004	7/23/2013 1:20:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		07/25/2013	07/25/2013
1307J66-003B	SW004	7/23/2013 1:20:00PM	Surface Water	Laboratory Hydrogen Ion (pH)		07/25/2013	07/25/2013
1307J66-003B	SW004	7/23/2013 1:20:00PM	Surface Water	Acidity			07/31/2013
1307J66-003C	SW004	7/23/2013 1:20:00PM	Surface Water	Trace Elements by ICP/MS		07/26/2013	08/01/2013
1307J66-003D	SW004	7/23/2013 1:20:00PM	Surface Water	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307J66-003D	SW004	7/23/2013 1:20:00PM	Surface Water	Alkalinity			07/26/2013
1307J66-003E	SW004	7/23/2013 1:20:00PM	Surface Water	Residue, Suspended (TSS)		07/25/2013	07/26/2013
1307J66-004A	SW003	7/23/2013 2:10:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		07/25/2013	07/25/2013
1307J66-004B	SW003	7/23/2013 2:10:00PM	Surface Water	Laboratory Hydrogen Ion (pH)		07/25/2013	07/25/2013
1307J66-004B	SW003	7/23/2013 2:10:00PM	Surface Water	Acidity			07/31/2013
1307J66-004C	SW003	7/23/2013 2:10:00PM	Surface Water	Trace Elements by ICP/MS		07/26/2013	08/01/2013
1307J66-004D	SW003	7/23/2013 2:10:00PM	Surface Water	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307J66-004D	SW003	7/23/2013 2:10:00PM	Surface Water	Alkalinity			07/26/2013
1307J66-004E	SW003	7/23/2013 2:10:00PM	Surface Water	Residue, Suspended (TSS)		07/25/2013	07/26/2013
1307J66-005A	SW002	7/23/2013 2:30:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		07/25/2013	07/25/2013

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1307J66

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1307J66-005B	SW002	7/23/2013 2:30:00PM	Surface Water	Laboratory Hydrogen Ion (pH)		07/25/2013	07/25/2013
1307J66-005B	SW002	7/23/2013 2:30:00PM	Surface Water	Acidity			07/31/2013
1307J66-005C	SW002	7/23/2013 2:30:00PM	Surface Water	Trace Elements by ICP/MS		07/26/2013	08/01/2013
1307J66-005D	SW002	7/23/2013 2:30:00PM	Surface Water	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307J66-005D	SW002	7/23/2013 2:30:00PM	Surface Water	Alkalinity			07/26/2013
1307J66-005E	SW002	7/23/2013 2:30:00PM	Surface Water	Residue, Suspended (TSS)		07/25/2013	07/26/2013
1307J66-006A	SW001	7/23/2013 2:45:00PM	Surface Water	Biochemical Oxygen Demand (BOD)		07/25/2013	07/25/2013
1307J66-006B	SW001	7/23/2013 2:45:00PM	Surface Water	Laboratory Hydrogen Ion (pH)		07/25/2013	07/25/2013
1307J66-006B	SW001	7/23/2013 2:45:00PM	Surface Water	Acidity			07/31/2013
1307J66-006C	SW001	7/23/2013 2:45:00PM	Surface Water	Trace Elements by ICP/MS		07/26/2013	08/01/2013
1307J66-006D	SW001	7/23/2013 2:45:00PM	Surface Water	Residue, Dissolved (TDS)		07/26/2013	07/26/2013
1307J66-006D	SW001	7/23/2013 2:45:00PM	Surface Water	Alkalinity			07/26/2013
1307J66-006E	SW001	7/23/2013 2:45:00PM	Surface Water	Residue, Suspended (TSS)		07/25/2013	07/26/2013

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: 179018

Sample ID: **MB-179018** Client ID: Units: **mg/L** Prep Date: **07/25/2013** Run No: **248743**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **179018** Analysis Date: **07/25/2013** Seq No: **5212797**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0									

Sample ID: **1307J34-002ADUP** Client ID: Units: **mg/L** Prep Date: **07/25/2013** Run No: **248743**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **179018** Analysis Date: **07/25/2013** Seq No: **5212801**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0						3.000	0	5	

Sample ID: **1307J71-001EDUP** Client ID: Units: **mg/L** Prep Date: **07/25/2013** Run No: **248743**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **179018** Analysis Date: **07/26/2013** Seq No: **5213060**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	15.00	5.0						14.50	3.39	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: 179025

Sample ID: **MB-179025** Client ID: Units: **mg/L** Prep Date: **07/25/2013** Run No: **248954**
SampleType: **MBLK** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **179025** Analysis Date: **07/25/2013** Seq No: **5217363**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	BRL	0.2									

Sample ID: **LCS-179025** Client ID: Units: **mg/L** Prep Date: **07/25/2013** Run No: **248954**
SampleType: **LCS** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **179025** Analysis Date: **07/25/2013** Seq No: **5217364**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	191.6	5.0	198.0		96.8	85	115				

Sample ID: **LCSD-179025** Client ID: Units: **mg/L** Prep Date: **07/25/2013** Run No: **248954**
SampleType: **LCSD** TestCode: **BOD (5 day) (E405.1/SM5210B)** BatchID: **179025** Analysis Date: **07/25/2013** Seq No: **5217395**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	194.6	5.0	198.0		98.3	85	115	191.6	1.55	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: 179034

Sample ID: **MB-179034** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **249143**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **179034** Analysis Date: **07/31/2013** Seq No: **5221116**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **MB-179034** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **249143**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **179034** Analysis Date: **08/01/2013** Seq No: **5221697**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	10.0									

Sample ID: **LCS-179034** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **249143**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **179034** Analysis Date: **07/31/2013** Seq No: **5221114**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	108.8	5.00	100.0	1.028	108	85	115				

Sample ID: **LCS-179034** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **249143**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **179034** Analysis Date: **08/01/2013** Seq No: **5221695**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1047	10.0	1000		105	85	115				
Iron	1104	100	1000		110	85	115				

Sample ID: **1307J62-001AMS** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **249143**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **179034** Analysis Date: **07/31/2013** Seq No: **5221119**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1185	10.0	1000	56.31	113	70	130				
Iron	1619	100	1000	202.8	142	70	130				S
Manganese	185.3	5.00	100.0	67.76	118	70	130				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 2-Aug-13

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: 179034

Sample ID: **1307J62-001AMSD** Client ID: Units: **ug/L** Prep Date: **07/26/2013** Run No: **249143**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **179034** Analysis Date: **07/31/2013** Seq No: **5221120**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1216	10.0	1000	56.31	116	70	130	1185	2.58	20	
Iron	1626	100	1000	202.8	142	70	130	1619	0.431	20	S
Manganese	186.5	5.00	100.0	67.76	119	70	130	185.3	0.646	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: 179118

Sample ID: **MB-179118** Client ID: Units: **mg/L** Prep Date: **07/26/2013** Run No: **248821**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **179118** Analysis Date: **07/26/2013** Seq No: **5214312**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1307J62-001DDUP** Client ID: Units: **mg/L** Prep Date: **07/26/2013** Run No: **248821**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **179118** Analysis Date: **07/26/2013** Seq No: **5214314**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	46.00	10						47.00	2.15	5	

Sample ID: **1307K40-004CDUP** Client ID: Units: **mg/L** Prep Date: **07/26/2013** Run No: **248821**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **179118** Analysis Date: **07/26/2013** Seq No: **5214325**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	143.0	10						142.0	0.702	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: **R248740**

Sample ID: **LCS-R248740** Client ID: Units: **pH Units** Prep Date: **07/25/2013** Run No: **248740**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R248740** Analysis Date: **07/25/2013** Seq No: **5212750**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.050	0.01	7.000		101	90	110				

Sample ID: **1307J59-001ADUP** Client ID: Units: **pH Units** Prep Date: **07/25/2013** Run No: **248740**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R248740** Analysis Date: **07/25/2013** Seq No: **5212752**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	8.070	0.01						8.100	0.371	10	H

Sample ID: **1307J76-001BDUP** Client ID: Units: **pH Units** Prep Date: **07/25/2013** Run No: **248740**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R248740** Analysis Date: **07/25/2013** Seq No: **5212766**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	9.800	0.01						9.790	0.102	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: R248771

Sample ID: **MB-R248771** Client ID: Units: **mg/L** Prep Date: Run No: **248771**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R248771** Analysis Date: **07/26/2013** Seq No: **5213309**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R248771** Client ID: Units: **mg/L** Prep Date: Run No: **248771**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R248771** Analysis Date: **07/26/2013** Seq No: **5213310**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	243.0	10.0	250.0		97.2	75	125				

Sample ID: **1307J66-003DDUP** Client ID: **SW004** Units: **mg/L** Prep Date: Run No: **248771**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R248771** Analysis Date: **07/26/2013** Seq No: **5213340**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	49.00	10.0						48.70	0.614	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 2-Aug-13

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1307J66

ANALYTICAL QC SUMMARY REPORT

BatchID: R249070

Sample ID: **MB-R249070** Client ID: Units: **mg/L** Prep Date: Run No: **249070**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R249070** Analysis Date: **07/31/2013** Seq No: **5219623**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R249070** Client ID: Units: **mg/L** Prep Date: Run No: **249070**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R249070** Analysis Date: **07/31/2013** Seq No: **5219625**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	101.0	10.0	100.0		101	80	120				

Sample ID: **1307J62-001DDUP** Client ID: Units: **mg/L** Prep Date: Run No: **249070**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R249070** Analysis Date: **07/31/2013** Seq No: **5219629**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

February 15, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1402380

Analytical Environmental Services, Inc. received 8 samples on 2/5/2014 1:38:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1402380

Date: 2/4/14 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 11405 Walters Rd, Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J McKinney

SIGNATURE:

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	pH	Fe, mn	SO4	TDS	TSS							REMARKS	No # of Containers
							PRESERVATION (See codes)														
							I	I	I	N	I	I	I								
1	TC-DOWN	2/4/14	0730	X		SW	X	X	X	X	X	X	X								7
2	SW006	2/4/14	0845	X		SW	X	X	X	X	X	X	X								7
3	SW005	2/4/14	1010	X		SW	X	X	X	X	X	X	X								7
4	SW004	2/4/14	1130	X		SW	X	X	X	X	X	X	X								7
5	SW TC-UP	2/4/14	1315	X		SW	X	X	X	X	X	X	X								7
6	SW003	2/4/14	1340	X		SW	X	X	X	X	X	X	X								7
7	SW002	2/4/14	1400	X		SW	X	X	X	X	X	X	X								7
8	SW001	2/4/14	1415	X		SW	X	X	X	X	X	X	X								7
9																					
10																					
11																					
12																					
13																					
14																					

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	2/5/14 1000	1:	2-5-14 1:30
2:	2-5-14 1:38	2:	2/5/14 1:38
3:		3:	

PROJECT INFORMATION

PROJECT NAME: Ridgeholm

PROJECT #: 02-20120195.00

SITE ADDRESS:

SEND REPORT TO: Bob Decker

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE #: PO#:

RECEIPT

Total # of Containers

Turnaround Time Request

- ☒ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):

E-mail? Y / N; Fax? Y / N

DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD

OUT / / VIA:

IN 2/5/14 VIA: AES

CLIENT FedEx UPS MAIL COURIER

GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.

SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1402380

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	TC-DOWN
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 7:30:00 AM
Lab ID:	1402380-001	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	821	100		ug/L	186758	1	02/07/2014 18:02	MR
Manganese	89.3	5.00		ug/L	186758	1	02/07/2014 18:02	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	52.5	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	26	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	6.37	1.00		mg/L	R261170	1	02/10/2014 10:22	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.18	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:28	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 8:45:00 AM
Lab ID:	1402380-002	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	593	100		ug/L	186758	1	02/07/2014 18:07	MR
Manganese	80.7	5.00		ug/L	186758	1	02/07/2014 18:07	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	15.0	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	14	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	5.90	1.00		mg/L	R261170	1	02/10/2014 10:36	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.27	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:29	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 005
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 10:10:00 AM
Lab ID:	1402380-003	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	406	100		ug/L	186758	1	02/07/2014 18:12	MR
Manganese	49.2	5.00		ug/L	186758	1	02/07/2014 18:12	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	5.5	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	41	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	8.45	1.00		mg/L	R261170	1	02/10/2014 10:51	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.29	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:30	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 004
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 11:30:00 AM
Lab ID:	1402380-004	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	295	100		ug/L	186758	1	02/07/2014 18:17	MR
Manganese	83.4	5.00		ug/L	186758	1	02/07/2014 18:17	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	11.0	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	55	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	13.0	1.00		mg/L	R261170	1	02/10/2014 11:06	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.04	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	10.3	10.0		mg/L	R261076	1	02/11/2014 12:31	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC-UP
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 1:15:00 PM
Lab ID:	1402380-005	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	584	100		ug/L	186758	1	02/07/2014 18:22	MR
Manganese	67.4	5.00		ug/L	186758	1	02/07/2014 18:22	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	154	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	26	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	6.62	1.00		mg/L	R261170	1	02/10/2014 11:20	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.08	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:32	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 003
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 1:40:00 PM
Lab ID:	1402380-006	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	732	100		ug/L	186758	1	02/07/2014 18:28	MR
Manganese	91.7	5.00		ug/L	186758	1	02/07/2014 18:28	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	13.5	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	28	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	8.49	1.00		mg/L	R261170	1	02/10/2014 11:35	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	6.56	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	15.8	10.0		mg/L	R261076	1	02/11/2014 12:33	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 002
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 2:00:00 PM
Lab ID:	1402380-007	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	147	100		ug/L	186758	1	02/07/2014 18:33	MR
Manganese	40.8	5.00		ug/L	186758	1	02/07/2014 18:33	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	12.0	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	81	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	6.25	1.00		mg/L	R261170	1	02/10/2014 11:50	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.20	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:34	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 15-Feb-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 001
Project Name:	Ridgeholm	**Collection Date:**	2/4/2014 2:15:00 PM
Lab ID:	1402380-008	**Matrix:**	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8 (E200.2)								
Iron	144	100		ug/L	186758	1	02/07/2014 18:49	MR
Manganese	51.6	5.00		ug/L	186758	1	02/07/2014 18:49	MR
Residue,Suspended(TSS)(E160.2/SM2540D)								
Residue, Suspended (TSS)	13.0	5.0		mg/L	186839	1	02/10/2014 11:00	KB
Residue, Diss.(TDS)(E160.1/SM2540C)								
Residue, Dissolved (TDS)	24	10		mg/L	186982	1	02/10/2014 16:30	KB
Inorganic Anions by IC E300.0								
Sulfate	3.84	1.00		mg/L	R261170	1	02/10/2014 13:18	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)								
pH	5.58	0.01	H	pH Units	R260884	1	02/07/2014 08:30	AB
Alkalinity E310.2								
Alkalinity, Total (As CaCO3)	BRL	10.0		mg/L	R261076	1	02/11/2014 12:38	TL
Acidity (E305.1/SM2310 B)								
Acidity	BRL	10.0		mg/L	R260977	1	02/10/2014 10:30	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth

Work Order Number 1402390

Checklist completed by [signature] 2/5/14
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.3 Cooler #2 3.9 Cooler #3 3.8 Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1402380

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1402380-001A	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-001B	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Acidity			02/10/2014
1402380-001C	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Alkalinity			02/11/2014
1402380-001D	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-001E	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-001F	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-001G	TC-DOWN	2/4/2014 7:30:00AM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-002A	SW 006	2/4/2014 8:45:00AM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-002B	SW 006	2/4/2014 8:45:00AM	Surface Water	Acidity			02/10/2014
1402380-002C	SW 006	2/4/2014 8:45:00AM	Surface Water	Alkalinity			02/11/2014
1402380-002D	SW 006	2/4/2014 8:45:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-002E	SW 006	2/4/2014 8:45:00AM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-002F	SW 006	2/4/2014 8:45:00AM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-002G	SW 006	2/4/2014 8:45:00AM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-003A	SW 005	2/4/2014 10:10:00AM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-003B	SW 005	2/4/2014 10:10:00AM	Surface Water	Acidity			02/10/2014
1402380-003C	SW 005	2/4/2014 10:10:00AM	Surface Water	Alkalinity			02/11/2014
1402380-003D	SW 005	2/4/2014 10:10:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-003E	SW 005	2/4/2014 10:10:00AM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-003F	SW 005	2/4/2014 10:10:00AM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-003G	SW 005	2/4/2014 10:10:00AM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-004A	SW 004	2/4/2014 11:30:00AM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-004B	SW 004	2/4/2014 11:30:00AM	Surface Water	Acidity			02/10/2014
1402380-004C	SW 004	2/4/2014 11:30:00AM	Surface Water	Alkalinity			02/11/2014
1402380-004D	SW 004	2/4/2014 11:30:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-004E	SW 004	2/4/2014 11:30:00AM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-004F	SW 004	2/4/2014 11:30:00AM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-004G	SW 004	2/4/2014 11:30:00AM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-005A	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1402380

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1402380-005B	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Acidity			02/10/2014
1402380-005C	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Alkalinity			02/11/2014
1402380-005D	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-005E	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-005F	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-005G	SW TC-UP	2/4/2014 1:15:00PM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-006A	SW 003	2/4/2014 1:40:00PM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-006B	SW 003	2/4/2014 1:40:00PM	Surface Water	Acidity			02/10/2014
1402380-006C	SW 003	2/4/2014 1:40:00PM	Surface Water	Alkalinity			02/11/2014
1402380-006D	SW 003	2/4/2014 1:40:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-006E	SW 003	2/4/2014 1:40:00PM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-006F	SW 003	2/4/2014 1:40:00PM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-006G	SW 003	2/4/2014 1:40:00PM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-007A	SW 002	2/4/2014 2:00:00PM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-007B	SW 002	2/4/2014 2:00:00PM	Surface Water	Acidity			02/10/2014
1402380-007C	SW 002	2/4/2014 2:00:00PM	Surface Water	Alkalinity			02/11/2014
1402380-007D	SW 002	2/4/2014 2:00:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-007E	SW 002	2/4/2014 2:00:00PM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-007F	SW 002	2/4/2014 2:00:00PM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-007G	SW 002	2/4/2014 2:00:00PM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014
1402380-008A	SW 001	2/4/2014 2:15:00PM	Surface Water	Trace Elements by ICP/MS		02/06/2014	02/07/2014
1402380-008B	SW 001	2/4/2014 2:15:00PM	Surface Water	Acidity			02/10/2014
1402380-008C	SW 001	2/4/2014 2:15:00PM	Surface Water	Alkalinity			02/11/2014
1402380-008D	SW 001	2/4/2014 2:15:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			02/07/2014
1402380-008E	SW 001	2/4/2014 2:15:00PM	Surface Water	Inorganic Anions by IC			02/10/2014
1402380-008F	SW 001	2/4/2014 2:15:00PM	Surface Water	Residue, Dissolved (TDS)		02/10/2014	02/10/2014
1402380-008G	SW 001	2/4/2014 2:15:00PM	Surface Water	Residue, Suspended (TSS)		02/10/2014	02/10/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: **186758**

Sample ID: **MB-186758** Client ID: Units: **ug/L** Prep Date: **02/06/2014** Run No: **261011**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS** **E200.8** BatchID: **186758** Analysis Date: **02/07/2014** Seq No: **5486345**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	BRL	100									
Manganese	BRL	5.00									

Sample ID: **LCS-186758** Client ID: Units: **ug/L** Prep Date: **02/06/2014** Run No: **261011**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS** **E200.8** BatchID: **186758** Analysis Date: **02/07/2014** Seq No: **5486343**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1051	100	1000	5.756	105	85	115				
Manganese	105.2	5.00	100.0		105	85	115				

Sample ID: **1402485-001AMS** Client ID: Units: **ug/L** Prep Date: **02/06/2014** Run No: **261011**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS** **E200.8** BatchID: **186758** Analysis Date: **02/07/2014** Seq No: **5486348**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1006	100	1000	107.8	89.9	70	130				
Manganese	99.24	5.00	100.0	7.109	92.1	70	130				

Sample ID: **1402485-001AMSD** Client ID: Units: **ug/L** Prep Date: **02/06/2014** Run No: **261011**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS** **E200.8** BatchID: **186758** Analysis Date: **02/07/2014** Seq No: **5486349**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1032	100	1000	107.8	92.4	70	130	1006	2.53	20	
Manganese	102.4	5.00	100.0	7.109	95.3	70	130	99.24	3.14	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: 186839

Sample ID: **MB-186839** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **260981**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **186839** Analysis Date: **02/10/2014** Seq No: **5486108**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0									

Sample ID: **1402317-001ADUP** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **260981**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **186839** Analysis Date: **02/10/2014** Seq No: **5486110**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	46.00	5.0						44.50	3.31	5	

Sample ID: **1402372-001CDUP** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **260981**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **186839** Analysis Date: **02/10/2014** Seq No: **5486121**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	64.62	7.7						63.85	1.20	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: 186982

Sample ID: **MB-186982** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **261156**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **186982** Analysis Date: **02/10/2014** Seq No: **5489550**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1402379-001FDUP** Client ID: Units: **mg/L** Prep Date: **02/10/2014** Run No: **261156**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **186982** Analysis Date: **02/10/2014** Seq No: **5489565**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	69.00	10						70.00	1.44	5	

Sample ID: **1402380-005FDUP** Client ID: **SW TC-UP** Units: **mg/L** Prep Date: **02/10/2014** Run No: **261156**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **186982** Analysis Date: **02/10/2014** Seq No: **5489566**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	25.00	10						26.00	3.92	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: R260884

Sample ID: **LCS-R260884** Client ID: Units: **pH Units** Prep Date: Run No: **260884**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R260884** Analysis Date: **02/07/2014** Seq No: **5483768**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.010	0.01	7.000		100	90	110				

Sample ID: **1402379-001DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **260884**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R260884** Analysis Date: **02/07/2014** Seq No: **5483796**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.320	0.01						6.310	0.158	10	H

Sample ID: **1402380-005DDUP** Client ID: **SW TC-UP** Units: **pH Units** Prep Date: Run No: **260884**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R260884** Analysis Date: **02/07/2014** Seq No: **5483805**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.090	0.01						6.080	0.164	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: **R260977**

Sample ID: **MB-R260977** Client ID: Units: **mg/L** Prep Date: Run No: **260977**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R260977** Analysis Date: **02/10/2014** Seq No: **5485699**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R260977** Client ID: Units: **mg/L** Prep Date: Run No: **260977**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R260977** Analysis Date: **02/10/2014** Seq No: **5485700**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	81.70	10.0	100.0		81.7	80	120				

Sample ID: **1402379-001BDUP** Client ID: Units: **mg/L** Prep Date: Run No: **260977**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R260977** Analysis Date: **02/10/2014** Seq No: **5485716**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: R261076

Sample ID: **MB-R261076** Client ID: Units: **mg/L** Prep Date: Run No: **261076**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R261076** Analysis Date: **02/11/2014** Seq No: **5487810**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R261076** Client ID: Units: **mg/L** Prep Date: Run No: **261076**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R261076** Analysis Date: **02/11/2014** Seq No: **5487813**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	267.0	10.0	250.0		107	75	125				

Sample ID: **1402291-002FDUP** Client ID: Units: **mg/L** Prep Date: Run No: **261076**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R261076** Analysis Date: **02/11/2014** Seq No: **5487917**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	123.0	10.0						124.0	0.810	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1402380

ANALYTICAL QC SUMMARY REPORT

BatchID: R261170

Sample ID: **MB-R261170** Client ID: Units: **mg/L** Prep Date: Run No: **261170**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R261170** Analysis Date: **02/10/2014** Seq No: **5489800**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R261170** Client ID: Units: **mg/L** Prep Date: Run No: **261170**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R261170** Analysis Date: **02/10/2014** Seq No: **5489801**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	23.90	1.00	25.00		95.6	90	110				

Sample ID: **1402380-007EMS** Client ID: **SW 002** Units: **mg/L** Prep Date: Run No: **261170**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R261170** Analysis Date: **02/10/2014** Seq No: **5489809**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	30.69	1.00	25.00	6.245	97.8	90	110				

Sample ID: **1402380-007EMSD** Client ID: **SW 002** Units: **mg/L** Prep Date: Run No: **261170**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R261170** Analysis Date: **02/10/2014** Seq No: **5489811**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	30.07	1.00	25.00	6.245	95.3	90	110	30.69	2.07	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 19, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1403C11

Analytical Environmental Services, Inc. received 9 samples on 3/13/2014 2:25:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

CKanhai

Chantelle Kanhai
Project Manager

Revision 5/19/2014

3785 PRESIDENTIAL PARKWAY • ATLANTA, GEORGIA 30340 • TEL: (770) 457-8177 • FAX: (770) 457-8188

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1403C11

Date: 3/12/14 Page 1 of 1

COMPANY: Earthcon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J. McKinney

SIGNATURE:

ANALYSIS REQUESTED: Acidity, Alkalinity, pH, metals, anions, TSS, TDS

PRESERVATION (See codes): I, I, I, N, I, I, I

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	pH	metals	anions	TSS	TDS	REMARKS	No # of Containers
1	SWTC Down	3/12/14	0915	X		SW	1	1	1	1	1	1	1		7
2	SW Pond 1	3/12/14	0950	X		SW	1	1	1	1	1	1	1		7
3	SW006	3/12/14	1100	X		SW	1	1	1	1	1	1	1		7
4	SW005	3/12/14	1220	X		SW	1	1	1	1	1	1	1		7
5	SW004	3/12/14	1350	X		SW	1	1	1	1	1	1	1		7
6	SWTC UP	3/12/14	1415	X		SW	1	1	1	1	1	1	1		7
7	SW003	3/12/14	1445	X		SW	1	1	1	1	1	1	1		7
8	SW002	3/12/14	1515	X		SW	1	1	1	1	1	1	1		7
9	SW001	3/12/14	1540	X		SW	1	1	1	1	1	1	1		7
10															
11															
12															
13															
14															

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	3/13/14 0900	1:	3-13-14 11:45
2:	3-13-14 14:25	2:	3/13/14 2:25
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 3/13/14 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 63

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1403C11

Case Narrative

pH Analysis by Method 150.1:

Samples for pH analysis by Method 150.1 were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC DOWN
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 9:15:00 AM
Lab ID:	1403C11-001	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	70.0		4.45	10.0	ug/L	188368	1	03/17/2014 17:45	TA
Antimony	0.0986	J	0.0437	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Arsenic	BRL		0.228	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/17/2014 17:45	TA
Cadmium	0.0299	J	0.0132	0.700	ug/L	188368	1	03/17/2014 17:45	TA
Chromium	0.147	J	0.115	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Iron	169		40.5	100	ug/L	188368	1	03/17/2014 17:45	TA
Lead	0.143	J	0.134	1.00	ug/L	188368	1	03/17/2014 17:45	TA
Manganese	36.6		0.157	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Nickel	0.501	J	0.111	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Selenium	BRL		0.302	5.00	ug/L	188368	1	03/17/2014 17:45	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/17/2014 17:45	TA
Thallium	0.0834	J	0.0537	1.00	ug/L	188368	1	03/17/2014 17:45	TA
Zinc	5.01	J	2.97	10.0	ug/L	188368	1	03/17/2014 17:45	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	0.00019	J	0.00007	0.00020	mg/L	188399	1	03/18/2014 15:53	CG
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	2.5	J	1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	52		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	5.65		0.262	1.00	mg/L	R263565	1	03/18/2014 10:56	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.53	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	3.9	J	2.8	10.0	mg/L	R263252	1	03/14/2014 12:20	TL
Acidity (E305.1/SM2310 B)									
Acidity	15.0		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW POND 1
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 9:50:00 AM
Lab ID:	1403C11-002	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	90.6		4.45	10.0	ug/L	188368	1	03/20/2014 18:59	TA
Antimony	0.109	J	0.0437	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Arsenic	0.487	J	0.228	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 18:59	TA
Cadmium	0.0211	J	0.0132	0.700	ug/L	188368	1	03/20/2014 18:59	TA
Chromium	0.183	J	0.115	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Iron	310		40.5	100	ug/L	188368	1	03/20/2014 18:59	TA
Lead	0.184	J	0.134	1.00	ug/L	188368	1	03/20/2014 18:59	TA
Manganese	162		0.157	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Nickel	0.770	J	0.111	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Selenium	1.13	J	0.302	5.00	ug/L	188368	1	03/20/2014 18:59	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 18:59	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 18:59	TA
Zinc	8.43	J	2.97	10.0	ug/L	188368	1	03/20/2014 18:59	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	19.5		1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	44		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	5.50		0.262	1.00	mg/L	R263565	1	03/18/2014 11:12	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	5.93	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	14.5		2.8	10.0	mg/L	R263252	1	03/14/2014 11:46	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 11:00:00 AM
Lab ID:	1403C11-003	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	97.9		4.45	10.0	ug/L	188368	1	03/20/2014 19:04	TA
Antimony	0.0710	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Arsenic	0.335	J	0.228	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:04	TA
Cadmium	0.0149	J	0.0132	0.700	ug/L	188368	1	03/20/2014 19:04	TA
Chromium	0.185	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Iron	550		40.5	100	ug/L	188368	1	03/20/2014 19:04	TA
Lead	0.168	J	0.134	1.00	ug/L	188368	1	03/20/2014 19:04	TA
Manganese	128		0.157	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Nickel	0.632	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Selenium	0.570	J	0.302	5.00	ug/L	188368	1	03/20/2014 19:04	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:04	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:04	TA
Zinc	6.66	J	2.97	10.0	ug/L	188368	1	03/20/2014 19:04	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	9.0		1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	17		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	5.25		0.262	1.00	mg/L	R263567	1	03/18/2014 13:01	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.04	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	5.4	J	2.8	10.0	mg/L	R263252	1	03/14/2014 11:47	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 005
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 12:20:00 PM
Lab ID:	1403C11-004	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	107		4.45	10.0	ug/L	188368	1	03/20/2014 19:09	TA
Antimony	0.0887	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Arsenic	0.325	J	0.228	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:09	TA
Cadmium	BRL		0.0132	0.700	ug/L	188368	1	03/20/2014 19:09	TA
Chromium	0.251	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Copper	2.98	J	1.24	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Iron	395		40.5	100	ug/L	188368	1	03/20/2014 19:09	TA
Lead	0.180	J	0.134	1.00	ug/L	188368	1	03/20/2014 19:09	TA
Manganese	45.0		0.157	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Nickel	1.66	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Selenium	0.447	J	0.302	5.00	ug/L	188368	1	03/20/2014 19:09	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:09	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:09	TA
Zinc	6.12	J	2.97	10.0	ug/L	188368	1	03/20/2014 19:09	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	3.0	J	1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	20		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	6.18		0.262	1.00	mg/L	R263567	1	03/18/2014 13:16	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.61	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	5.8	J	2.8	10.0	mg/L	R263252	1	03/14/2014 12:12	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 004
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 1:50:00 PM
Lab ID:	1403C11-005	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	233		4.45	10.0	ug/L	188368	1	03/20/2014 19:14	TA
Antimony	0.0893	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Arsenic	0.574	J	0.228	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:14	TA
Cadmium	BRL		0.0132	0.700	ug/L	188368	1	03/20/2014 19:14	TA
Chromium	0.309	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Copper	5.58		1.24	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Iron	379		40.5	100	ug/L	188368	1	03/20/2014 19:14	TA
Lead	0.481	J	0.134	1.00	ug/L	188368	1	03/20/2014 19:14	TA
Manganese	99.8		0.157	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Nickel	0.380	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Selenium	0.779	J	0.302	5.00	ug/L	188368	1	03/20/2014 19:14	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:14	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:14	TA
Zinc	9.18	J	2.97	10.0	ug/L	188368	1	03/20/2014 19:14	TA
Total Mercury E245.1					**(E245.1)**				
Mercury	0.00019	J	0.00007	0.00020	mg/L	188399	1	03/18/2014 16:34	CG
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	7.5		1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	52		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	11.5		0.262	1.00	mg/L	R263567	1	03/18/2014 13:32	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.44	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	11.9		2.8	10.0	mg/L	R263252	1	03/14/2014 12:21	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC UP
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 2:15:00 PM
Lab ID:	1403C11-006	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	55.8		4.45	10.0	ug/L	188368	1	03/20/2014 19:20	TA
Antimony	0.0567	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Arsenic	BRL		0.228	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:20	TA
Cadmium	BRL		0.0132	0.700	ug/L	188368	1	03/20/2014 19:20	TA
Chromium	0.206	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Iron	138		40.5	100	ug/L	188368	1	03/20/2014 19:20	TA
Lead	BRL		0.134	1.00	ug/L	188368	1	03/20/2014 19:20	TA
Manganese	27.6		0.157	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Nickel	0.507	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Selenium	0.373	J	0.302	5.00	ug/L	188368	1	03/20/2014 19:20	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:20	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:20	TA
Zinc	6.80	J	2.97	10.0	ug/L	188368	1	03/20/2014 19:20	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	BRL		1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	13		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	5.48		0.262	1.00	mg/L	R263567	1	03/18/2014 13:47	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	5.90	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	BRL		2.8	10.0	mg/L	R263252	1	03/14/2014 11:56	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 003
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 2:45:00 PM
Lab ID:	1403C11-007	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	93.4		4.45	10.0	ug/L	188368	1	03/20/2014 19:25	TA
Antimony	0.0891	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Arsenic	0.677	J	0.228	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:25	TA
Cadmium	BRL		0.0132	0.700	ug/L	188368	1	03/20/2014 19:25	TA
Chromium	0.235	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Iron	2460		40.5	100	ug/L	188368	1	03/20/2014 19:25	TA
Lead	0.178	J	0.134	1.00	ug/L	188368	1	03/20/2014 19:25	TA
Manganese	288		0.157	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Nickel	0.255	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Selenium	0.373	J	0.302	5.00	ug/L	188368	1	03/20/2014 19:25	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:25	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:25	TA
Zinc	9.47	J	2.97	10.0	ug/L	188368	1	03/20/2014 19:25	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	17.0		1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	20		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	6.69		0.262	1.00	mg/L	R263567	1	03/18/2014 14:02	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.73	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	13.3		2.8	10.0	mg/L	R263252	1	03/14/2014 11:57	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 002
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 3:15:00 PM
Lab ID:	1403C11-008	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	123		4.45	10.0	ug/L	188368	1	03/20/2014 19:30	TA
Antimony	0.0639	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Arsenic	BRL		0.228	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:30	TA
Cadmium	0.0286	J	0.0132	0.700	ug/L	188368	1	03/20/2014 19:30	TA
Chromium	0.182	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Iron	62.8	J	40.5	100	ug/L	188368	1	03/20/2014 19:30	TA
Lead	0.162	J	0.134	1.00	ug/L	188368	1	03/20/2014 19:30	TA
Manganese	45.2		0.157	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Nickel	0.728	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Selenium	0.431	J	0.302	5.00	ug/L	188368	1	03/20/2014 19:30	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:30	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:30	TA
Zinc	6.95	J	2.97	10.0	ug/L	188368	1	03/20/2014 19:30	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	3.0	J	1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	24		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	5.19		0.262	1.00	mg/L	R263567	1	03/18/2014 14:17	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	7.04	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	BRL		2.8	10.0	mg/L	R263252	1	03/14/2014 11:58	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 001
Project Name:	Ridgeholm	**Collection Date:**	3/12/2014 3:40:00 PM
Lab ID:	1403C11-009	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	104		4.45	10.0	ug/L	188368	1	03/20/2014 19:35	TA
Antimony	0.0601	J	0.0437	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Arsenic	0.318	J	0.228	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Beryllium	BRL		0.181	1.00	ug/L	188368	1	03/20/2014 19:35	TA
Cadmium	0.0179	J	0.0132	0.700	ug/L	188368	1	03/20/2014 19:35	TA
Chromium	0.230	J	0.115	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Copper	BRL		1.24	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Iron	522		40.5	100	ug/L	188368	1	03/20/2014 19:35	TA
Lead	0.199	J	0.134	1.00	ug/L	188368	1	03/20/2014 19:35	TA
Manganese	136		0.157	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Nickel	0.716	J	0.111	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Selenium	BRL		0.302	5.00	ug/L	188368	1	03/20/2014 19:35	TA
Silver	BRL		0.0654	1.00	ug/L	188368	1	03/20/2014 19:35	TA
Thallium	BRL		0.0537	1.00	ug/L	188368	1	03/20/2014 19:35	TA
Zinc	12.7		2.97	10.0	ug/L	188368	1	03/20/2014 19:35	TA
Residue,Suspended(TSS)(E160.2/SM2540D)									
Residue, Suspended (TSS)	7.0		1.0	5.0	mg/L	188520	1	03/18/2014 10:30	KB
Residue, Diss.(TDS)(E160.1/SM2540C)									
Residue, Dissolved (TDS)	14		5	10	mg/L	188490	1	03/18/2014 16:00	KB
Inorganic Anions by IC E300.0									
Sulfate	3.02		0.262	1.00	mg/L	R263567	1	03/18/2014 14:32	GR
Hydrogen Ion (pH)(E150.1/SM4500 H+ B)									
pH	6.69	H	0.01	0.01	pH Units	R263630	1	03/19/2014 12:00	KB
Alkalinity E310.2									
Alkalinity, Total (As CaCO3)	BRL		2.8	10.0	mg/L	R263252	1	03/14/2014 11:59	TL
Acidity (E305.1/SM2310 B)									
Acidity	BRL		10.0	10.0	mg/L	R263733	1	03/19/2014 14:00	KB

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth Co. Work Order Number 1403C11

Checklist completed by M 3/13/14
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1° Cooler #2 3.9° Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1403C11

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1403C11-001A	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/17/2014
1403C11-001A	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	TOTAL MERCURY		03/18/2014	03/18/2014
1403C11-001B	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Acidity			03/19/2014
1403C11-001C	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Alkalinity			03/14/2014
1403C11-001D	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-001E	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-001F	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-001G	SW TC DOWN	3/12/2014 9:15:00AM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014
1403C11-002A	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-002B	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Acidity			03/19/2014
1403C11-002C	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Alkalinity			03/14/2014
1403C11-002D	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-002E	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-002F	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-002G	SW POND 1	3/12/2014 9:50:00AM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014
1403C11-003A	SW 006	3/12/2014 11:00:00AM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-003B	SW 006	3/12/2014 11:00:00AM	Surface Water	Acidity			03/19/2014
1403C11-003C	SW 006	3/12/2014 11:00:00AM	Surface Water	Alkalinity			03/14/2014
1403C11-003D	SW 006	3/12/2014 11:00:00AM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-003E	SW 006	3/12/2014 11:00:00AM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-003F	SW 006	3/12/2014 11:00:00AM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-003G	SW 006	3/12/2014 11:00:00AM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014
1403C11-004A	SW 005	3/12/2014 12:20:00PM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-004B	SW 005	3/12/2014 12:20:00PM	Surface Water	Acidity			03/19/2014
1403C11-004C	SW 005	3/12/2014 12:20:00PM	Surface Water	Alkalinity			03/14/2014
1403C11-004D	SW 005	3/12/2014 12:20:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-004E	SW 005	3/12/2014 12:20:00PM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-004F	SW 005	3/12/2014 12:20:00PM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-004G	SW 005	3/12/2014 12:20:00PM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1403C11

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1403C11-005A	SW 004	3/12/2014 1:50:00PM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-005A	SW 004	3/12/2014 1:50:00PM	Surface Water	TOTAL MERCURY		03/18/2014	03/18/2014
1403C11-005B	SW 004	3/12/2014 1:50:00PM	Surface Water	Acidity			03/19/2014
1403C11-005C	SW 004	3/12/2014 1:50:00PM	Surface Water	Alkalinity			03/14/2014
1403C11-005D	SW 004	3/12/2014 1:50:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-005E	SW 004	3/12/2014 1:50:00PM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-005F	SW 004	3/12/2014 1:50:00PM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-005G	SW 004	3/12/2014 1:50:00PM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014
1403C11-006A	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-006B	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Acidity			03/19/2014
1403C11-006C	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Alkalinity			03/14/2014
1403C11-006D	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-006E	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-006F	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-006G	SW TC UP	3/12/2014 2:15:00PM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014
1403C11-007A	SW 003	3/12/2014 2:45:00PM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-007B	SW 003	3/12/2014 2:45:00PM	Surface Water	Acidity			03/19/2014
1403C11-007C	SW 003	3/12/2014 2:45:00PM	Surface Water	Alkalinity			03/14/2014
1403C11-007D	SW 003	3/12/2014 2:45:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-007E	SW 003	3/12/2014 2:45:00PM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-007F	SW 003	3/12/2014 2:45:00PM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-007G	SW 003	3/12/2014 2:45:00PM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014
1403C11-008A	SW 002	3/12/2014 3:15:00PM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-008B	SW 002	3/12/2014 3:15:00PM	Surface Water	Acidity			03/19/2014
1403C11-008C	SW 002	3/12/2014 3:15:00PM	Surface Water	Alkalinity			03/14/2014
1403C11-008D	SW 002	3/12/2014 3:15:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-008E	SW 002	3/12/2014 3:15:00PM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-008F	SW 002	3/12/2014 3:15:00PM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-008G	SW 002	3/12/2014 3:15:00PM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014

Analytical Environmental Services, Inc

Date: 26-Mar-14

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1403C11

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1403C11-009A	SW 001	3/12/2014 3:40:00PM	Surface Water	Trace Elements by ICP/MS		03/17/2014	03/20/2014
1403C11-009B	SW 001	3/12/2014 3:40:00PM	Surface Water	Acidity			03/19/2014
1403C11-009C	SW 001	3/12/2014 3:40:00PM	Surface Water	Alkalinity			03/14/2014
1403C11-009D	SW 001	3/12/2014 3:40:00PM	Surface Water	Laboratory Hydrogen Ion (pH)			03/19/2014
1403C11-009E	SW 001	3/12/2014 3:40:00PM	Surface Water	Inorganic Anions by IC			03/18/2014
1403C11-009F	SW 001	3/12/2014 3:40:00PM	Surface Water	Residue, Dissolved (TDS)		03/18/2014	03/18/2014
1403C11-009G	SW 001	3/12/2014 3:40:00PM	Surface Water	Residue, Suspended (TSS)		03/18/2014	03/18/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: 188368

Sample ID: **MB-188368** Client ID: Units: **ug/L** Prep Date: **03/17/2014** Run No: **263463**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **188368** Analysis Date: **03/17/2014** Seq No: **5542445**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	10.0									
Antimony	BRL	5.00									
Arsenic	BRL	5.00									
Beryllium	BRL	1.00									
Cadmium	0.07512	0.700									J
Chromium	0.08230	5.00									J
Copper	0.3148	5.00									J
Iron	3.687	100									J
Lead	BRL	1.00									
Manganese	BRL	5.00									
Nickel	BRL	5.00									
Selenium	BRL	5.00									
Silver	BRL	1.00									
Thallium	0.1685	1.00									J
Zinc	3.868	10.0									J

Sample ID: **LCS-188368** Client ID: Units: **ug/L** Prep Date: **03/17/2014** Run No: **263463**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **188368** Analysis Date: **03/17/2014** Seq No: **5542442**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	874.1	10.0	1000		87.4	85	115				
Antimony	93.33	5.00	100.0		93.3	85	115				
Arsenic	93.67	5.00	100.0		93.7	85	115				
Beryllium	96.31	1.00	100.0		96.3	85	115				
Cadmium	104.3	0.700	100.0	0.07512	104	85	115				
Chromium	87.73	5.00	100.0	0.08230	87.6	85	115				
Copper	91.10	5.00	100.0	0.3148	90.8	85	115				

Qualifiers:
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: 188368

Sample ID: **LCS-188368** Client ID: Units: **ug/L** Prep Date: **03/17/2014** Run No: **263463**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **188368** Analysis Date: **03/17/2014** Seq No: **5542442**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	868.9	100	1000	3.687	86.5	85	115				
Lead	87.84	1.00	100.0		87.8	85	115				
Manganese	87.89	5.00	100.0		87.9	85	115				
Nickel	89.80	5.00	100.0		89.8	85	115				
Selenium	97.72	5.00	100.0		97.7	85	115				
Silver	9.295	1.00	10.00		93.0	85	115				
Thallium	95.40	1.00	100.0	0.1685	95.2	85	115				
Zinc	96.99	10.0	100.0	3.868	93.1	85	115				

Sample ID: **1403C11-001AMS** Client ID: **SW TC DOWN** Units: **ug/L** Prep Date: **03/17/2014** Run No: **263463**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **188368** Analysis Date: **03/17/2014** Seq No: **5542449**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	950.7	10.0	1000	69.97	88.1	70	130				
Antimony	91.79	5.00	100.0	0.09859	91.7	70	130				
Arsenic	91.07	5.00	100.0		91.1	70	130				
Beryllium	100.6	1.00	100.0		101	70	130				
Cadmium	104.1	0.700	100.0	0.02986	104	70	130				
Chromium	84.70	5.00	100.0	0.1474	84.6	70	130				
Copper	86.68	5.00	100.0		86.7	70	130				
Iron	1007	100	1000	168.7	83.8	70	130				
Lead	87.77	1.00	100.0	0.1427	87.6	70	130				
Manganese	119.7	5.00	100.0	36.57	83.2	70	130				
Nickel	86.03	5.00	100.0	0.5014	85.5	70	130				
Selenium	94.95	5.00	100.0		95.0	70	130				
Silver	9.024	1.00	10.00		90.2	70	130				
Thallium	95.60	1.00	100.0	0.08345	95.5	70	130				
Zinc	95.18	10.0	100.0	5.008	90.2	70	130				

Qualifiers:
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: 188368

Sample ID: **1403C11-001AMSD** Client ID: **SW TC DOWN** Units: **ug/L** Prep Date: **03/17/2014** Run No: **263463**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **188368** Analysis Date: **03/17/2014** Seq No: **5542451**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	948.1	10.0	1000	69.97	87.8	70	130	950.7	0.276	20	
Antimony	93.33	5.00	100.0	0.09859	93.2	70	130	91.79	1.67	20	
Arsenic	90.82	5.00	100.0		90.8	70	130	91.07	0.274	20	
Beryllium	91.97	1.00	100.0		92.0	70	130	100.6	9.00	20	
Cadmium	95.58	0.700	100.0	0.02986	95.6	70	130	104.1	8.54	20	
Chromium	84.62	5.00	100.0	0.1474	84.5	70	130	84.70	0.096	20	
Copper	86.80	5.00	100.0		86.8	70	130	86.68	0.139	20	
Iron	1014	100	1000	168.7	84.6	70	130	1007	0.723	20	
Lead	89.36	1.00	100.0	0.1427	89.2	70	130	87.77	1.80	20	
Manganese	121.1	5.00	100.0	36.57	84.5	70	130	119.7	1.12	20	
Nickel	86.21	5.00	100.0	0.5014	85.7	70	130	86.03	0.211	20	
Selenium	95.00	5.00	100.0		95.0	70	130	94.95	0.047	20	
Silver	9.155	1.00	10.00		91.6	70	130	9.024	1.44	20	
Thallium	96.54	1.00	100.0	0.08345	96.5	70	130	95.60	0.979	20	
Zinc	93.77	10.0	100.0	5.008	88.8	70	130	95.18	1.49	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: 188399

Sample ID: **MB-188399** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263444**
SampleType: **MBLK** TestCode: **Total Mercury E245.1** BatchID: **188399** Analysis Date: **03/18/2014** Seq No: **5543258**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	BRL	0.00020									

Sample ID: **LCS-188399** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263444**
SampleType: **LCS** TestCode: **Total Mercury E245.1** BatchID: **188399** Analysis Date: **03/18/2014** Seq No: **5543262**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004669	0.00020	0.0050		93.4	85	115				

Sample ID: **1403B45-003AMS** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263444**
SampleType: **MS** TestCode: **Total Mercury E245.1** BatchID: **188399** Analysis Date: **03/18/2014** Seq No: **5543267**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004990	0.00020	0.0050		99.8	70	130				

Sample ID: **1403C11-005AMS** Client ID: **SW 004** Units: **mg/L** Prep Date: **03/18/2014** Run No: **263444**
SampleType: **MS** TestCode: **Total Mercury E245.1** BatchID: **188399** Analysis Date: **03/18/2014** Seq No: **5543580**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.005137	0.00020	0.0050	0.0001867	99.0	70	130				

Sample ID: **1403B45-003AMSD** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263444**
SampleType: **MSD** TestCode: **Total Mercury E245.1** BatchID: **188399** Analysis Date: **03/18/2014** Seq No: **5543270**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004601	0.00020	0.0050		92.0	70	130	0.004990	8.12	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: 188490

Sample ID: **MB-188490** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263639**
SampleType: **MBLK** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **188490** Analysis Date: **03/18/2014** Seq No: **5546555**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1403B72-002ADUP** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263639**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **188490** Analysis Date: **03/18/2014** Seq No: **5546557**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	1060	10						1056	0.378	5	

Sample ID: **1403C17-001FDUP** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263639**
SampleType: **DUP** TestCode: **Residue, Diss.(TDS)(E160.1/SM2540C)** BatchID: **188490** Analysis Date: **03/18/2014** Seq No: **5546568**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	40.00	10						41.00	2.47	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: 188520

Sample ID: **MB-188520** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263581**
SampleType: **MBLK** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **188520** Analysis Date: **03/18/2014** Seq No: **5545509**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0									

Sample ID: **1403A66-001BDUP** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263581**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **188520** Analysis Date: **03/18/2014** Seq No: **5545511**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	210.0	20.0						208.0	0.957	5	

Sample ID: **1403B46-001ADUP** Client ID: Units: **mg/L** Prep Date: **03/18/2014** Run No: **263581**
SampleType: **DUP** TestCode: **Residue,Suspended(TSS)(E160.2/SM2540D)** BatchID: **188520** Analysis Date: **03/18/2014** Seq No: **5545523**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	17.00	5.0						17.50	2.90	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: R263252

Sample ID: **MB-R263252** Client ID: Units: **mg/L** Prep Date: Run No: **263252**
SampleType: **MBLK** TestCode: **Alkalinity E310.2** BatchID: **R263252** Analysis Date: **03/14/2014** Seq No: **5536672**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	BRL	10.0									

Sample ID: **LCS-R263252** Client ID: Units: **mg/L** Prep Date: Run No: **263252**
SampleType: **LCS** TestCode: **Alkalinity E310.2** BatchID: **R263252** Analysis Date: **03/14/2014** Seq No: **5536674**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	244.0	10.0	250.0		97.6	75	125				

Sample ID: **1403C29-002CDUP** Client ID: Units: **mg/L** Prep Date: Run No: **263252**
SampleType: **DUP** TestCode: **Alkalinity E310.2** BatchID: **R263252** Analysis Date: **03/14/2014** Seq No: **5542160**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	106.0	10.0						106.0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: R263565

Sample ID: **MB-R263565** Client ID: Units: **mg/L** Prep Date: Run No: **263565**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263565** Analysis Date: **03/18/2014** Seq No: **5544655**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	BRL	1.00									
Sulfate	BRL	1.00									

Sample ID: **LCS-R263565** Client ID: Units: **mg/L** Prep Date: Run No: **263565**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263565** Analysis Date: **03/18/2014** Seq No: **5544650**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	4.740	1.00	5.000		94.8	90	110				
Sulfate	24.22	1.00	25.00		96.9	90	110				

Sample ID: **1403C11-002EMS** Client ID: **SW POND 1** Units: **mg/L** Prep Date: Run No: **263565**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263565** Analysis Date: **03/18/2014** Seq No: **5544676**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	7.932	1.00	5.000	3.269	93.3	90	110				
Sulfate	28.07	1.00	25.00	5.497	90.3	90	110				

Sample ID: **1403C11-002EMSD** Client ID: **SW POND 1** Units: **mg/L** Prep Date: Run No: **263565**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263565** Analysis Date: **03/18/2014** Seq No: **5544679**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	7.966	1.00	5.000	3.269	93.9	90	110	7.932	0.416	20	
Sulfate	28.03	1.00	25.00	5.497	90.1	90	110	28.07	0.134	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: R263567

Sample ID: **MB-R263567** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544813**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R263567** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544810**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	25.09	1.00	25.00		100	90	110				

Sample ID: **1403F04-001BMS** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544851**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	520.0	20.0	500.0	67.91	90.4	90	110				

Sample ID: **1403F51-004AMS** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544909**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	23.61	1.00	25.00	1.955	86.6	90	110				S

Sample ID: **1403F04-001BMSD** Client ID: Units: **mg/L** Prep Date: Run No: **263567**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R263567** Analysis Date: **03/18/2014** Seq No: **5544864**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	519.9	20.0	500.0	67.91	90.4	90	110	520.0	0.014	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: R263630

Sample ID: **LCS-R263630** Client ID: Units: **pH Units** Prep Date: Run No: **263630**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R263630** Analysis Date: **03/19/2014** Seq No: **5546363**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.990	0.01	7.000		99.9	90	110				

Sample ID: **1403C11-001DDUP** Client ID: **SW TC DOWN** Units: **pH Units** Prep Date: Run No: **263630**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R263630** Analysis Date: **03/19/2014** Seq No: **5546385**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.550	0.01						6.530	0.306	10	H

Sample ID: **1403C29-002DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **263630**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH)(E150.1/SM4500 H+ B)** BatchID: **R263630** Analysis Date: **03/19/2014** Seq No: **5546386**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.220	0.01						7.210	0.139	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1403C11

ANALYTICAL QC SUMMARY REPORT

BatchID: R263733

Sample ID: **MB-R263733** Client ID: Units: **mg/L** Prep Date: Run No: **263733**
SampleType: **MBLK** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R263733** Analysis Date: **03/19/2014** Seq No: **5548685**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R263733** Client ID: Units: **mg/L** Prep Date: Run No: **263733**
SampleType: **LCS** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R263733** Analysis Date: **03/19/2014** Seq No: **5548686**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	96.90	10.0	100.0		96.9	80	120				

Sample ID: **1403C11-001BDUP** Client ID: **SW TC DOWN** Units: **mg/L** Prep Date: Run No: **263733**
SampleType: **DUP** TestCode: **Acidity (E305.1/SM2310 B)** BatchID: **R263733** Analysis Date: **03/19/2014** Seq No: **5548701**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	15.90	10.0						14.95	6.16	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ALS Environmental
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March 26, 2014

Analytical Report for Service Request No: K1402590

Robert Decker
AES Atlanta
3080 Presidential Dr.
Atlanta, GA 30340

RE: Ridgeholm/02.20120195.00

Dear Robert:

Enclosed are the results of the samples submitted to our laboratory on March 15, 2014. For your reference, these analyses have been assigned our service request number K1402590.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

GS/aj

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	AES Atlanta	**Service Request No.:**	K1402590
Project:	Ridgeholm/ 02.20120195.00	**Date Received:**	03/15/14
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven water samples were received for analysis at ALS Environmental on 03/15/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Approved by

ALS Environmental

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
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ALS Environmental

CHAIN OF CUSTODY
47508

001

SR# K1402590
COC Set____of____
COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

1103C97

Project Name: Ridgeholm
Project Number: 02.20120195.00
Project Manager: Bob Decker
Company: EarthCon
Address: 14405 Walters Rd Ste 700 Houston TX
Phone #: 281-240-5200
email: RDecker@earthcon.com
Sampler Signature:
Sampler Printed Name: J. McKinney

CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix	NUMBER OF CONTAINERS	90D / 1631E / Hg LL T	1	2	3	4	5	Remarks
1. SWPond1		3/12/14 0950	SW	1	X						
2. SW006		3/12/14 1100	SW	1	X						
3. SW005		3/12/14 1220	SW	1	X						
4. SWTCUP		3/12/14 1415	SW	1	X						
5. SW003		3/12/14 1445	SW	1	X						
6. SW002		3/12/14 1515	SW	1	X						
7. SW001		3/12/14 1540	SW	1	X						
8.											
9.											
10.											

send report to: rdecker@earthcon.co
ckanhai@aesatlanta.c
ATTN: ROBERT DECKER

Invoice: AES, Inc.
3080 Presidential Drive
Atlanta, Ga 30340
ckanhai@aesatlanta.com

Report Requirements
- X I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information
P.O.# 16603
Bill To: AES, Inc.

Turnaround Requirements
___ 24 hr ___ 48 hr
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature 3/13/14 2:45	Signature	Signature
Printed Name J McKinney	Printed Name	Printed Name 3/14	Printed Name	Printed Name	Printed Name AES
Firm EarthCon	Firm	Firm	Firm	Firm	Firm 3/15/14 1000
Date/Time 3/13/14 0900	Date/Time 3-13-14 1145	Date/Time 3-13-14 14:25	Date/Time	Date/Time	Date/Time

PC 6/1/2014

Cooler Receipt and Preservation Form

Client / Project: EARTHCOM Service Request *K14* 02590

Received: 3/15/14 Opened: 3/15/14 By: A Unloaded: 3/15/14 By: A

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 FRONT

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.5	0.5	2.0	2.0	~~0~~	282		561327018355	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Mercury

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	AES Atlanta	**Service Request:**	K1402590
Project:	Ridgeholm/02.20120195.00	**Date Collected:**	03/12/14
Sample Matrix:	Water	**Date Received:**	03/15/14

Mercury, Total

Prep Method:	METHOD	Units:	ng/L
Analysis Method:	1631E	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW Pond 1	K1402590-001	1.0	0.06	1	03/18/14	03/21/14	1.03	
SW006	K1402590-002	1.0	0.06	1	03/18/14	03/21/14	0.54	J
SW005	K1402590-003	1.0	0.06	1	03/18/14	03/21/14	0.89	J
SWTCUP	K1402590-004	1.0	0.06	1	03/18/14	03/21/14	0.94	J
SW003	K1402590-005	1.0	0.06	1	03/18/14	03/21/14	1.59	
SW002	K1402590-006	1.0	0.06	1	03/18/14	03/21/14	0.82	J
SW001	K1402590-007	1.0	0.06	1	03/18/14	03/21/14	2.04	
Method Blank 1	K1402590-MB1	1.0	0.06	1	03/18/14	03/21/14	ND	
Method Blank 2	K1402590-MB2	1.0	0.06	1	03/18/14	03/21/14	ND	
Method Blank 3	K1402590-MB3	1.0	0.06	1	03/18/14	03/21/14	ND	

ALS Group USA, Corp.
dba ALS Environmental
QA/QC Report

Client:	AES Atlanta	**Service Request:**	K1402590
Project:	Ridgeholm/02.20120195.00	**Date Collected:**	03/12/14
Sample Matrix:	Water	**Date Received:**	03/15/14
		Date Extracted:	03/18/14
		Date Analyzed:	03/21/14

Matrix Spike/Duplicate Matrix Spike Summary
Total Metals

Sample Name:	SW005		Units:	ng/L
Lab Code:	K1402590-003MS,	K1402590-003MSD	Basis:	NA
Test Notes:				

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Mercury	METHOD	1631E	1.0	25	25	0.89	25.9	22.1	100	85	71-125	16	

ALS Group USA, Corp.
dba ALS Environmental
QA/QC Report

Client:	AES Atlanta	**Service Request:**	K1402590
Project:	Ridgeholm/02.20120195.00	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	03/21/14

Ongoing Precision and Recovery (OPR) Sample Summary
Total Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	4.68	94	77-123	

ALS Group USA, Corp.
dba ALS Environmental
QA/QC Report

Client:	AES Atlanta	**Service Request:**	K1402590
Project:	Ridgeholm/02.20120195.00	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	03/21/14

Ongoing Precision and Recovery (OPR) Sample Summary
Total Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	4.74	95	77-123	

ALS Group USA, Corp.
dba ALS Environmental
QA/QC Report

Client:	AES Atlanta	**Service Request:**	K1402590
Project:	Ridgeholm/02.20120195.00	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	03/21/14

Quality Control Sample (QCS) Summary
Total Metals

Sample Name: Quality Control Sample

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	4.76	95	77-123	

ALS Environmental

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

Mercury

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Service Request #: K1402585, K1402590

MS/MSD with #: K1402585, K1402590
StarLims Run # : 384830
StarLims Prep # : 204423
Prep Date: 3/18/2014

OPR Standard ID:	AF1-87-G	Expiration Date:	4/10/2014
QCS Standard ID:	AF1-87-L	Expiration Date:	4/14/2014
Parent OPR ID:	AF1-84-F	Expiration Date:	4/29/2014
Parent QCS ID:	AF1-86-A	Expiration Date:	8/1/2014

1631 Data Review Form

	Yes	No	NA
1. 20 samples (or less) in batch	X		
2. MS/MSD every 10 samples	X		
3. Current Calibration factor used	X		
4. Calibration data included	X		
5. Method Blank < 0.5 ng/L	X		
6. 3 Bubbler Blanks Ran Avg < 25pg	X		
7. Bubbler Blanks < 50 pg	X		
8. OPR, QCS in control (77-123%)	X		
9. MS/MSD recovery 71-125%	X		
10. Spike RPD within 24%	X		
11. All samples within the linear range	X		
12. All corresponding charts included	X		
13. Dilution factors calculated	X		
14. Bench sheet signed	X		
15. Reagent Blank below 20 pg	X		
16. Water Blank Ran < 0.5 ng/L	X		

Comments

Primary Reviewed by BJS Date 3/21/14

Secondary Reviewed by BM Date 3/21/14

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

Run Duration:	2.5	Integration Mode:	Total Hg
Heating Time:	2.0	Integration Type:	Peak Area
Retention Start Time:	0.5	Result Units:	ng/L
Retention Stop Time:	1.75		
Calibration File:	CAL CURVE 031714.brd		

Reagents

Name	Lot Number
BrCl	RE2-56-E
SnCl	RE2-55-K
NH2OH	RE2-53-F

Standards

Name	Concentration	Lot Number
OPR STD	10 ppb	AF1-87-G
QCS STD	10 ppb	AF1-87-F

Comments

PMT: 596
OFFSET: 5,063
NOISE: 322

HgGuru ver 3.0 (c) 2003 Brooks Rand LLC

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

Run	Run Type	Name/ID	Method Blank	Peak	Peak Area	Analyzed Result (pg)	Final Result (ng/L)	QA Results	Criteria	Notes
1	OPR	OPR-1	MBD	1	2,926,969	489	4.68	93.6	77-123	accept
2	MBD	WB-1	MBD	1	121,802	20.7	0.207	0.207	< .5	accept
3	MBA	MB-1	MBD	1	76,326	3.73	-0.170	-0.170	< 0.5	accept
4	QCS	QCS-1	MBD	1	2,973,448	497	4.76	95.2	77-123	accept
5	S	K1402585-001		1	548,886	84.2	0.842		< HS	accept
6	MS	K1402585-001		1	13,638,234	2,310	23.1	89.1	71-125	accept
7	MSD	K1402585-001		1	13,637,212	2,310	23.1	89.1	71-125	accept
8	S	K1402585-002		1	3,398,651	569	5.69		< HS	accept
9	CB	BB (OPR-1)		1	38,896	6.62		6.62	< 50	accept
10	MBA	MB-1	MBD	1	63,945	1.62	-0.191	-0.191	< 0.5	accept
11	S	K1402585-003		2	1,366,422	223	2.23		< HS	accept
12	S	K1402585-004		1	1,548,770	254	2.54		< HS	accept
13	CB	BB (QCS-1)		1	99,452	16.9		16.9	< 50	accept
14	S	K1402585-005		1	2,212,447	367	3.67		< HS	accept
15	S	K1402585-006		1	2,069,646	343	3.43		< HS	accept
16	S	K1402585-007		1	2,426,756	404	4.04		< HS	accept
17	S	K1402585-008		1	2,707,372	452	4.52		< HS	accept
18	S	K1402585-009		1	82,234	4.73	0.0473		< HS	accept
19	S	K1402585-010		1	1,929,783	319	3.19		< HS	accept
20	S	K1402590-003		1	579,897	89.4	0.894		< HS	accept
21	MS	K1402590-003		1	15,289,954	2,590	25.9	100	71-125	accept
22	MSD	K1402590-003		1	13,047,301	2,210	22.1	84.9	71-125	accept
23	S	K1402585-011		1	2,178,484	361	3.61		< HS	accept
24	S	K1402585-012		2	19,327,010	3,280	32.8		< HS	accept
25	S	K1402585-013		1	557,922	85.7	0.857		< HS	accept
26	S	K1402590-001		1	661,431	103	1.03		< HS	accept
27	S	K1402590-002		1	371,298	53.9	0.539		< HS	accept
28	S	K1402590-004		1	607,599	94.1	0.941		< HS	accept
29	S	K1402590-005		1	987,200	159	1.59		< HS	accept
30	S	K1402590-006		1	534,046	81.6	0.816		< HS	accept
31	S	K1402590-007		1	1,254,501	204	2.04		< HS	accept
32	MBA	MB-3	MBD	1	29,949	-4.16	-0.249	-0.249	< 0.5	accept
33	OPR	OPR-2	MBD	1	2,961,532	495	4.74	94.8	77-123	accept
34	CB	BB (OPR-2)		1	24,898	4.24		4.24	< 50	accept

Comments

HgGuru ver 3.0 (c) 2003 Brooks Rand LLC

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

Bias and Precision

Run Type	Name/ID	Final Result	Units	Spike Level	Source Result	% REC	% REC Limit	RPD	RPD Limit	Notes
MS	K1402585-001	23.1	ng/L	25	0.842	89.1	71-125			accept
	K1402590-003	25.9	ng/L	25	0.894	100	71-125			accept
MSD	K1402585-001	23.1	ng/L	25	0.842	89.1	71-125	0.00752	< 24	accept
	K1402590-003	22.1	ng/L	25	0.894	84.9	71-125	15.9	< 24	accept
OPR	OPR-1	4.68	ng/L	5		93.6	77-123			accept
	OPR-2	4.74	ng/L	5		94.8	77-123			accept
QCS	QCS-1	4.76	ng/L	5		95.2	77-123			accept

Calibration

QA Sample Type	Name/ID	Analyzed Result	Units	Spike Level	% REC	% REC Limit	RSD	RSD Limit	Notes
Calibration	20	21.4	pg	20	107	75-125			accept
	50	55.9	pg	50	112	75-125			accept
	100	96.6	pg	100	96.6	75-125			accept
	200	215	pg	200	108	75-125			accept
	500	497	pg	500	99.4	75-125			accept
	2000	1,920	pg	2000	96.0	75-125			accept
	5000	4,770	pg	5000	95.4	75-125			accept
	15000	13,500	pg	15000	90.0	75-125			accept
Calibration Factor		0.000170	pg/PA				7.29	< 15	accept
Calibration Date		3/17/14							

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Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

Blank Summary

QA Sample Type	Name/ID	Analyzed Result	Units	Criteria	StDev	StDev Limit	Notes
CB	BB (OPR-1)	6.62	pg	< 50			accept
	BB (QCS-1)	16.9	pg	< 50			accept
	BB (OPR-2)	4.24	pg	< 50			accept
Average		9.26	pg	< 25	6.74	< 10	accept
MBA	MB-1	-0.170	ng/L	< 0.5			accept
	MB-1	-0.191	ng/L	< 0.5			accept
	MB-3	-0.249	ng/L	< 0.5			accept
Average		-0.203	ng/L		0.0409		
MBD	WB-1	0.207	ng/L	< .5			accept

Comments

PMT: 596
OFFSET: 5,063
NOISE: 322

HgGuru ver 3.0 (c) 2003 Brooks Rand LLC

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

Run	Name/ID	Final Result (ng/L)	Notes
5	K1402585-001	0.842	accepted
8	K1402585-002	5.69	accepted
11	K1402585-003	2.23	accepted
12	K1402585-004	2.54	accepted
14	K1402585-005	3.67	accepted
15	K1402585-006	3.43	accepted
16	K1402585-007	4.04	accepted
17	K1402585-008	4.52	accepted
18	K1402585-009	0.0473	accepted
19	K1402585-010	3.19	accepted
23	K1402585-011	3.61	accepted
24	K1402585-012	32.8	accepted
25	K1402585-013	0.857	accepted
26	K1402590-001	1.03	accepted
27	K1402590-002	0.539	accepted
20	K1402590-003	0.894	accepted
28	K1402590-004	0.941	accepted
29	K1402590-005	1.59	accepted
30	K1402590-006	0.816	accepted
31	K1402590-007	2.04	accepted

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Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

Run	Run Type	Name/ID	Method Blank	Sample Vol/Wt	Dilution Vol (ml)	Analyzed Vol (ml)	Expected Value	Notes
1	OPR	OPR-1	MBD	100	100	100	5	
2	MBD	WB-1	MBD	100	100	100		
3	MBA	MB-1	MBD	500	500	100		
4	QCS	QCS-1	MBD	100	100	100	5	
5	S	K1402585-001		500	500	100		
6	MS	K1402585-001		500	500	100	25	
7	MSD	K1402585-001		500	500	100	25	
8	S	K1402585-002		500	500	100		
9	CB	BB (OPR-1)		100	100	100		
10	MBA	MB-1	MBD	500	500	100		
11	S	K1402585-003		500	500	100		
12	S	K1402585-004		500	500	100		
13	CB	BB (QCS-1)		100	100	100		
14	S	K1402585-005		500	500	100		
15	S	K1402585-006		500	500	100		
16	S	K1402585-007		500	500	100		
17	S	K1402585-008		500	500	100		
18	S	K1402585-009		500	500	100		
19	S	K1402585-010		500	500	100		
20	S	K1402590-003		500	500	100		
21	MS	K1402590-003		500	500	100	25	
22	MSD	K1402590-003		500	500	100	25	
23	S	K1402585-011		500	500	100		
24	S	K1402585-012		500	500	100		
25	S	K1402585-013		500	500	100		
26	S	K1402590-001		500	500	100		
27	S	K1402590-002		500	500	100		
28	S	K1402590-004		500	500	100		
29	S	K1402590-005		500	500	100		
30	S	K1402590-006		500	500	100		
31	S	K1402590-007		500	500	100		
32	MBA	MB-3	MBD	500	500	100		
33	OPR	OPR-2	MBD	100	100	100	5	
34	CB	BB (OPR-2)		100	100	100		

HgGuru ver 3.0 (c) 2003 Brooks Rand LLC

Columbia Analytical Services
Metals Digestion Sheet

Service Requests:

Method : **1631E** | Analysis for : **CVAFS**

Sample	StarLims #	Date Prepped	> BrCl	Prepared Initial Vol. (ml)	Prepared Final Vol. (ml)	Analyzed Vol. (ml)	Analyzed Dil. Vol. (ml)	Matrix
Method Blank		3/18/2014	X	500	500	100	100	0.5% BrCl
Method Blank		3/18/2014	X	500	500	100	100	0.5% BrCl
OPR 1			X	500	500	100	100	0.5% BrCl
QCS			X	500	500	100	100	0.5% BrCl
K1402585-001	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-001MS	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-001MSD	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-002	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-003	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-004	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-005	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-006	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-007	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-008	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-009	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-010	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-011	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-012	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402585-013	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-001	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-002	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-003	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-003MS	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-003MSD	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-004	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-005	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-006	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
K1402590-007	204423	3/18/2014	X	500	500	100	100	0.5% BrCl
Method Blank		3/18/2014	X	500	500	100	100	0.5% BrCl
OPR-2			X	500	500	100	100	0.5% BrCl

RE2-56-E **BrCl** *Time Started : 04:00pm*

AF1-87-L *(10 ng/mL)* ----- **QCS:** 50uL

AF1-87-G *(10 ng/mL)* ------ **OPR:** 50uL

1st MS / DMS: 0.25mL
2nd MS / DMS: 0.25mL

Comments:

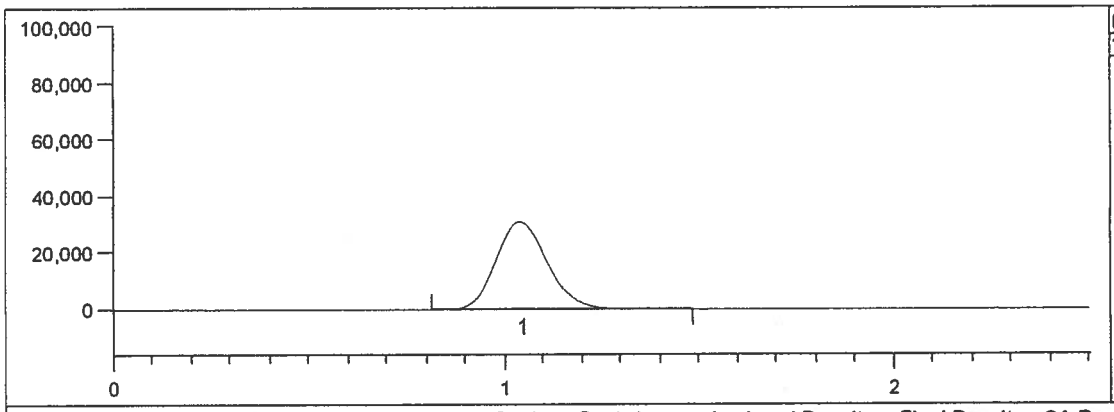
Analyst [signature]

1631Dig.XLS
2/8/2008

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

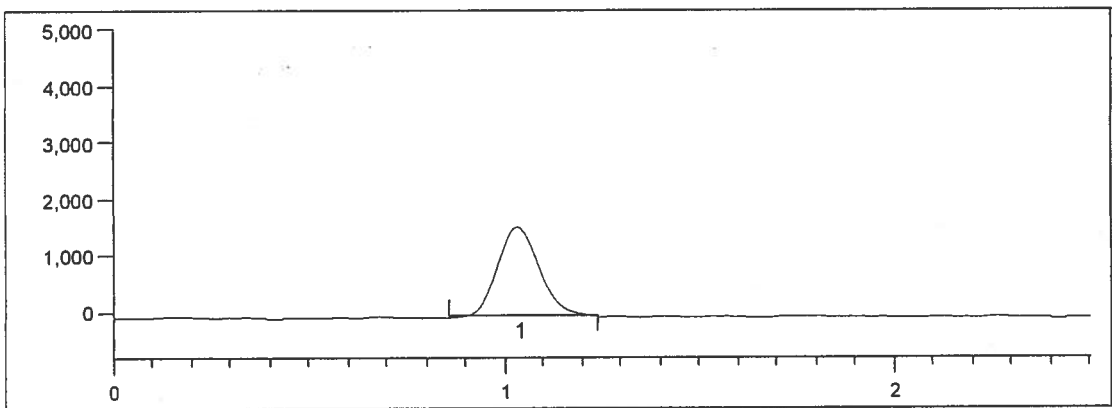


Date: 3/21/14
Time: 10:12 AM

Peak	rt	Area
1	1.03	2,926,969

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
1	OPR	OPR-1	MBD	1	2,926,969	489	4.68	93.6	77-123	accept

Notes:

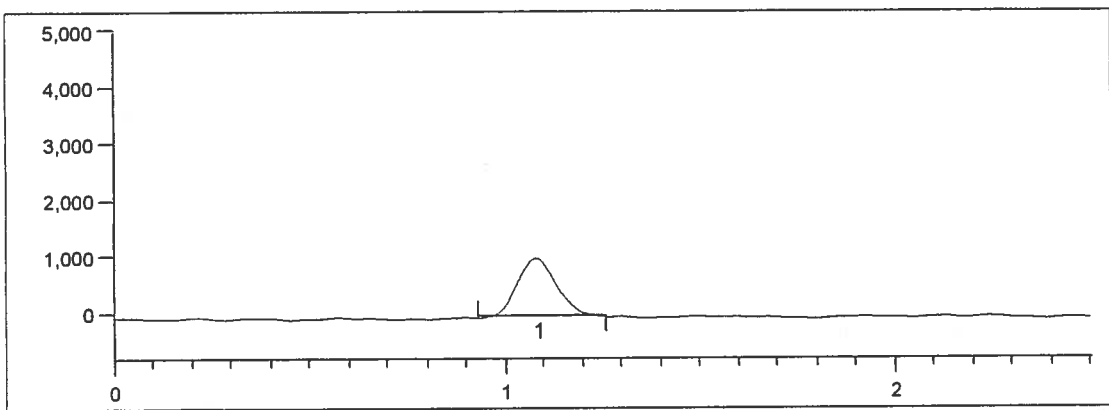


Date: 3/21/14
Time: 10:15 AM

Peak	rt	Area
1	1.02	121,802

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
2	MBD	WB-1	MBD	1	121,802	20.7	0.207	0.207	< .5	accept

Notes:



Date: 3/21/14
Time: 10:17 AM

Peak	rt	Area
1	1.07	76,326

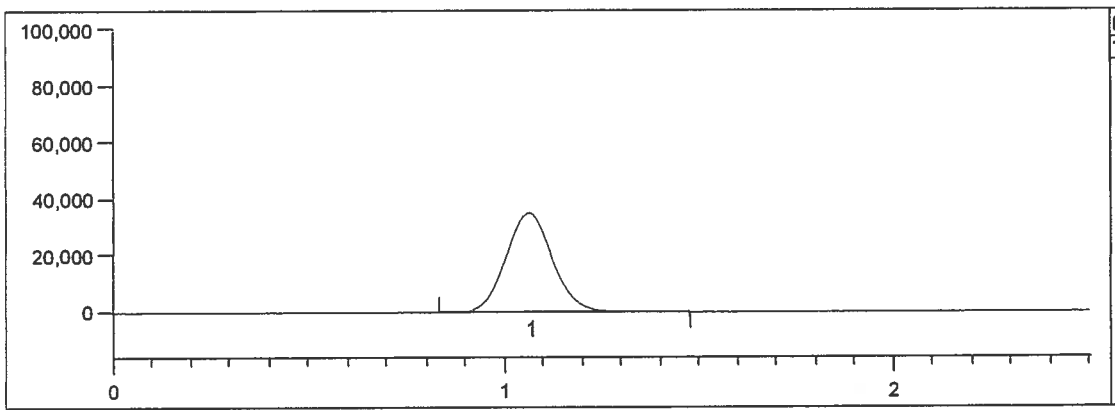
Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
3	MBA	MB-1	MBD	1	76,326	3.73	-0.170	-0.170	< 0.5	accept

Notes:

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

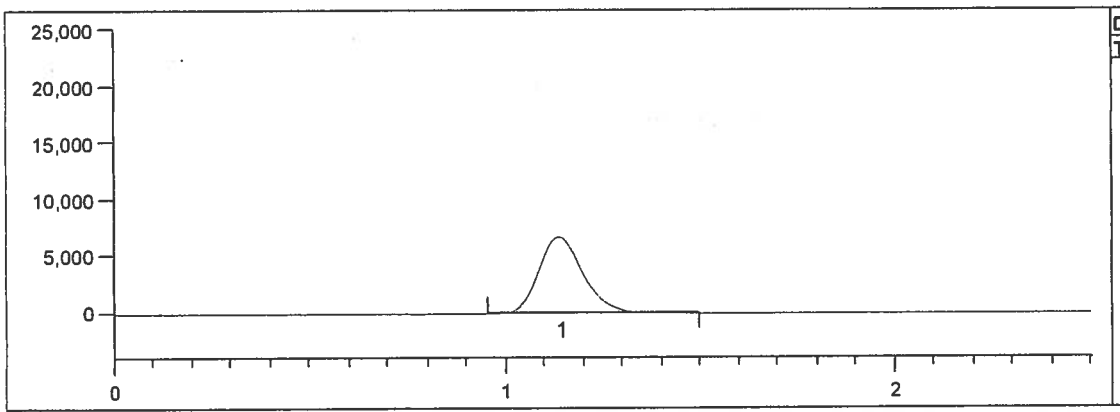


Date: 3/21/14
Time: 10:20 AM

Peak	rt	Area
1	1.06	2,973,448

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
4	QCS	QCS-1	MBD	1	2,973,448	497	4.76	95.2	77-123	accept

Notes:

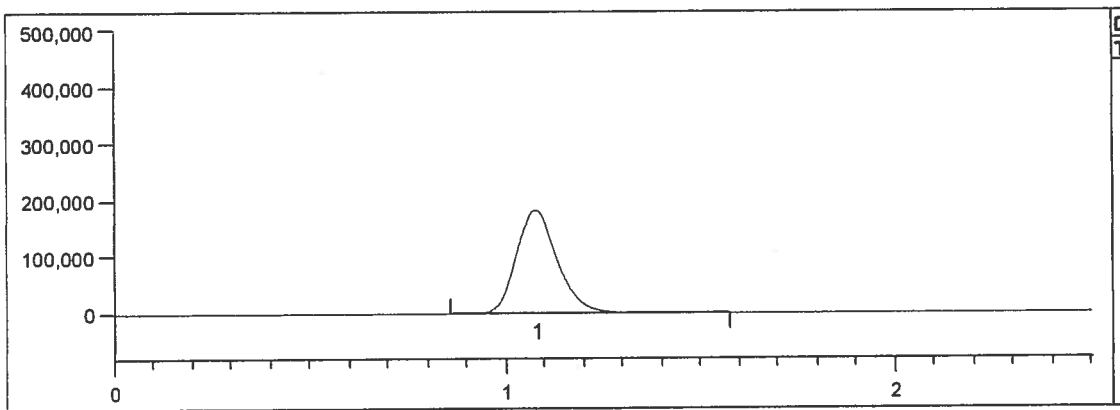


Date: 3/21/14
Time: 10:23 AM

Peak	rt	Area
1	1.13	548,886

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
5	S	K1402585-001		1	548,886	84.2	0.842		< HS	accept

Notes:



Date: 3/21/14
Time: 10:26 AM

Peak	rt	Area
1	1.07	13,638,234

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
6	MS	K1402585-001		1	13,638,234	2,310	23.1	89.1	71-125	accept

Notes:

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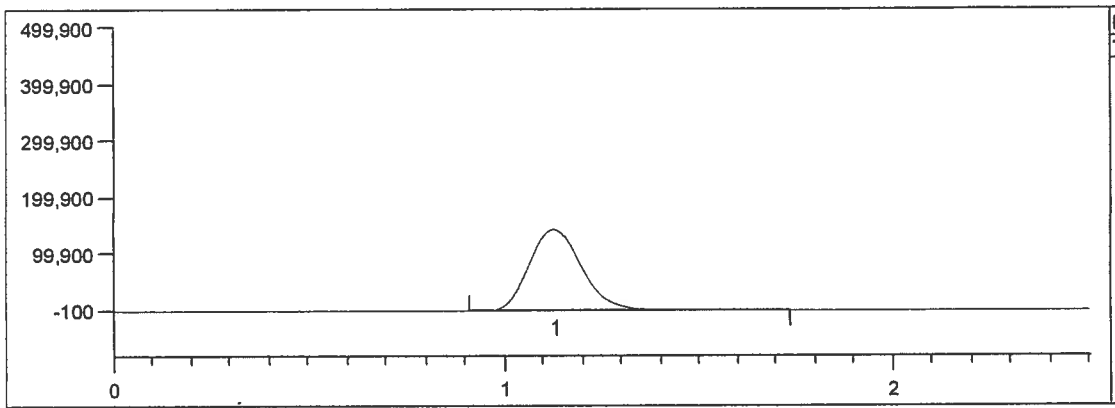
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

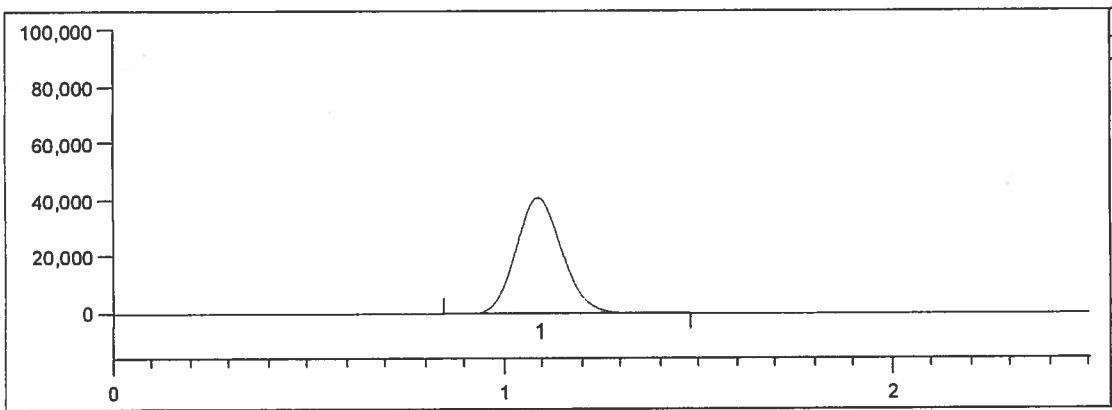


Date: 3/21/14
Time: 10:29 AM

Peak	rt	Area
1	1.12	13,637,212

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
7	MSD	K1402585-001		1	13,637,212	2,310	23.1	89.1	71-125	accept

Notes:

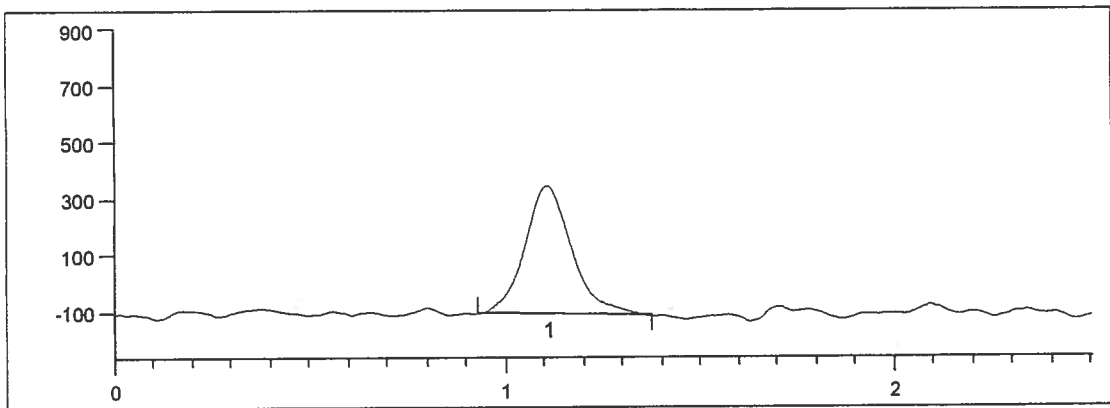


Date: 3/21/14
Time: 10:31 AM

Peak	rt	Area
1	1.08	3,398,651

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
8	S	K1402585-002		1	3,398,651	569	5.69		< HS	accept

Notes:



Date: 3/21/14
Time: 10:39 AM

Peak	rt	Area
1	1.10	38,896

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
9	CB	BB (OPR-1)		1	38,896	6.62		6.62	< 50	accept

Notes:

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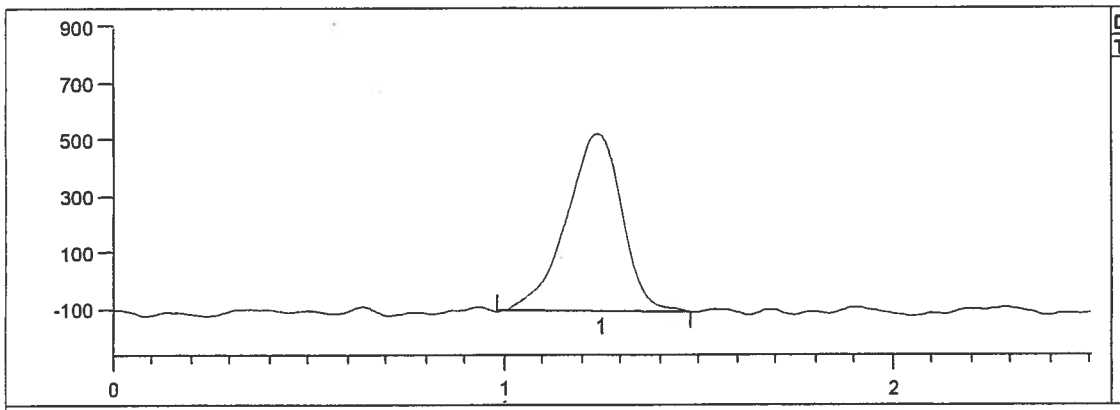
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

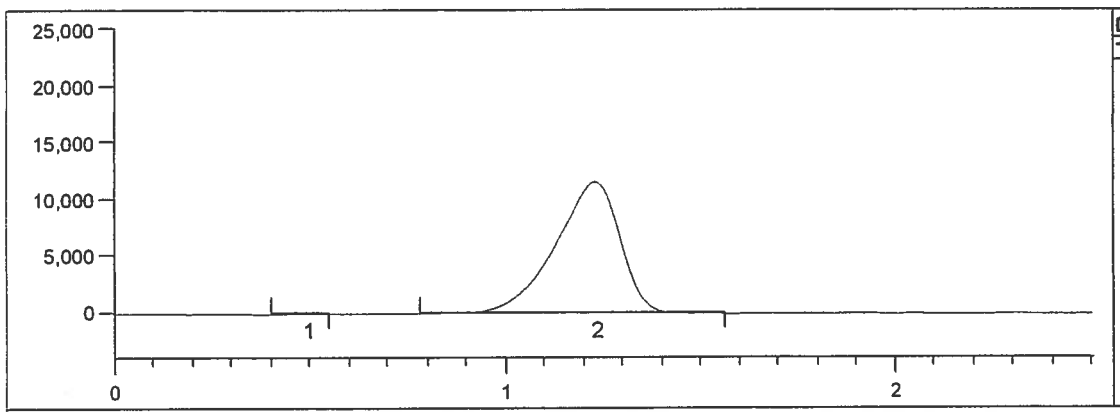


Date: 3/21/14
Time: 10:42 AM

Peak	rt	Area
1	1.23	63,945

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
10	MBA	MB-1	MBD	1	63,945	1.62	-0.191	-0.191	< 0.5	accept

Notes:

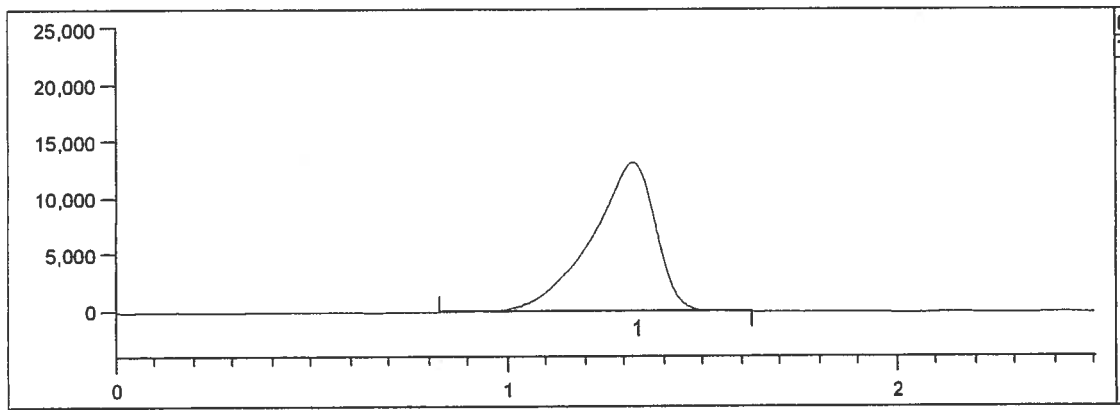


Date: 3/21/14
Time: 10:44 AM

Peak	rt	Area
1	0.48	2,156
2	1.22	1,366,422

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
11	S	K1402585-003		2	1,366,422	223	2.23		< HS	accept

Notes:



Date: 3/21/14
Time: 10:48 AM

Peak	rt	Area
1	1.32	1,548,770

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
12	S	K1402585-004		1	1,548,770	254	2.54		< HS	accept

Notes:

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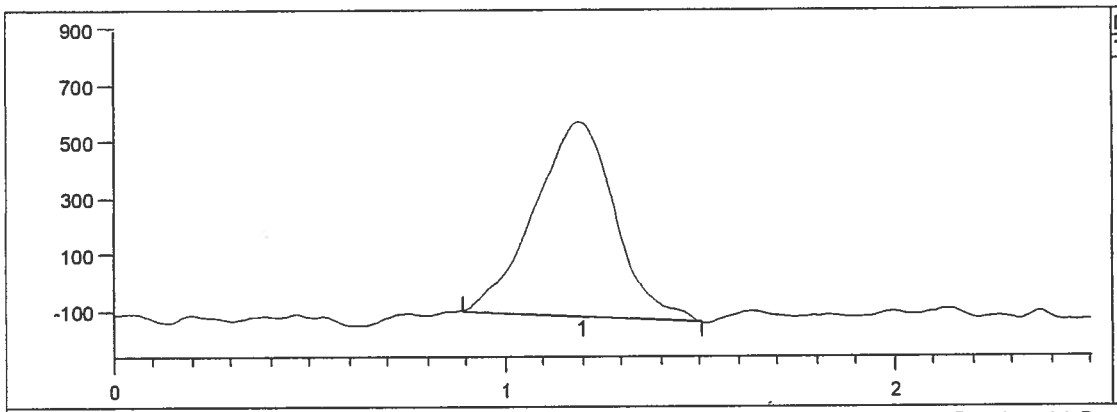
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

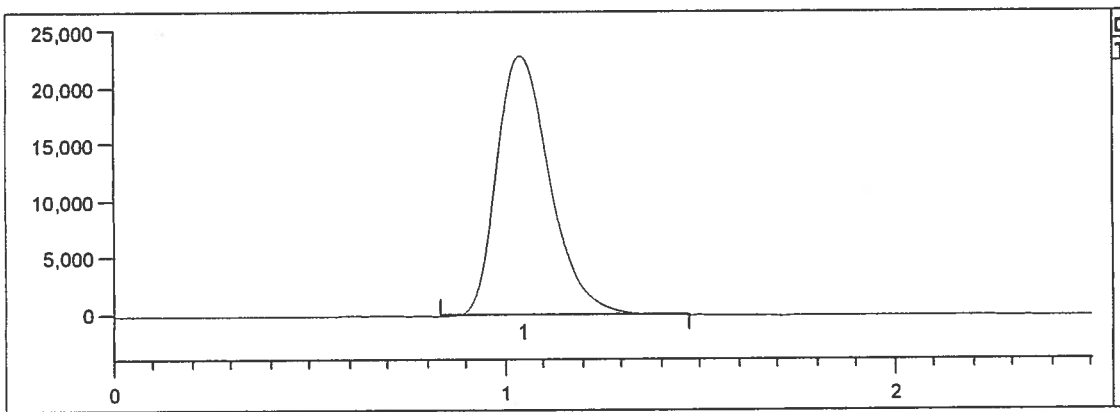


Date: 3/21/14
Time: 10:51 AM

Peak	rt	Area
1	1.18	99,452

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
13	CB	BB (QCS-1)		1	99,452	16.9		16.9	< 50	accept

Notes:

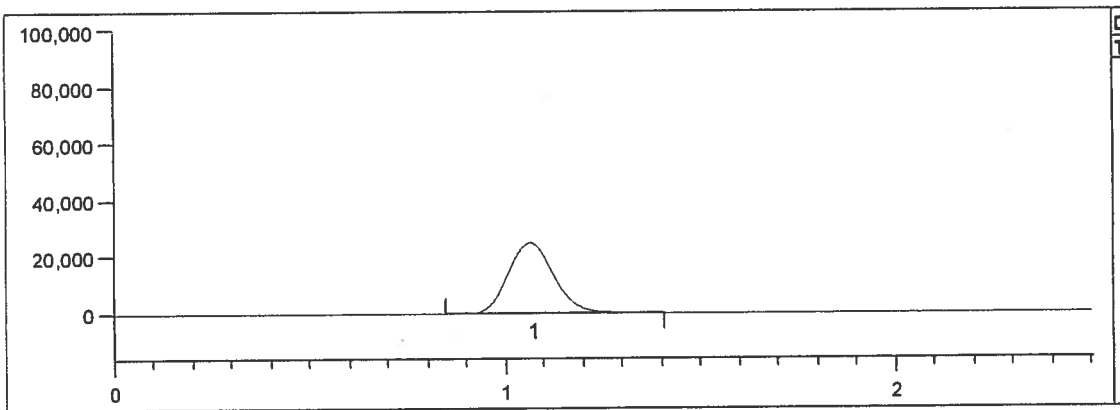


Date: 3/21/14
Time: 10:54 AM

Peak	rt	Area
1	1.03	2,212,447

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
14	S	K1402585-005		1	2,212,447	367	3.67		< HS	accept

Notes:



Date: 3/21/14
Time: 10:57 AM

Peak	rt	Area
1	1.06	2,069,646

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
15	S	K1402585-006		1	2,069,646	343	3.43		< HS	accept

Notes:

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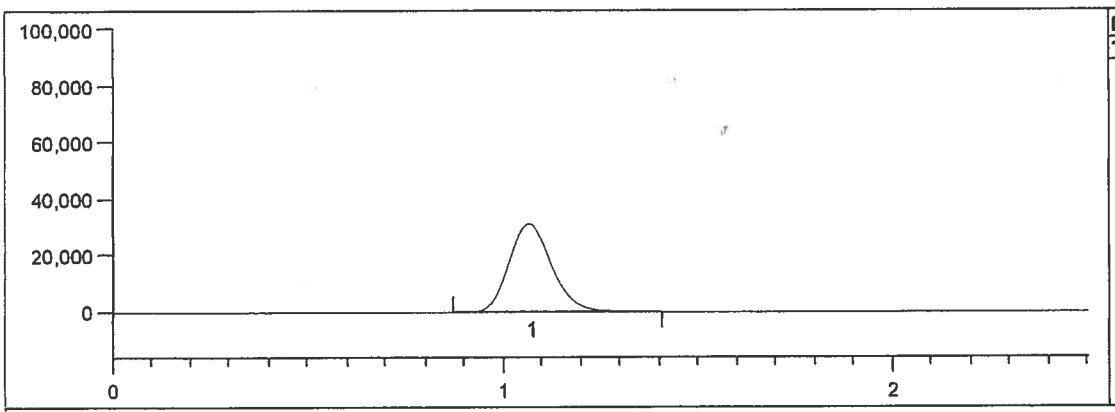
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

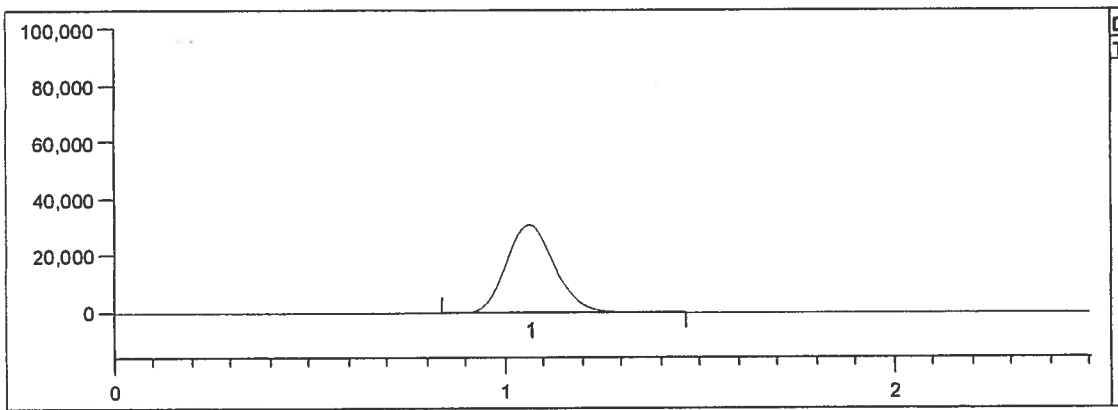


Date: 3/21/14
Time: 10:59 AM

Peak	rt	Area
1	1.06	2,426,756

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
16	S	K1402585-007		1	2,426,756	404	4.04		< HS	accept

Notes:

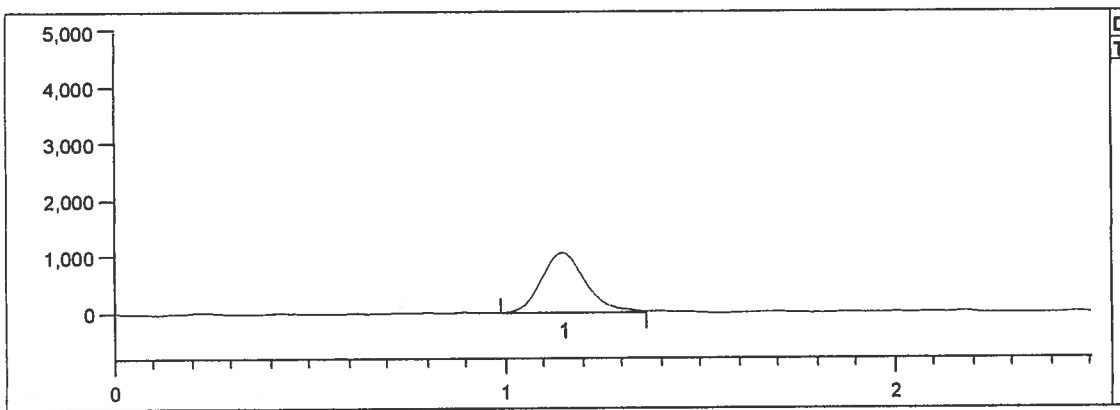


Date: 3/21/14
Time: 11:09 AM

Peak	rt	Area
1	1.06	2,707,372

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
17	S	K1402585-008		1	2,707,372	452	4.52		< HS	accept

Notes:



Date: 3/21/14
Time: 11:13 AM

Peak	rt	Area
1	1.14	82,234

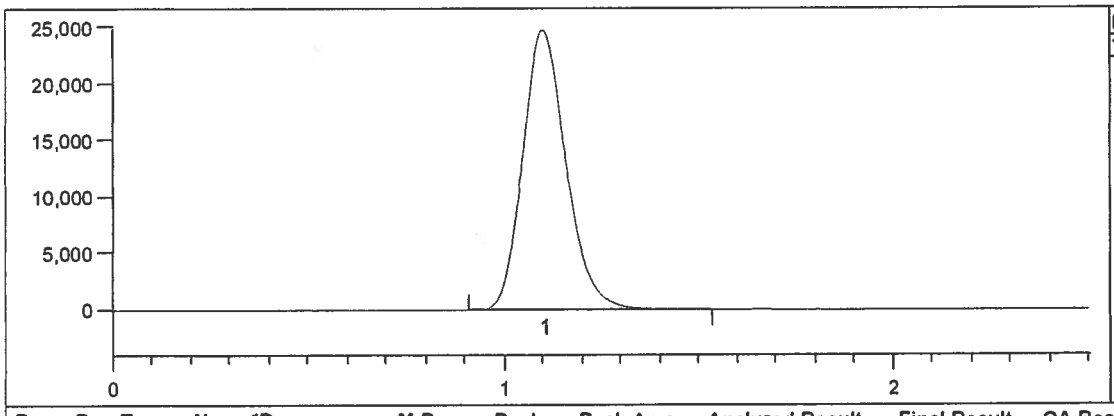
Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
18	S	K1402585-009		1	82,234	4.73	0.0473		< HS	accept

Notes:

Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

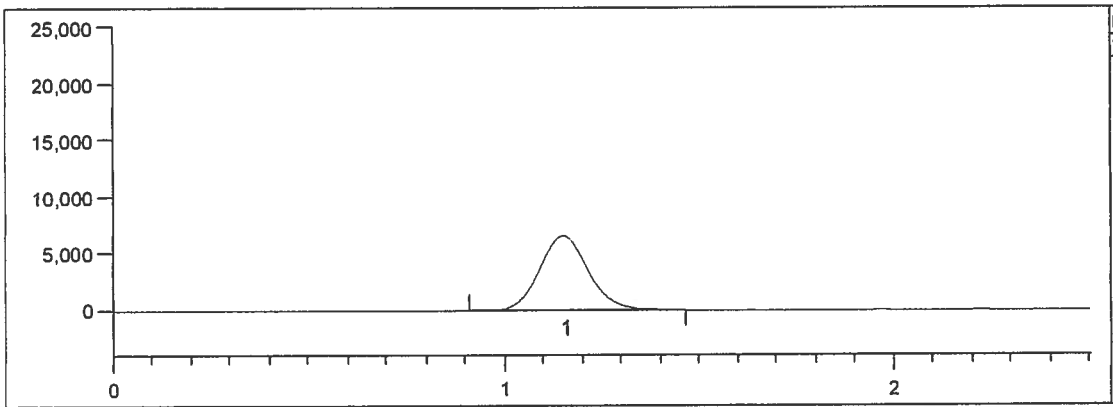


Date: 3/21/14
Time: 11:16 AM

Peak	rt	Area
1	1.09	1,929,783

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
19	S	K1402585-010		1	1,929,783	319	3.19		< HS	accept

Notes:

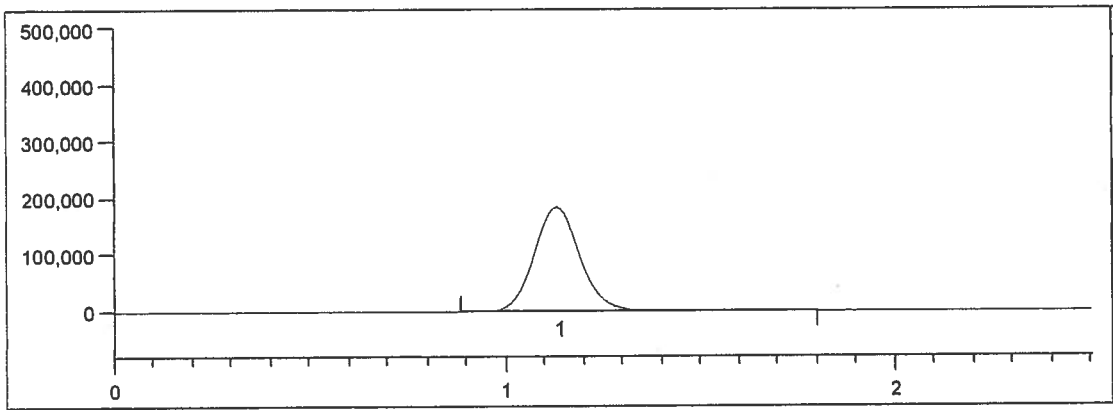


Date: 3/21/14
Time: 11:19 AM

Peak	rt	Area
1	1.14	579,897

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
20	S	K1402590-003		1	579,897	89.4	0.894		< HS	accept

Notes:



Date: 3/21/14
Time: 11:21 AM

Peak	rt	Area
1	1.12	15,289,954

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
21	MS	K1402590-003		1	15,289,954	2,590	25.9	100	71-125	accept

Notes:

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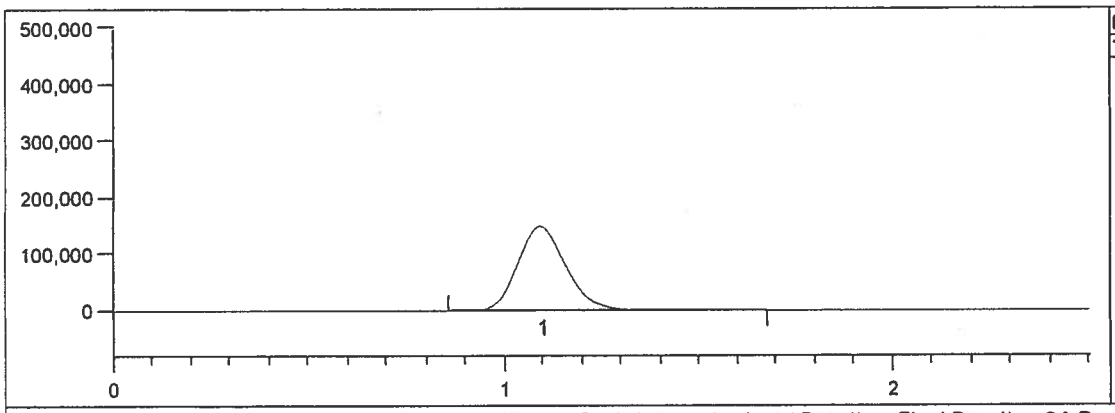
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

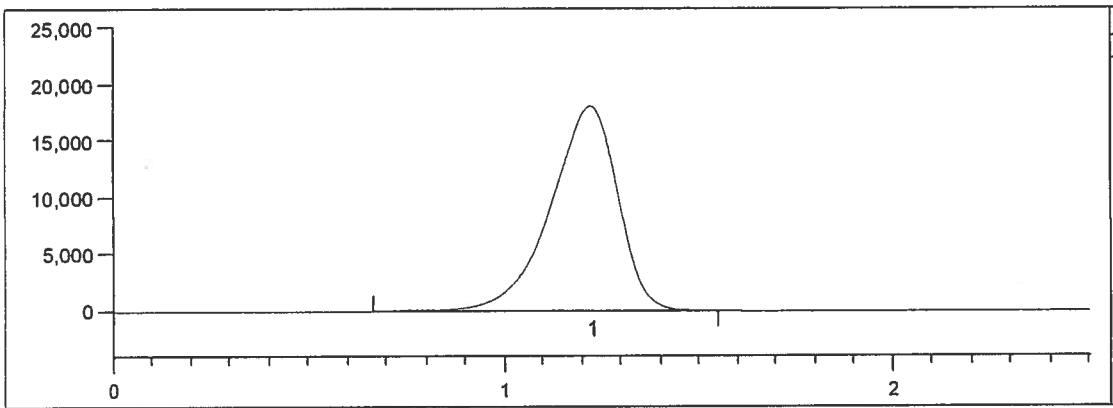


Date: 3/21/14
Time: 11:24 AM

Peak	rt	Area
1	1.09	13,047,301

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
22	MSD	K1402590-003		1	13,047,301	2,210	22.1	84.9	71-125	accept

Notes:

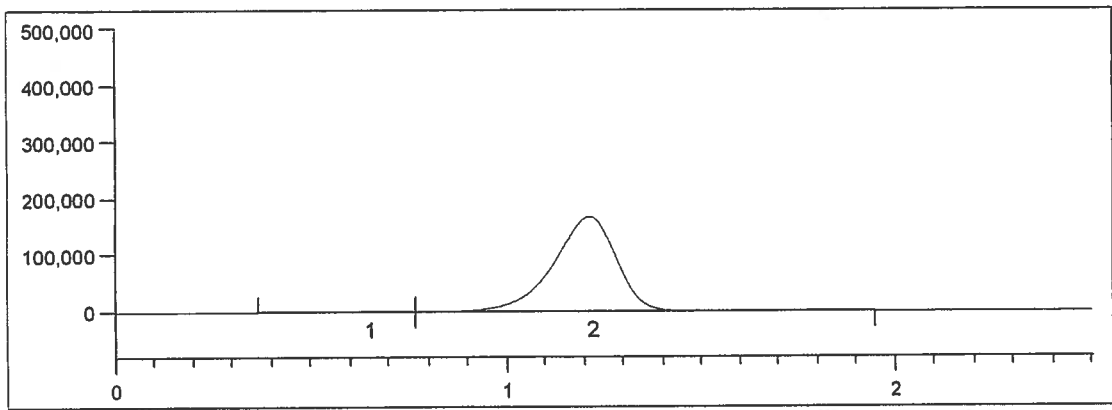


Date: 3/21/14
Time: 11:27 AM

Peak	rt	Area
1	1.22	2,178,484

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
23	S	K1402585-011		1	2,178,484	361	3.61		< HS	accept

Notes:



Date: 3/21/14
Time: 11:30 AM

Peak	rt	Area
1	0.64	192,369
2	1.21	19,327,010

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
24	S	K1402585-012		2	19,327,010	3,280	32.8		< HS	accept

Notes:

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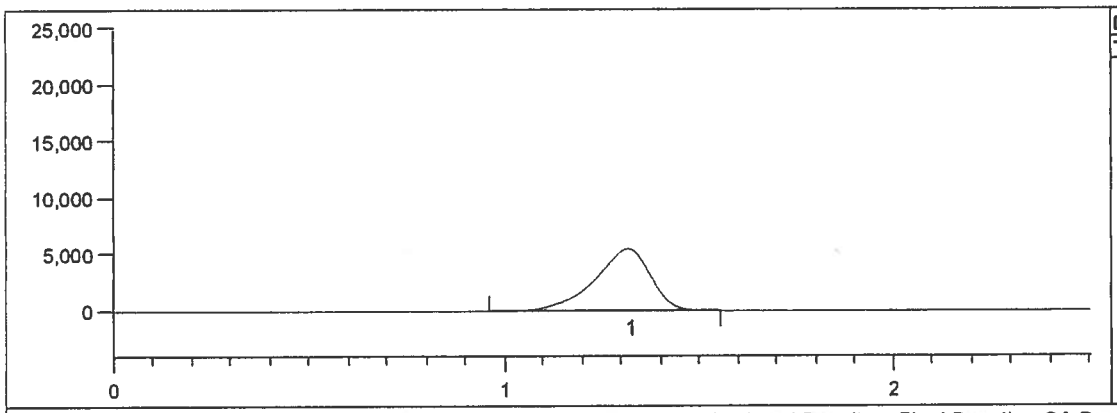
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

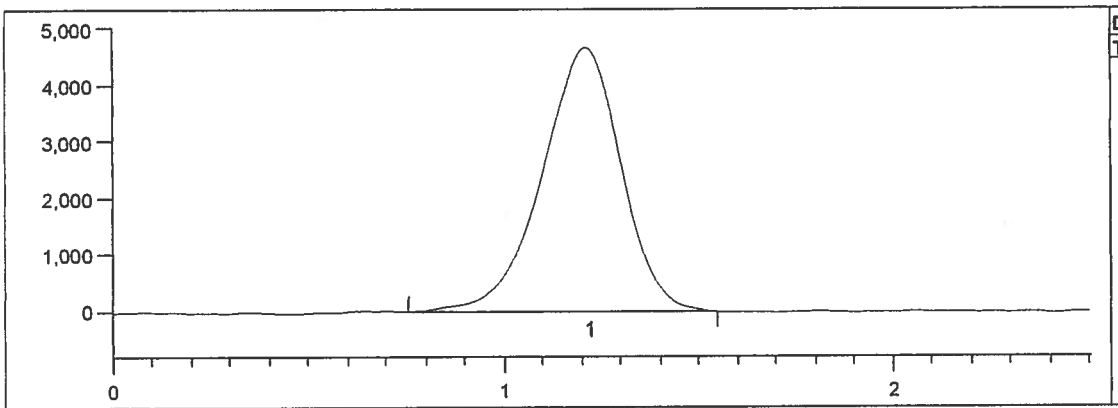


Date: 3/21/14
Time: 11:38 AM

Peak	rt	Area
1	1.31	557,922

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
25	S	K1402585-013		1	557,922	85.7	0.857		< HS	accept

Notes:

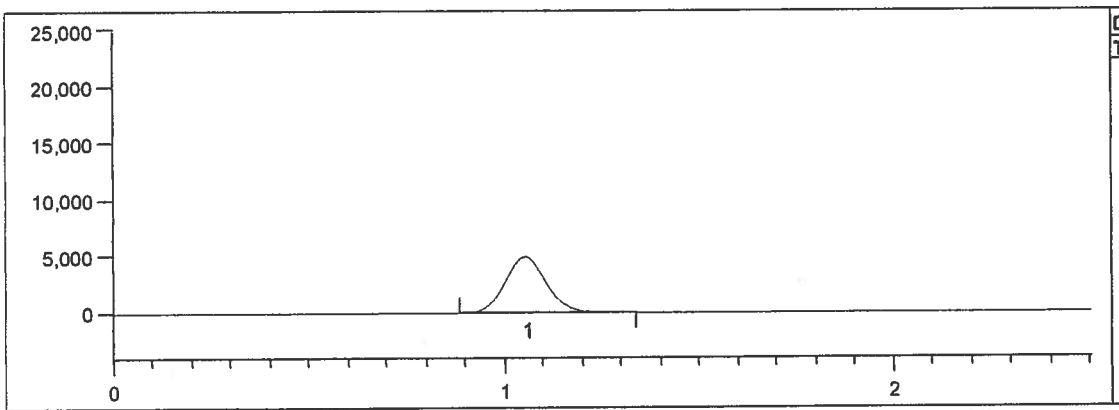


Date: 3/21/14
Time: 11:41 AM

Peak	rt	Area
1	1.20	661,431

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
26	S	K1402590-001		1	661,431	103	1.03		< HS	accept

Notes:



Date: 3/21/14
Time: 11:43 AM

Peak	rt	Area
1	1.05	371,298

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
27	S	K1402590-002		1	371,298	53.9	0.539		< HS	accept

Notes:

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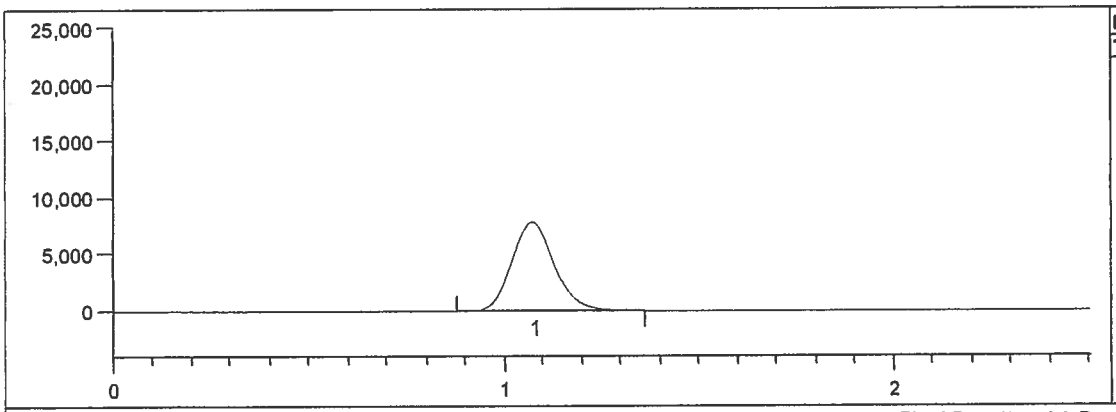
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

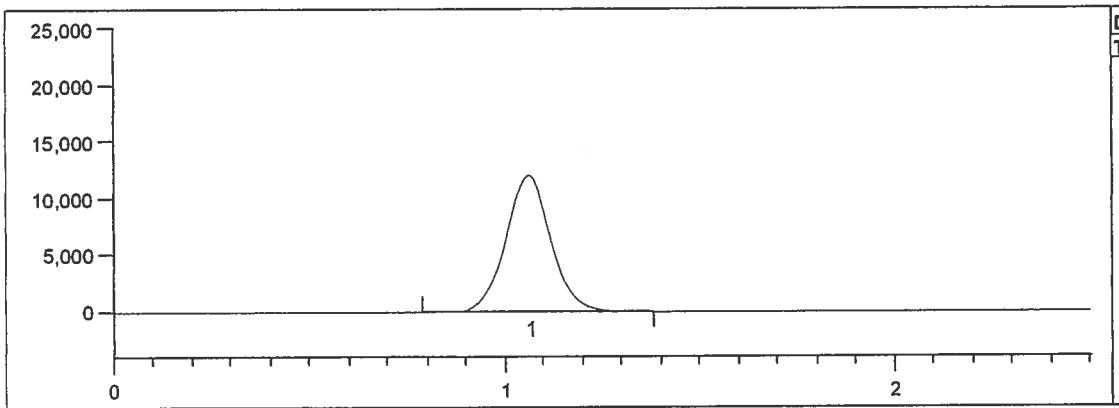


Date: 3/21/14
Time: 11:46 AM

Peak	rt	Area
1	1.06	607,599

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
28	S	K1402590-004		1	607,599	94.1	0.941		< HS	accept

Notes:

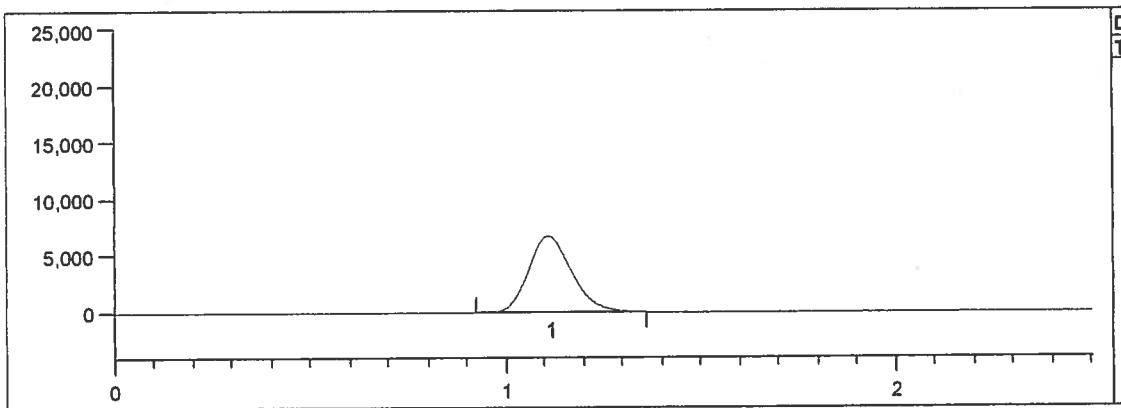


Date: 3/21/14
Time: 11:49 AM

Peak	rt	Area
1	1.06	987,200

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
29	S	K1402590-005		1	987,200	159	1.59		< HS	accept

Notes:



Date: 3/21/14
Time: 11:51 AM

Peak	rt	Area
1	1.10	534,046

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
30	S	K1402590-006		1	534,046	81.6	0.816		< HS	accept

Notes:

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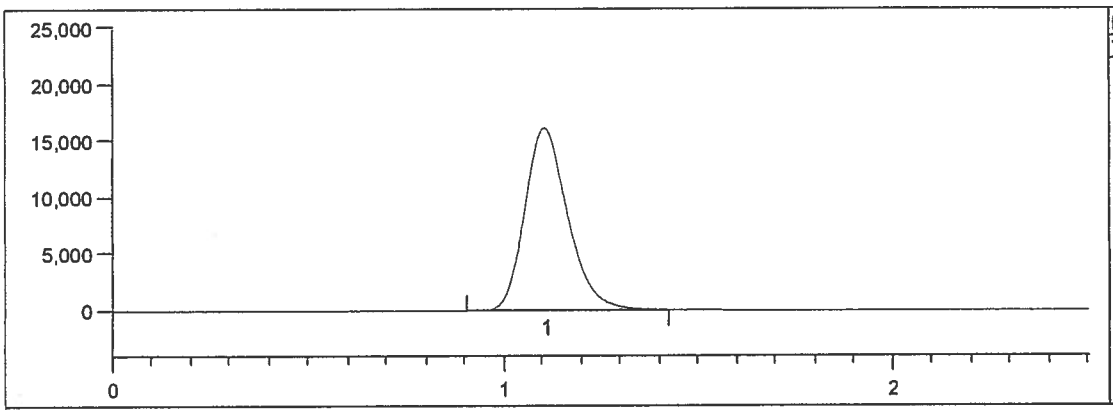
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon

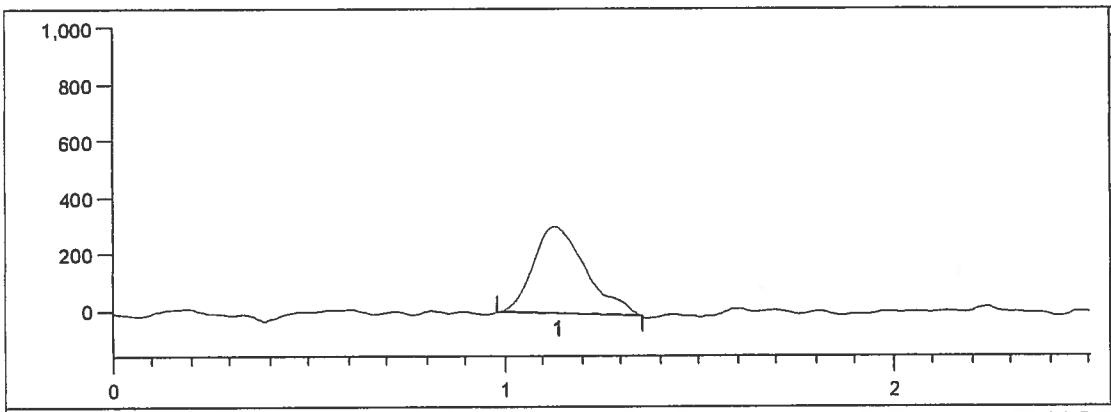


Date: 3/21/14
Time: 11:54 AM

Peak	rt	Area
1	1.10	1,254,501

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
31	S	K1402590-007		1	1,254,501	204	2.04		< HS	accept

Notes:

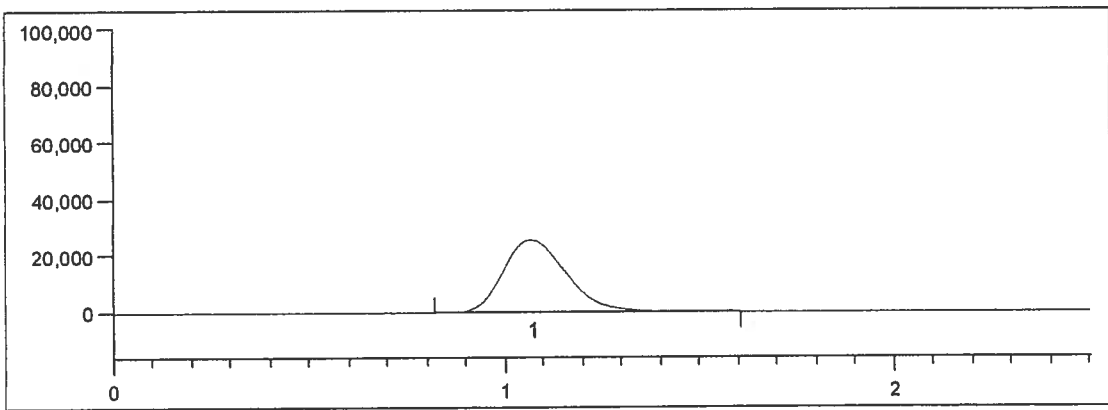


Date: 3/21/14
Time: 11:57 AM

Peak	rt	Area
1	1.12	29,949

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
32	MBA	MB-3	MBD	1	29,949	-4.16	-0.249	-0.249	< 0.5	accept

Notes:



Date: 3/21/14
Time: 12:00 PM

Peak	rt	Area
1	1.06	2,961,532

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
33	OPR	OPR-2	MBD	1	2,961,532	495	4.74	94.8	77-123	accept

Notes:

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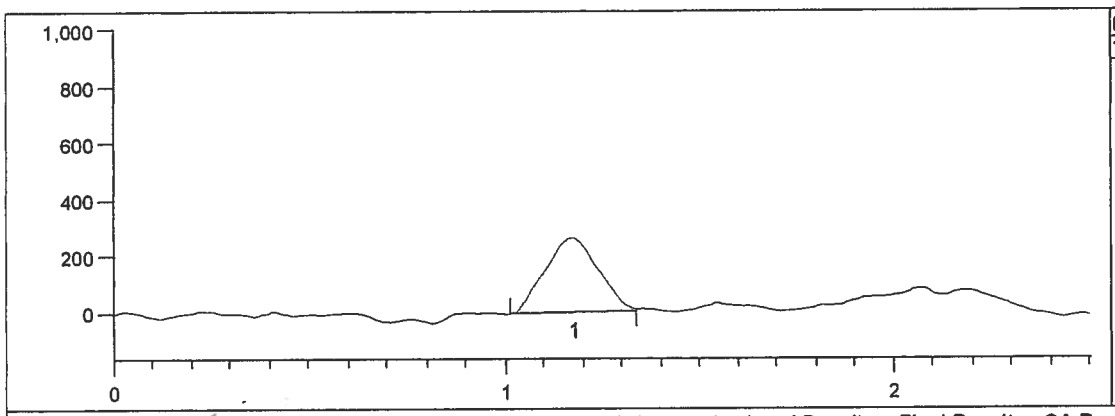
Batch Number:
Method Number: EPA 1631E.001

Project Number(s): WATERS
Instrument ID: K-AFS-01

Date Analyzed: 3/21/14
Analyst Name: Brian Sheldon



Date:	3/21/14
Time:	12:03 PM

Peak	rt	Area
1	1.16	24,898

Run	Run Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
34	CB	BB (OPR-2)		1	24,898	4.24		4.24	< 50	accept

Notes:

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AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 19, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1404B84

Analytical Environmental Services, Inc. received 8 samples on 4/10/2014 3:00:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

CKanhai

Chantelle Kanhai
Project Manager

Revision 5/19/2014

3785 PRESIDENTIAL PARKWAY • ATLANTA, GEORGIA 30340 • TEL: (770) 457-8177 • FAX: (770)457-8188

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1404B84

Date: 4/10/14 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd Ste 700 Houston, TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: J. McKinney

SIGNATURE: [signature]

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	PH	Metals	Anions	TDS	TSS	REMARKS	No # of Containers
							PRESERVATION (See codes)								
							I	I	I	N	I	I	I		
1	SW TC Down	4/9/14	0930	X		SW	1	1	1	1	1	1	1		7
2	SW006	4/9/14	1035	X		SW	1	1	1	1	1	1	1		7
3	SW005	4/9/14	1130	X		SW	1	1	1	1	1	1	1		7
4	SW004	4/9/14	1230	X		SW	1	1	1	1	1	1	1		7
5	SW TC UP	4/9/14	1300	X		SW	1	1	1	1	1	1	1		7
6	SW003	4/9/14	1330	X		SW	1	1	1	1	1	1	1		7
7	SW002	4/9/14	1345	X		SW	1	1	1	1	1	1	1		7
8	SW001	4/9/14	1400	X		SW	1	1	1	1	1	1	1		7
9															
10															
11															
12															
13															
14															

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	4/10/14 0900	1: [signature]	4-10-14 12:00
2: [signature]	4-10-14 15:00	2: [signature]	4/10/14 3:00PM
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 4/1/14 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers 56

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1404B84

Case Narrative

pH Analysis by Method SM4500 H+ B:

Samples for pH analysis by Method SM4500 H+ B were received and analyzed outside holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC DOWN
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 9:30:00 AM
Lab ID:	1404B84-001	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	566		4.45	10.0	ug/L	189739	1	04/17/2014 21:41	MR
Antimony	0.0593	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Arsenic	0.481	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/16/2014 23:02	MR
Cadmium	0.0382	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:02	MR
Chromium	0.529	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Copper	BRL		1.24	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Iron	575		40.5	100	ug/L	189739	1	04/16/2014 23:02	MR
Lead	0.702	J	0.134	1.00	ug/L	189739	1	04/17/2014 21:41	MR
Manganese	74.4		0.157	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Nickel	1.11	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Selenium	0.620	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:02	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:02	MR
Thallium	0.108	J	0.0537	1.00	ug/L	189739	1	04/17/2014 21:41	MR
Zinc	6.49	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:02	MR
Total Mercury E245.1				(E245.1)					
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 13:50	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	22.5		1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	89		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	5.31		0.220	1.00	mg/L	R265671	1	04/14/2014 12:23	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.39	H	0.0100	0.0100	pH Units	R265689	1	04/16/2014 10:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	10.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	10.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW006
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 10:35:00 AM
Lab ID:	1404B84-002	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	209		4.45	10.0	ug/L	189739	1	04/17/2014 21:46	MR
Antimony	0.0625	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Arsenic	0.507	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/16/2014 23:18	MR
Cadmium	0.0284	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:18	MR
Chromium	0.235	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Copper	2.60	J	1.24	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Iron	656		40.5	100	ug/L	189739	1	04/16/2014 23:18	MR
Lead	0.456	J	0.134	1.00	ug/L	189739	1	04/17/2014 21:46	MR
Manganese	148		0.157	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Nickel	0.856	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Selenium	0.699	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:18	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:18	MR
Thallium	0.102	J	0.0537	1.00	ug/L	189739	1	04/17/2014 21:46	MR
Zinc	5.80	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:18	MR
Total Mercury E245.1				(E245.1)					
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:01	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	20.5		1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	187		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	4.80		0.220	1.00	mg/L	R265671	1	04/14/2014 12:39	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.14	H	0.0100	0.0100	pH Units	R265689	1	04/16/2014 10:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	18.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	18.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW005
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 11:30:00 AM
Lab ID:	1404B84-003	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	207		4.45	10.0	ug/L	189739	1	04/17/2014 21:51	MR
Antimony	0.0572	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Arsenic	0.518	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/16/2014 23:23	MR
Cadmium	0.0322	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:23	MR
Chromium	0.240	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Copper	2.96	J	1.24	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Iron	504		40.5	100	ug/L	189739	1	04/16/2014 23:23	MR
Lead	0.424	J	0.134	1.00	ug/L	189739	1	04/17/2014 21:51	MR
Manganese	61.3		0.157	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Nickel	0.888	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Selenium	0.633	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:23	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:23	MR
Thallium	0.0814	J	0.0537	1.00	ug/L	189739	1	04/17/2014 21:51	MR
Zinc	5.29	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:23	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:04	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	7.0		1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	68		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	6.33		0.220	1.00	mg/L	R265671	1	04/14/2014 12:54	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.20	H	0.0100	0.0100	pH Units	R265689	1	04/16/2014 10:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	19.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	19.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW004
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 12:30:00 PM
Lab ID:	1404B84-004	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	497		4.45	10.0	ug/L	189739	1	04/17/2014 21:57	MR
Antimony	0.0736	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Arsenic	0.649	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/17/2014 21:57	MR
Cadmium	0.0251	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:29	MR
Chromium	0.426	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Copper	BRL		1.24	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Iron	489		40.5	100	ug/L	189739	1	04/16/2014 23:29	MR
Lead	0.667	J	0.134	1.00	ug/L	189739	1	04/17/2014 21:57	MR
Manganese	136		0.157	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Nickel	0.575	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Selenium	0.690	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:29	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:29	MR
Thallium	0.0712	J	0.0537	1.00	ug/L	189739	1	04/17/2014 21:57	MR
Zinc	4.51	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:29	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:06	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	19.5		1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	72		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	13.3		0.220	1.00	mg/L	R265671	1	04/14/2014 13:09	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.14	H	0.0100	0.0100	pH Units	R265689	1	04/16/2014 10:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	23.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	23.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC UP
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 1:00:00 PM
Lab ID:	1404B84-005	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	349		4.45	10.0	ug/L	189739	1	04/17/2014 22:02	MR
Antimony	0.0513	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Arsenic	0.348	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/16/2014 23:34	MR
Cadmium	0.0249	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:34	MR
Chromium	0.336	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Copper	BRL		1.24	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Iron	350		40.5	100	ug/L	189739	1	04/16/2014 23:34	MR
Lead	0.463	J	0.134	1.00	ug/L	189739	1	04/17/2014 22:02	MR
Manganese	50.0		0.157	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Nickel	0.909	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Selenium	0.594	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:34	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:34	MR
Thallium	0.0674	J	0.0537	1.00	ug/L	189739	1	04/17/2014 22:02	MR
Zinc	5.14	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:34	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:08	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	14.0		1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	55		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	5.70		0.220	1.00	mg/L	R265671	1	04/14/2014 13:24	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.15	H	0.0100	0.0100	pH Units	R265689	1	04/16/2014 10:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	9.00		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	9.00		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW003
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 1:30:00 PM
Lab ID:	1404B84-006	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	79.7		4.45	10.0	ug/L	189739	1	04/17/2014 22:07	MR
Antimony	0.0682	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Arsenic	0.711	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/17/2014 22:07	MR
Cadmium	0.0187	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:39	MR
Chromium	0.145	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Copper	3.88	J	1.24	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Iron	789		40.5	100	ug/L	189739	1	04/16/2014 23:39	MR
Lead	0.237	J	0.134	1.00	ug/L	189739	1	04/17/2014 22:07	MR
Manganese	119		0.157	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Nickel	0.399	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Selenium	0.645	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:39	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:39	MR
Thallium	0.0583	J	0.0537	1.00	ug/L	189739	1	04/17/2014 22:07	MR
Zinc	4.40	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:39	MR
Total Mercury E245.1				(E245.1)					
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:10	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	11.0		1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	66		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	7.76		0.220	1.00	mg/L	R265671	1	04/14/2014 13:39	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.22	H	0.0100	0.0100	pH Units	R265689	1	04/16/2014 10:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	30.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	30.0		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW002
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 1:45:00 PM
Lab ID:	1404B84-007	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	198		4.45	10.0	ug/L	189739	1	04/17/2014 22:12	MR
Antimony	BRL		0.0437	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Arsenic	BRL		0.228	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/16/2014 23:44	MR
Cadmium	0.0438	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:44	MR
Chromium	0.176	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Copper	BRL		1.24	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Iron	89.1	J	40.5	100	ug/L	189739	1	04/16/2014 23:44	MR
Lead	0.480	J	0.134	1.00	ug/L	189739	1	04/17/2014 22:12	MR
Manganese	45.8		0.157	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Nickel	0.842	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Selenium	0.551	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:44	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:44	MR
Thallium	BRL		0.0537	1.00	ug/L	189739	1	04/17/2014 22:12	MR
Zinc	3.20	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:44	MR
Total Mercury E245.1				(E245.1)					
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:12	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	3.0	J	1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	35		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	5.55		0.262	1.00	mg/L	R265671	1	04/14/2014 13:54	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.21	H	0.0100	0.0100	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	3.00		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	3.00		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 19-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW001
Project Name:	Ridgeholm	**Collection Date:**	4/9/2014 2:00:00 PM
Lab ID:	1404B84-008	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8				(E200.2)					
Aluminum	145		4.45	10.0	ug/L	189739	1	04/17/2014 22:17	MR
Antimony	0.0528	J	0.0437	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Arsenic	0.419	J	0.228	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Beryllium	BRL		0.181	1.00	ug/L	189739	1	04/16/2014 23:49	MR
Cadmium	0.0295	J	0.0132	0.700	ug/L	189739	1	04/16/2014 23:49	MR
Chromium	0.181	J	0.115	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Copper	BRL		1.24	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Iron	436		40.5	100	ug/L	189739	1	04/16/2014 23:49	MR
Lead	0.216	J	0.134	1.00	ug/L	189739	1	04/17/2014 22:17	MR
Manganese	175		0.157	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Nickel	0.833	J	0.111	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Selenium	0.612	J	0.302	5.00	ug/L	189739	1	04/16/2014 23:49	MR
Silver	BRL		0.0654	1.00	ug/L	189739	1	04/16/2014 23:49	MR
Thallium	BRL		0.0537	1.00	ug/L	189739	1	04/17/2014 22:17	MR
Zinc	4.66	J	2.97	10.0	ug/L	189739	1	04/16/2014 23:49	MR
Total Mercury E245.1				(E245.1)					
Mercury	BRL		0.00007	0.00020	mg/L	189687	1	04/15/2014 14:13	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	3.0	J	1.0	5.0	mg/L	189745	1	04/15/2014 09:00	SG
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	55		5	10	mg/L	189749	1	04/14/2014 16:00	LB
Inorganic Anions by IC E300.0									
Sulfate	3.13		0.220	1.00	mg/L	R265671	1	04/14/2014 14:09	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	5.98	H	0.0100	0.0100	pH Units	R265691	1	04/16/2014 12:00	LB
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	8.00		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Alkalinity, Total (As CaCO3)	8.00		0.672	3.00	mg/L	R265775	1	04/17/2014 10:15	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R266002	1	04/21/2014 11:30	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
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- Narr See case narrative

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earthcon Work Order Number 1404B84

Checklist completed by [signature] 4/10/14
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.2°C Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by SM

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1404B84

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1404B84-001A	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-001A	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-001A	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-001B	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-001C	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-001D	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-001E	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-001F	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-001G	SW TC DOWN	4/9/2014 9:30:00AM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-002A	SW006	4/9/2014 10:35:00AM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-002A	SW006	4/9/2014 10:35:00AM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-002A	SW006	4/9/2014 10:35:00AM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-002B	SW006	4/9/2014 10:35:00AM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-002C	SW006	4/9/2014 10:35:00AM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-002D	SW006	4/9/2014 10:35:00AM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-002E	SW006	4/9/2014 10:35:00AM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-002F	SW006	4/9/2014 10:35:00AM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-002G	SW006	4/9/2014 10:35:00AM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-003A	SW005	4/9/2014 11:30:00AM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-003A	SW005	4/9/2014 11:30:00AM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-003A	SW005	4/9/2014 11:30:00AM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-003B	SW005	4/9/2014 11:30:00AM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-003C	SW005	4/9/2014 11:30:00AM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-003D	SW005	4/9/2014 11:30:00AM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-003E	SW005	4/9/2014 11:30:00AM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-003F	SW005	4/9/2014 11:30:00AM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-003G	SW005	4/9/2014 11:30:00AM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-004A	SW004	4/9/2014 12:30:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-004A	SW004	4/9/2014 12:30:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1404B84

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1404B84-004A	SW004	4/9/2014 12:30:00PM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-004B	SW004	4/9/2014 12:30:00PM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-004C	SW004	4/9/2014 12:30:00PM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-004D	SW004	4/9/2014 12:30:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-004E	SW004	4/9/2014 12:30:00PM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-004F	SW004	4/9/2014 12:30:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-004G	SW004	4/9/2014 12:30:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-005A	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-005A	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-005A	SW TC UP	4/9/2014 1:00:00PM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-005B	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-005C	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-005D	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-005E	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-005F	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-005G	SW TC UP	4/9/2014 1:00:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-006A	SW003	4/9/2014 1:30:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-006A	SW003	4/9/2014 1:30:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-006A	SW003	4/9/2014 1:30:00PM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-006B	SW003	4/9/2014 1:30:00PM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-006C	SW003	4/9/2014 1:30:00PM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-006D	SW003	4/9/2014 1:30:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-006E	SW003	4/9/2014 1:30:00PM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-006F	SW003	4/9/2014 1:30:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-006G	SW003	4/9/2014 1:30:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-007A	SW002	4/9/2014 1:45:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-007A	SW002	4/9/2014 1:45:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-007A	SW002	4/9/2014 1:45:00PM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-007B	SW002	4/9/2014 1:45:00PM	Surface Water	Acidity by SM2310B			04/21/2014

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1404B84

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1404B84-007C	SW002	4/9/2014 1:45:00PM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-007D	SW002	4/9/2014 1:45:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-007E	SW002	4/9/2014 1:45:00PM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-007F	SW002	4/9/2014 1:45:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-007G	SW002	4/9/2014 1:45:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014
1404B84-008A	SW001	4/9/2014 2:00:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/16/2014
1404B84-008A	SW001	4/9/2014 2:00:00PM	Surface Water	Trace Elements by ICP/MS		04/15/2014	04/17/2014
1404B84-008A	SW001	4/9/2014 2:00:00PM	Surface Water	TOTAL MERCURY		04/15/2014	04/15/2014
1404B84-008B	SW001	4/9/2014 2:00:00PM	Surface Water	Acidity by SM2310B			04/21/2014
1404B84-008C	SW001	4/9/2014 2:00:00PM	Surface Water	Alkalinity by SM2320B			04/17/2014
1404B84-008D	SW001	4/9/2014 2:00:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			04/16/2014
1404B84-008E	SW001	4/9/2014 2:00:00PM	Surface Water	Inorganic Anions by IC			04/14/2014
1404B84-008F	SW001	4/9/2014 2:00:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		04/14/2014	04/14/2014
1404B84-008G	SW001	4/9/2014 2:00:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		04/15/2014	04/15/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189687

Sample ID: **MB-189687** Client ID: Units: **mg/L** Prep Date: **04/15/2014** Run No: **265515**
SampleType: **MBLK** TestCode: **Total Mercury E245.1** BatchID: **189687** Analysis Date: **04/15/2014** Seq No: **5595347**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	BRL	0.00020									

Sample ID: **LCS-189687** Client ID: Units: **mg/L** Prep Date: **04/15/2014** Run No: **265515**
SampleType: **LCS** TestCode: **Total Mercury E245.1** BatchID: **189687** Analysis Date: **04/15/2014** Seq No: **5595349**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004887	0.00020	0.0050		97.7	85	115				

Sample ID: **1404B84-001AMS** Client ID: **SW TC DOWN** Units: **mg/L** Prep Date: **04/15/2014** Run No: **265515**
SampleType: **MS** TestCode: **Total Mercury E245.1** BatchID: **189687** Analysis Date: **04/15/2014** Seq No: **5595360**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.005440	0.00020	0.0050		109	70	130				

Sample ID: **1404B84-001AMSD** Client ID: **SW TC DOWN** Units: **mg/L** Prep Date: **04/15/2014** Run No: **265515**
SampleType: **MSD** TestCode: **Total Mercury E245.1** BatchID: **189687** Analysis Date: **04/15/2014** Seq No: **5595407**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.005339	0.00020	0.0050		107	70	130	0.005440	1.88	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189739

Sample ID: **MB-189739** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/16/2014** Seq No: **5600238**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	BRL	10.0									
Antimony	BRL	5.00									
Arsenic	BRL	5.00									
Beryllium	BRL	1.00									
Cadmium	BRL	0.700									
Chromium	BRL	5.00									
Copper	0.2638	5.00									J
Iron	BRL	100									
Lead	BRL	1.00									
Manganese	0.1959	5.00									J
Nickel	BRL	5.00									
Selenium	0.5642	5.00									J
Silver	BRL	1.00									
Thallium	0.03693	1.00									J
Zinc	2.659	10.0									J

Sample ID: **LCS-189739** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/16/2014** Seq No: **5600231**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	868.7	10.0	1000		86.9	85	115				
Chromium	111.8	5.00	100.0		112	85	115				
Copper	110.5	5.00	100.0	0.2638	110	85	115				
Iron	1042	100	1000		104	85	115				
Manganese	103.5	5.00	100.0	0.1959	103	85	115				
Nickel	108.6	5.00	100.0		109	85	115				
Silver	9.617	1.00	10.00		96.2	85	115				

Qualifiers:
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189739

Sample ID: **LCS-189739** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/17/2014** Seq No: **5602363**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	97.44	5.00	100.0		97.4	85	115				
Arsenic	96.82	5.00	100.0		96.8	85	115				
Beryllium	110.1	1.00	100.0		110	85	115				
Cadmium	109.6	0.700	100.0		110	85	115				
Lead	98.27	1.00	100.0		98.3	85	115				
Selenium	112.9	5.00	100.0	0.5642	112	85	115				
Thallium	92.87	1.00	100.0	0.03693	92.8	85	115				
Zinc	104.1	10.0	100.0	2.659	101	85	115				

Sample ID: **1404B75-001AMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/16/2014** Seq No: **5600241**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	879.5	10.0	1000	23.35	85.6	70	130				
Beryllium	126.7	1.00	100.0		127	70	130				
Cadmium	115.1	0.700	100.0	0.04346	115	70	130				
Chromium	110.8	5.00	100.0	1.876	109	70	130				
Copper	120.2	5.00	100.0	13.08	107	70	130				
Iron	1335	100	1000	302.7	103	70	130				
Manganese	108.3	5.00	100.0	6.570	102	70	130				
Nickel	111.8	5.00	100.0	6.117	106	70	130				
Selenium	107.6	5.00	100.0	0.5772	107	70	130				
Silver	9.243	1.00	10.00		92.4	70	130				

Sample ID: **1404B75-001AMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/17/2014** Seq No: **5602365**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189739

Sample ID: **1404B75-001AMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/17/2014** Seq No: **5602365**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	90.38	5.00	100.0		90.4	70	130				
Arsenic	89.26	5.00	100.0	0.2187	89.0	70	130				
Lead	97.95	1.00	100.0	0.3562	97.6	70	130				
Thallium	93.90	1.00	100.0	0.3942	93.5	70	130				
Zinc	147.3	10.0	100.0	50.57	96.7	70	130				

Sample ID: **1404D41-007AMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/16/2014** Seq No: **5600246**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	128.4	5.00	100.0		128	70	130				
Beryllium	124.8	1.00	100.0		125	70	130				
Cadmium	113.0	0.700	100.0	0.07759	113	70	130				
Chromium	101.2	5.00	100.0	1.002	100	70	130				
Copper	99.86	5.00	100.0	1.884	98.0	70	130				
Iron	1748	100	1000	1281	46.7	70	130				S
Manganese	214.8	5.00	100.0	127.4	87.4	70	130				
Nickel	97.91	5.00	100.0	0.6181	97.3	70	130				
Selenium	105.7	5.00	100.0	0.8319	105	70	130				
Silver	8.679	1.00	10.00		86.8	70	130				
Zinc	132.0	10.0	100.0	9.075	123	70	130				

Sample ID: **1404D41-007AMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/17/2014** Seq No: **5602367**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1215	10.0	1000	421.7	79.3	70	130				
Arsenic	93.04	5.00	100.0	0.5588	92.5	70	130				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189739

Sample ID: **1404D41-007AMS** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/17/2014** Seq No: **5602367**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	97.63	1.00	100.0	0.6659	97.0	70	130				
Thallium	90.12	1.00	100.0	0.1298	90.0	70	130				

Sample ID: **1404B75-001AMSD** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/16/2014** Seq No: **5600243**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	868.2	10.0	1000	23.35	84.5	70	130	879.5	1.29	20	
Beryllium	129.0	1.00	100.0		129	70	130	126.7	1.72	20	
Cadmium	118.8	0.700	100.0	0.04346	119	70	130	115.1	3.15	20	
Chromium	109.6	5.00	100.0	1.876	108	70	130	110.8	1.13	20	
Copper	119.7	5.00	100.0	13.08	107	70	130	120.2	0.452	20	
Iron	1319	100	1000	302.7	102	70	130	1335	1.17	20	
Manganese	105.9	5.00	100.0	6.570	99.4	70	130	108.3	2.21	20	
Nickel	109.9	5.00	100.0	6.117	104	70	130	111.8	1.69	20	
Selenium	107.0	5.00	100.0	0.5772	106	70	130	107.6	0.607	20	
Silver	9.071	1.00	10.00		90.7	70	130	9.243	1.87	20	

Sample ID: **1404B75-001AMSD** Client ID: Units: **ug/L** Prep Date: **04/15/2014** Run No: **265777**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **189739** Analysis Date: **04/17/2014** Seq No: **5602366**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	84.72	5.00	100.0		84.7	70	130	90.38	6.47	20	
Arsenic	83.60	5.00	100.0	0.2187	83.4	70	130	89.26	6.54	20	
Lead	93.78	1.00	100.0	0.3562	93.4	70	130	97.95	4.35	20	
Thallium	88.20	1.00	100.0	0.3942	87.8	70	130	93.90	6.26	20	
Zinc	138.0	10.0	100.0	50.57	87.4	70	130	147.3	6.52	20	

Qualifiers:
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189745

Sample ID: **MB-189745**	Client ID:				Units: **mg/L**		Prep Date: **04/15/2014**		Run No: **265597**	
SampleType: **MBLK**	TestCode: **Residue, Suspended (TSS) by SM2540D**				BatchID: **189745**		Analysis Date: **04/15/2014**		Seq No: **5596000**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0									

Sample ID: **1404A99-001ADUP**	Client ID:				Units: **mg/L**		Prep Date: **04/15/2014**		Run No: **265597**	
SampleType: **DUP**	TestCode: **Residue, Suspended (TSS) by SM2540D**				BatchID: **189745**		Analysis Date: **04/15/2014**		Seq No: **5596002**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	51.50	5.0						50.50	1.96	5	

Sample ID: **1404D41-001CDUP**	Client ID:				Units: **mg/L**		Prep Date: **04/15/2014**		Run No: **265597**	
SampleType: **DUP**	TestCode: **Residue, Suspended (TSS) by SM2540D**				BatchID: **189745**		Analysis Date: **04/15/2014**		Seq No: **5596037**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	26.00	5.0						26.00	0	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: 189749

Sample ID: **MB-189749** Client ID: Units: **mg/L** Prep Date: **04/14/2014** Run No: **265719**
SampleType: **MBLK** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **189749** Analysis Date: **04/14/2014** Seq No: **5598828**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1404B11-001DDUP** Client ID: Units: **mg/L** Prep Date: **04/14/2014** Run No: **265719**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **189749** Analysis Date: **04/14/2014** Seq No: **5598830**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10						0	0	5	

Sample ID: **1404B11-012DDUP** Client ID: Units: **mg/L** Prep Date: **04/14/2014** Run No: **265719**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **189749** Analysis Date: **04/14/2014** Seq No: **5598850**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	102.0	10						104.0	1.94	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: R265671

Sample ID: **MB-R265671** Client ID: Units: **mg/L** Prep Date: Run No: **265671**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R265671** Analysis Date: **04/14/2014** Seq No: **5597744**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R265671** Client ID: Units: **mg/L** Prep Date: Run No: **265671**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R265671** Analysis Date: **04/14/2014** Seq No: **5597740**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	25.01	1.00	25.00		100	90	110				

Sample ID: **1404B84-007EMS** Client ID: **SW002** Units: **mg/L** Prep Date: Run No: **265671**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R265671** Analysis Date: **04/14/2014** Seq No: **5597764**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	32.06	1.00	25.00	5.552	106	90	110				

Sample ID: **1404B84-007EMSD** Client ID: **SW002** Units: **mg/L** Prep Date: Run No: **265671**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R265671** Analysis Date: **04/14/2014** Seq No: **5597766**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	31.95	1.00	25.00	5.552	106	90	110	32.06	0.342	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: R265689

Sample ID: **LCS-R265689** Client ID: Units: **pH Units** Prep Date: Run No: **265689**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265689** Analysis Date: **04/16/2014** Seq No: **5598001**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.030	0.0100	7.000		100	90	110				

Sample ID: **1404B00-001BDUP** Client ID: Units: **pH Units** Prep Date: Run No: **265689**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265689** Analysis Date: **04/16/2014** Seq No: **5598022**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.620	0.0100						6.640	0.302	20	H

Sample ID: **1404B12-001BDUP** Client ID: Units: **pH Units** Prep Date: Run No: **265689**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265689** Analysis Date: **04/16/2014** Seq No: **5598023**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.230	0.0100						7.240	0.138	20	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: R265691

Sample ID: **LCS-R265691** Client ID: Units: **pH Units** Prep Date: Run No: **265691**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265691** Analysis Date: **04/16/2014** Seq No: **5598035**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.030	0.0100	7.000		100	90	110				

Sample ID: **1404B84-007DDUP** Client ID: **SW002** Units: **pH Units** Prep Date: Run No: **265691**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265691** Analysis Date: **04/16/2014** Seq No: **5598054**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.220	0.0100						6.210	0.161	20	H

Sample ID: **1404C23-002ADUP** Client ID: Units: **pH Units** Prep Date: Run No: **265691**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R265691** Analysis Date: **04/16/2014** Seq No: **5598055**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.690	0.0100						7.680	0.130	20	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: R265775

Sample ID: **MB-R265775** Client ID: Units: **mg/L** Prep Date: Run No: **265775**
SampleType: **MBLK** TestCode: **Alkalinity by SM2320B** BatchID: **R265775** Analysis Date: **04/17/2014** Seq No: **5600086**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1.000	3.00									J

Sample ID: **LCS-R265775** Client ID: Units: **mg/L** Prep Date: Run No: **265775**
SampleType: **LCS** TestCode: **Alkalinity by SM2320B** BatchID: **R265775** Analysis Date: **04/17/2014** Seq No: **5600087**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	123.0	3.00	125.0	1.000	97.6	75	125				

Sample ID: **1404B84-001CDUP** Client ID: **SW TC DOWN** Units: **mg/L** Prep Date: Run No: **265775**
SampleType: **DUP** TestCode: **Alkalinity by SM2320B** BatchID: **R265775** Analysis Date: **04/17/2014** Seq No: **5600092**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, M (pH 4.5) (CaCO3)	10.00	3.00						10.00	0	30	
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00						0	0	30	
Alkalinity, Total (As CaCO3)	10.00	3.00						10.00	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1404B84

ANALYTICAL QC SUMMARY REPORT

BatchID: R266002

Sample ID: **MB-R266002** Client ID: Units: **mg/L** Prep Date: Run No: **266002**
SampleType: **MBLK** TestCode: **Acidity by SM2310B** BatchID: **R266002** Analysis Date: **04/21/2014** Seq No: **5606552**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R266002** Client ID: Units: **mg/L** Prep Date: Run No: **266002**
SampleType: **LCS** TestCode: **Acidity by SM2310B** BatchID: **R266002** Analysis Date: **04/21/2014** Seq No: **5606553**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	97.90	10.0	100.0		97.9	80	120				

Sample ID: **1404B84-001BDUP** Client ID: **SW TC DOWN** Units: **mg/L** Prep Date: Run No: **266002**
SampleType: **DUP** TestCode: **Acidity by SM2310B** BatchID: **R266002** Analysis Date: **04/21/2014** Seq No: **5606569**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 20, 2014

Bob Decker
EarthCon Consultants, Inc.
14405 Walters Road, Suite 700
Houston TX 77014

TEL: (281) 240-5200
FAX:

RE: Ridgeholm

Dear Bob Decker: Order No: 1405765

Analytical Environmental Services, Inc. received 8 samples on May 8, 2014 2:15 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: ~~140 5764~~ 1405 765 MJ 5/8/14

Date: 5/8/14 Page 1 of 1

COMPANY: EarthCon

ADDRESS: 14405 Walters Rd ste 700 Houston TX 77014

PHONE: 281-240-5200

FAX:

SAMPLED BY: JB McKinney

SIGNATURE:

ANALYSIS REQUESTED: Acidity, Alkalinity, pH, metals, anions, TDS, TSS

PRESERVATION (See codes): I, I, I, N, I, I, I

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Acidity	Alkalinity	pH	metals	anions	TDS	TSS	REMARKS	No # of Containers
1	SWTCDN	5/7/14	0915	X		SW	X	X	X	X	X	X	X		7
2	SW005	5/7/14	1030	X		SW	X	X	X	X	X	X	X		7
3	SW004	5/7/14	1200	X		SW	X	X	X	X	X	X	X		7
4	SWTCUP	5/7/14	1230	X		SW	X	X	X	X	X	X	X		7
5	SW003	5/7/14	1300	X		SW	X	X	X	X	X	X	X		7
6	SW002	5/7/14	1320	X		SW	X	X	X	X	X	X	X		7
7	SW001	5/7/14	1340	X		SW	X	X	X	X	X	X	X		7
8	SW006	5/7/14	1630	X		SW	X	X	X	X	X	X	X		7
9															
10															
11															
12															
13															
14															

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5/8/14 1000	1:	5/8/14 1010
2:	5/8/14 1415	2:	5/8/14 2115
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN 5/8/14 VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: Ridgeholm
PROJECT #: 02.20120195.00
SITE ADDRESS:
SEND REPORT TO: Bob Decker
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 56

Turnaround Time Request
- (✓) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab ID: 1405765

Case Narrative

pH Analysis by Method SM4500 H+ B:

Samples for pH analysis by Method SM4500 H+ B were received and analyzed outside of the holding time requirement of "immediate or 15 minutes".

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC DN
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 9:15:00 AM
Lab ID:	1405765-001	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	97.1		4.45	10.0	ug/L	190940	1	05/14/2014 18:34	MR
Antimony	0.336	J	0.0437	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Arsenic	0.346	J	0.228	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 18:34	MR
Cadmium	0.0161	J	0.0132	0.700	ug/L	190940	1	05/14/2014 18:34	MR
Chromium	0.205	J	0.115	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Copper	BRL		1.24	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Iron	310		40.5	100	ug/L	190940	1	05/14/2014 18:34	MR
Lead	0.217	J	0.134	1.00	ug/L	190940	1	05/14/2014 18:34	MR
Manganese	60.6		0.157	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Nickel	0.657	J	0.111	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Selenium	0.431	J	0.302	5.00	ug/L	190940	1	05/14/2014 18:34	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 18:34	MR
Thallium	0.0539	J	0.0537	1.00	ug/L	190940	1	05/14/2014 18:34	MR
Zinc	BRL		2.97	10.0	ug/L	190940	1	05/14/2014 18:34	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:04	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	2.0	J	1.0	5.0	mg/L	191001	1	05/13/2014 14:29	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	58		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	6.11		0.262	1.00	mg/L	R267480	1	05/12/2014 10:49	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.37	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	13.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	13.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 005
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 10:30:00 AM
Lab ID:	1405765-002	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	121		4.45	10.0	ug/L	190940	1	05/14/2014 18:39	MR
Antimony	0.242	J	0.0437	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Arsenic	0.446	J	0.228	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 18:39	MR
Cadmium	BRL		0.0132	0.700	ug/L	190940	1	05/14/2014 18:39	MR
Chromium	1.76	J	0.115	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Copper	BRL		1.24	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Iron	687		40.5	100	ug/L	190940	1	05/14/2014 18:39	MR
Lead	0.274	J	0.134	1.00	ug/L	190940	1	05/14/2014 18:39	MR
Manganese	91.6		0.157	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Nickel	2.70	J	0.111	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Selenium	0.326	J	0.302	5.00	ug/L	190940	1	05/14/2014 18:39	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 18:39	MR
Thallium	BRL		0.0537	1.00	ug/L	190940	1	05/14/2014 18:39	MR
Zinc	BRL		2.97	10.0	ug/L	190940	1	05/14/2014 18:39	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:12	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	1.5	J	1.0	5.0	mg/L	191001	1	05/13/2014 14:29	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	53		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	5.82		0.262	1.00	mg/L	R267480	1	05/12/2014 11:04	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.34	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	19.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	19.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 004
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 12:00:00 PM
Lab ID:	1405765-003	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	413		4.45	10.0	ug/L	190940	1	05/14/2014 18:19	MR
Antimony	0.308	J	0.0437	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Arsenic	1.33	J	0.228	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 18:19	MR
Cadmium	0.0764	J	0.0132	0.700	ug/L	190940	1	05/14/2014 18:19	MR
Chromium	0.384	J	0.115	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Copper	1.88	J	1.24	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Iron	955		40.5	100	ug/L	190940	1	05/14/2014 18:19	MR
Lead	1.19		0.134	1.00	ug/L	190940	1	05/14/2014 18:19	MR
Manganese	327		0.157	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Nickel	0.616	J	0.111	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Selenium	1.31	J	0.302	5.00	ug/L	190940	1	05/14/2014 18:19	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 18:19	MR
Thallium	0.197	J	0.0537	1.00	ug/L	190940	1	05/14/2014 18:19	MR
Zinc	5.75	J	2.97	10.0	ug/L	190940	1	05/14/2014 18:19	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:20	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	29.5		1.0	5.0	mg/L	191001	1	05/13/2014 14:31	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	116		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	13.2		0.262	1.00	mg/L	R267480	1	05/12/2014 11:19	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.26	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	20.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	20.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW TC UP
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 12:30:00 PM
Lab ID:	1405765-004	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	72.2		4.45	10.0	ug/L	190940	1	05/14/2014 18:55	MR
Antimony	0.192	J	0.0437	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Arsenic	0.299	J	0.228	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 18:55	MR
Cadmium	BRL		0.0132	0.700	ug/L	190940	1	05/14/2014 18:55	MR
Chromium	0.180	J	0.115	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Copper	BRL		1.24	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Iron	210		40.5	100	ug/L	190940	1	05/14/2014 18:55	MR
Lead	0.208	J	0.134	1.00	ug/L	190940	1	05/14/2014 18:55	MR
Manganese	32.8		0.157	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Nickel	0.487	J	0.111	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Selenium	0.312	J	0.302	5.00	ug/L	190940	1	05/14/2014 18:55	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 18:55	MR
Thallium	BRL		0.0537	1.00	ug/L	190940	1	05/14/2014 18:55	MR
Zinc	BRL		2.97	10.0	ug/L	190940	1	05/14/2014 18:55	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:22	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	1.0	J	1.0	5.0	mg/L	191001	1	05/13/2014 14:31	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	60		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	5.82		0.262	1.00	mg/L	R267480	1	05/12/2014 11:34	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.43	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	15.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	15.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 003
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 1:00:00 PM
Lab ID:	1405765-005	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	198		4.45	10.0	ug/L	190940	1	05/14/2014 19:00	MR
Antimony	0.196	J	0.0437	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Arsenic	1.03	J	0.228	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 19:00	MR
Cadmium	BRL		0.0132	0.700	ug/L	190940	1	05/14/2014 19:00	MR
Chromium	0.263	J	0.115	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Copper	2.15	J	1.24	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Iron	2200		40.5	100	ug/L	190940	1	05/14/2014 19:00	MR
Lead	0.358	J	0.134	1.00	ug/L	190940	1	05/14/2014 19:00	MR
Manganese	311		0.157	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Nickel	0.363	J	0.111	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Selenium	0.310	J	0.302	5.00	ug/L	190940	1	05/14/2014 19:00	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 19:00	MR
Thallium	BRL		0.0537	1.00	ug/L	190940	1	05/14/2014 19:00	MR
Zinc	BRL		2.97	10.0	ug/L	190940	1	05/14/2014 19:00	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:24	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	16.0		1.0	5.0	mg/L	191001	1	05/13/2014 14:32	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	79		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	6.92		0.262	1.00	mg/L	R267480	1	05/12/2014 14:51	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.32	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	35.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	35.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 002
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 1:20:00 PM
Lab ID:	1405765-006	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	117		4.45	10.0	ug/L	190940	1	05/14/2014 19:05	MR
Antimony	0.163	J	0.0437	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Arsenic	BRL		0.228	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 19:05	MR
Cadmium	0.0307	J	0.0132	0.700	ug/L	190940	1	05/14/2014 19:05	MR
Chromium	0.167	J	0.115	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Copper	BRL		1.24	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Iron	68.1	J	40.5	100	ug/L	190940	1	05/14/2014 19:05	MR
Lead	0.202	J	0.134	1.00	ug/L	190940	1	05/14/2014 19:05	MR
Manganese	57.1		0.157	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Nickel	0.883	J	0.111	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Selenium	BRL		0.302	5.00	ug/L	190940	1	05/14/2014 19:05	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 19:05	MR
Thallium	BRL		0.0537	1.00	ug/L	190940	1	05/14/2014 19:05	MR
Zinc	3.60	J	2.97	10.0	ug/L	190940	1	05/14/2014 19:05	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:26	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	5.5		1.0	5.0	mg/L	191001	1	05/13/2014 14:35	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	53		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	5.97		0.262	1.00	mg/L	R267480	1	05/12/2014 15:05	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	5.34	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	3.00		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	3.00		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267745	1	05/14/2014 15:00	LW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 001
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 1:40:00 PM
Lab ID:	1405765-007	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	950		4.45	10.0	ug/L	190940	1	05/14/2014 19:10	MR
Antimony	0.182	J	0.0437	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Arsenic	0.574	J	0.228	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 19:10	MR
Cadmium	0.0311	J	0.0132	0.700	ug/L	190940	1	05/14/2014 19:10	MR
Chromium	0.894	J	0.115	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Copper	BRL		1.24	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Iron	992		40.5	100	ug/L	190940	1	05/14/2014 19:10	MR
Lead	1.09		0.134	1.00	ug/L	190940	1	05/14/2014 19:10	MR
Manganese	191		0.157	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Nickel	1.34	J	0.111	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Selenium	BRL		0.302	5.00	ug/L	190940	1	05/14/2014 19:10	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 19:10	MR
Thallium	BRL		0.0537	1.00	ug/L	190940	1	05/14/2014 19:10	MR
Zinc	5.72	J	2.97	10.0	ug/L	190940	1	05/14/2014 19:10	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:28	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	188		1.0	5.0	mg/L	191001	1	05/13/2014 14:36	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	42		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	3.73		0.262	1.00	mg/L	R267480	1	05/12/2014 15:20	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	5.73	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	9.00		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	9.00		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267747	1	05/15/2014 12:00	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-May-14

Client:	EarthCon Consultants, Inc.	**Client Sample ID:**	SW 006
Project Name:	Ridgeholm	**Collection Date:**	5/7/2014 4:30:00 PM
Lab ID:	1405765-008	**Matrix:**	Surface Water

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Trace Elements by ICP/MS E200.8					**(E200.2)**				
Aluminum	144		4.45	10.0	ug/L	190940	1	05/14/2014 19:15	MR
Antimony	0.180	J	0.0437	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Arsenic	0.474	J	0.228	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Beryllium	BRL		0.181	1.00	ug/L	190940	1	05/14/2014 19:15	MR
Cadmium	BRL		0.0132	0.700	ug/L	190940	1	05/14/2014 19:15	MR
Chromium	0.219	J	0.115	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Copper	BRL		1.24	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Iron	860		40.5	100	ug/L	190940	1	05/14/2014 19:15	MR
Lead	0.295	J	0.134	1.00	ug/L	190940	1	05/14/2014 19:15	MR
Manganese	150		0.157	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Nickel	0.611	J	0.111	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Selenium	BRL		0.302	5.00	ug/L	190940	1	05/14/2014 19:15	MR
Silver	BRL		0.0654	1.00	ug/L	190940	1	05/14/2014 19:15	MR
Thallium	BRL		0.0537	1.00	ug/L	190940	1	05/14/2014 19:15	MR
Zinc	BRL		2.97	10.0	ug/L	190940	1	05/14/2014 19:15	MR
Total Mercury E245.1					**(E245.1)**				
Mercury	BRL		0.00007	0.00020	mg/L	190960	1	05/13/2014 12:30	CG
Residue, Suspended (TSS) by SM2540D									
Residue, Suspended (TSS)	9.5		1.0	5.0	mg/L	191001	1	05/13/2014 14:37	OM
Residue, Dissolved (TDS) by SM2540C									
Residue, Dissolved (TDS)	57		5	10	mg/L	191003	1	05/13/2014 10:00	OM
Inorganic Anions by IC E300.0									
Sulfate	4.99		0.262	1.00	mg/L	R267480	1	05/12/2014 15:35	GR
Hydrogen Ion (pH) by SM4500 H+ B									
pH	6.39	H	0.0100	0.0100	pH Units	R267290	1	05/09/2014 09:40	OM
Alkalinity by SM2320B									
Alkalinity, M (pH 4.5) (CaCO3)	19.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, P (pH 8.3) (CaCO3)	BRL		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Alkalinity, Total (As CaCO3)	19.0		0.672	3.00	mg/L	R267769	1	05/16/2014 10:48	EH
Acidity by SM2310B									
Acidity	BRL		10.0	10.0	mg/L	R267747	1	05/15/2014 12:00	OM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated value above quantitation range
BRL	Not detected at MDL	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	J	Estimated value detected below Reporting Limit
N	Analyte not NELAC certified	>	Greater than Result value
B	Analyte detected in the associated method blank	<	Less than Result value
NC	Not confirmed	Narr	See case narrative

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Earth Con Work Order Number 1405765 ~~1405765~~ JDH 5/20/14

Checklist completed by MJ 5/8/14
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.P Cooler #2 3.3 Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes __ No ✓

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by MJ

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1405765

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1405765-001A	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-001A	SW TC DN	5/7/2014 9:15:00AM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-001B	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Acidity by SM2310B			05/14/2014
1405765-001C	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-001D	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-001E	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-001F	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-001G	SW TC DN	5/7/2014 9:15:00AM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-002A	SW 005	5/7/2014 10:30:00AM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-002A	SW 005	5/7/2014 10:30:00AM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-002B	SW 005	5/7/2014 10:30:00AM	Surface Water	Acidity by SM2310B			05/14/2014
1405765-002C	SW 005	5/7/2014 10:30:00AM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-002D	SW 005	5/7/2014 10:30:00AM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-002E	SW 005	5/7/2014 10:30:00AM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-002F	SW 005	5/7/2014 10:30:00AM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-002G	SW 005	5/7/2014 10:30:00AM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-003A	SW 004	5/7/2014 12:00:00PM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-003A	SW 004	5/7/2014 12:00:00PM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-003B	SW 004	5/7/2014 12:00:00PM	Surface Water	Acidity by SM2310B			05/14/2014
1405765-003C	SW 004	5/7/2014 12:00:00PM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-003D	SW 004	5/7/2014 12:00:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-003E	SW 004	5/7/2014 12:00:00PM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-003F	SW 004	5/7/2014 12:00:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-003G	SW 004	5/7/2014 12:00:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-004A	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-004A	SW TC UP	5/7/2014 12:30:00PM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-004B	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Acidity by SM2310B			05/14/2014
1405765-004C	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-004D	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1405765

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1405765-004E	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-004F	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-004G	SW TC UP	5/7/2014 12:30:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-005A	SW 003	5/7/2014 1:00:00PM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-005A	SW 003	5/7/2014 1:00:00PM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-005B	SW 003	5/7/2014 1:00:00PM	Surface Water	Acidity by SM2310B			05/14/2014
1405765-005C	SW 003	5/7/2014 1:00:00PM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-005D	SW 003	5/7/2014 1:00:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-005E	SW 003	5/7/2014 1:00:00PM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-005F	SW 003	5/7/2014 1:00:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-005G	SW 003	5/7/2014 1:00:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-006A	SW 002	5/7/2014 1:20:00PM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-006A	SW 002	5/7/2014 1:20:00PM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-006B	SW 002	5/7/2014 1:20:00PM	Surface Water	Acidity by SM2310B			05/14/2014
1405765-006C	SW 002	5/7/2014 1:20:00PM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-006D	SW 002	5/7/2014 1:20:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-006E	SW 002	5/7/2014 1:20:00PM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-006F	SW 002	5/7/2014 1:20:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-006G	SW 002	5/7/2014 1:20:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-007A	SW 001	5/7/2014 1:40:00PM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-007A	SW 001	5/7/2014 1:40:00PM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014
1405765-007B	SW 001	5/7/2014 1:40:00PM	Surface Water	Acidity by SM2310B			05/15/2014
1405765-007C	SW 001	5/7/2014 1:40:00PM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-007D	SW 001	5/7/2014 1:40:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-007E	SW 001	5/7/2014 1:40:00PM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-007F	SW 001	5/7/2014 1:40:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-007G	SW 001	5/7/2014 1:40:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014
1405765-008A	SW 006	5/7/2014 4:30:00PM	Surface Water	Trace Elements by ICP/MS		05/12/2014	05/14/2014
1405765-008A	SW 006	5/7/2014 4:30:00PM	Surface Water	TOTAL MERCURY		05/13/2014	05/13/2014

Analytical Environmental Services, Inc

Date: 19-May-14

Client: EarthCon Consultants, Inc.
Project: Ridgeholm
Lab Order: 1405765

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1405765-008B	SW 006	5/7/2014 4:30:00PM	Surface Water	Acidity by SM2310B			05/15/2014
1405765-008C	SW 006	5/7/2014 4:30:00PM	Surface Water	Alkalinity by SM2320B			05/16/2014
1405765-008D	SW 006	5/7/2014 4:30:00PM	Surface Water	Hydrogen Ion (pH) by SM4500 H+ B			05/09/2014
1405765-008E	SW 006	5/7/2014 4:30:00PM	Surface Water	Inorganic Anions by IC			05/12/2014
1405765-008F	SW 006	5/7/2014 4:30:00PM	Surface Water	Residue, Dissolved (TDS) by SM2540C		05/13/2014	05/13/2014
1405765-008G	SW 006	5/7/2014 4:30:00PM	Surface Water	Residue, Suspended (TSS) by SM2540D		05/13/2014	05/13/2014

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **190940**

Sample ID: **MB-190940** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **MBLK** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644922**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	4.006	10.0									J
Antimony	BRL	5.00									
Arsenic	0.1969	5.00									J
Beryllium	BRL	1.00									
Cadmium	0.07107	0.700									J
Calcium	BRL	100									
Chromium	BRL	5.00									
Copper	0.2381	5.00									J
Iron	8.913	100									J
Lead	BRL	1.00									
Magnesium	BRL	100									
Manganese	0.8507	5.00									J
Nickel	0.1174	5.00									J
Selenium	1.270	5.00									J
Silver	BRL	1.00									
Thallium	0.1403	1.00									J
Zinc	BRL	10.0									

Sample ID: **LCS-190940** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644920**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1000	10.0	1000	4.006	99.6	85	115				
Antimony	101.8	5.00	100.0		102	85	115				
Arsenic	107.6	5.00	100.0	0.1969	107	85	115				
Beryllium	109.0	1.00	100.0		109	85	115				
Cadmium	112.8	0.700	100.0	0.07107	113	85	115				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: 190940

Sample ID: **LCS-190940** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **LCS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644920**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	987.7	100	1000		98.8	80	120				
Chromium	99.45	5.00	100.0		99.4	85	115				
Copper	102.6	5.00	100.0	0.2381	102	85	115				
Iron	1003	100	1000	8.913	99.4	85	115				
Lead	100.5	1.00	100.0		100	85	115				
Magnesium	1016	100	1000		102	80	120				
Manganese	100.8	5.00	100.0	0.8507	100.0	85	115				
Nickel	99.92	5.00	100.0	0.1174	99.8	85	115				
Selenium	115.1	5.00	100.0	1.270	114	85	115				
Silver	9.641	1.00	10.00		96.4	85	115				
Thallium	91.00	1.00	100.0	0.1403	90.9	85	115				
Zinc	109.9	10.0	100.0		110	85	115				

Sample ID: **1405674-001AMS** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644924**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	967.6	10.0	1000	29.48	93.8	70	130				
Antimony	98.77	5.00	100.0	0.8917	97.9	70	130				
Arsenic	96.52	5.00	100.0	1.059	95.5	70	130				
Beryllium	100.6	1.00	100.0		101	70	130				
Cadmium	99.22	0.700	100.0	0.3066	98.9	70	130				
Calcium	15060	100	1000	13970	110	70	130				
Chromium	96.40	5.00	100.0	1.566	94.8	70	130				
Copper	101.3	5.00	100.0	11.04	90.2	70	130				
Iron	944.2	100	1000	9.627	93.5	70	130				
Lead	93.28	1.00	100.0	1.287	92.0	70	130				
Magnesium	11710	100	1000	10570	114	70	130				

Qualifiers:
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **190940**

Sample ID: **1405674-001AMS** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644924**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	94.12	5.00	100.0	0.2742	93.8	70	130				
Nickel	89.97	5.00	100.0	2.142	87.8	70	130				
Selenium	93.33	5.00	100.0	0.3302	93.0	70	130				
Silver	8.414	1.00	10.00		84.1	70	130				
Thallium	89.43	1.00	100.0	0.02878	89.4	70	130				
Zinc	95.66	10.0	100.0	8.118	87.5	70	130				

Sample ID: **1405765-003AMS** Client ID: **SW 004** Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **MS** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644928**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	1402	10.0	1000	412.8	99.0	70	130				
Antimony	96.54	5.00	100.0	0.3076	96.2	70	130				
Arsenic	104.0	5.00	100.0	1.329	103	70	130				
Beryllium	103.7	1.00	100.0		104	70	130				
Cadmium	108.5	0.700	100.0	0.07645	108	70	130				
Calcium	7281	100	1000	6345	93.6	70	130				
Chromium	97.50	5.00	100.0	0.3836	97.1	70	130				
Copper	100.1	5.00	100.0	1.879	98.2	70	130				
Iron	1920	100	1000	955.1	96.5	70	130				
Lead	98.75	1.00	100.0	1.194	97.6	70	130				
Magnesium	3119	100	1000	2162	95.8	70	130				
Manganese	420.0	5.00	100.0	327.0	93.0	70	130				
Nickel	96.64	5.00	100.0	0.6162	96.0	70	130				
Selenium	107.8	5.00	100.0	1.305	107	70	130				
Silver	9.171	1.00	10.00		91.7	70	130				
Thallium	96.19	1.00	100.0	0.1965	96.0	70	130				
Zinc	111.9	10.0	100.0	5.748	106	70	130				

Qualifiers:
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

Analytical Environmental Services, Inc

Date: 20-May-14

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **190940**

Sample ID: **1405674-001AMSD** Client ID: Units: **ug/L** Prep Date: **05/12/2014** Run No: **267704**
SampleType: **MSD** TestCode: **Trace Elements by ICP/MS E200.8** BatchID: **190940** Analysis Date: **05/14/2014** Seq No: **5644925**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Aluminum	985.3	10.0	1000	29.48	95.6	70	130	967.6	1.82	20	
Antimony	100.3	5.00	100.0	0.8917	99.4	70	130	98.77	1.53	20	
Arsenic	96.66	5.00	100.0	1.059	95.6	70	130	96.52	0.148	20	
Beryllium	100.9	1.00	100.0		101	70	130	100.6	0.337	20	
Cadmium	99.95	0.700	100.0	0.3066	99.6	70	130	99.22	0.729	20	
Calcium	15440	100	1000	13970	148	70	130	15060	2.49	20	S
Chromium	96.92	5.00	100.0	1.566	95.4	70	130	96.40	0.537	20	
Copper	100.7	5.00	100.0	11.04	89.6	70	130	101.3	0.597	20	
Iron	950.9	100	1000	9.627	94.1	70	130	944.2	0.706	20	
Lead	92.58	1.00	100.0	1.287	91.3	70	130	93.28	0.748	20	
Magnesium	11860	100	1000	10570	128	70	130	11710	1.21	20	
Manganese	93.71	5.00	100.0	0.2742	93.4	70	130	94.12	0.437	20	
Nickel	90.38	5.00	100.0	2.142	88.2	70	130	89.97	0.453	20	
Selenium	94.20	5.00	100.0	0.3302	93.9	70	130	93.33	0.934	20	
Silver	8.429	1.00	10.00		84.3	70	130	8.414	0.181	20	
Thallium	87.66	1.00	100.0	0.02878	87.6	70	130	89.43	2.00	20	
Zinc	97.75	10.0	100.0	8.118	89.6	70	130	95.66	2.17	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: 190960

Sample ID: **MB-190960** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267460**
SampleType: **MBLK** TestCode: **Total Mercury E245.1** BatchID: **190960** Analysis Date: **05/13/2014** Seq No: **5640018**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	BRL	0.00020									

Sample ID: **LCS-190960** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267460**
SampleType: **LCS** TestCode: **Total Mercury E245.1** BatchID: **190960** Analysis Date: **05/13/2014** Seq No: **5640020**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.005000	0.00020	0.0050		100	85	115				

Sample ID: **1405765-001AMS** Client ID: **SW TC DN** Units: **mg/L** Prep Date: **05/13/2014** Run No: **267460**
SampleType: **MS** TestCode: **Total Mercury E245.1** BatchID: **190960** Analysis Date: **05/13/2014** Seq No: **5640027**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004964	0.00020	0.0050		99.3	70	130				

Sample ID: **1405765-002AMS** Client ID: **SW 005** Units: **mg/L** Prep Date: **05/13/2014** Run No: **267460**
SampleType: **MS** TestCode: **Total Mercury E245.1** BatchID: **190960** Analysis Date: **05/13/2014** Seq No: **5640039**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004943	0.00020	0.0050		98.9	70	130				

Sample ID: **1405765-001AMSD** Client ID: **SW TC DN** Units: **mg/L** Prep Date: **05/13/2014** Run No: **267460**
SampleType: **MSD** TestCode: **Total Mercury E245.1** BatchID: **190960** Analysis Date: **05/13/2014** Seq No: **5640030**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.004993	0.00020	0.0050		99.9	70	130	0.004964	0.586	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: 191001

Sample ID: **MB-191001** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267510**
SampleType: **MBLK** TestCode: **Residue, Suspended (TSS) by SM2540D** BatchID: **191001** Analysis Date: **05/13/2014** Seq No: **5640713**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	BRL	5.0									

Sample ID: **1405653-002ADUP** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267510**
SampleType: **DUP** TestCode: **Residue, Suspended (TSS) by SM2540D** BatchID: **191001** Analysis Date: **05/13/2014** Seq No: **5640719**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	250.6	11.8						257.6	2.78	5	

Sample ID: **1405765-005G** Client ID: **SW 003** Units: **mg/L** Prep Date: **05/13/2014** Run No: **267510**
SampleType: **DUP** TestCode: **Residue, Suspended (TSS) by SM2540D** BatchID: **191001** Analysis Date: **05/13/2014** Seq No: **5640733**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Suspended (TSS)	16.00	5.0						16.00	0	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: 191003

Sample ID: **MB-191003** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267624**
SampleType: **MBLK** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **191003** Analysis Date: **05/13/2014** Seq No: **5643175**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **1405764-001FDUP** Client ID: Units: **mg/L** Prep Date: **05/13/2014** Run No: **267624**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **191003** Analysis Date: **05/13/2014** Seq No: **5643198**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	168.0	10						167.0	0.597	5	

Sample ID: **1405765-006FDUP** Client ID: **SW 002** Units: **mg/L** Prep Date: **05/13/2014** Run No: **267624**
SampleType: **DUP** TestCode: **Residue, Dissolved (TDS) by SM2540C** BatchID: **191003** Analysis Date: **05/13/2014** Seq No: **5643200**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	55.00	10						53.00	3.70	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **R267290**

Sample ID: **LCS-R267290** Client ID: Units: **pH Units** Prep Date: Run No: **267290**
SampleType: **LCS** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R267290** Analysis Date: **05/09/2014** Seq No: **5634951**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.030	0.0100	7.000		100	90	110				

Sample ID: **1405670-001DDUP** Client ID: Units: **pH Units** Prep Date: Run No: **267290**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R267290** Analysis Date: **05/09/2014** Seq No: **5634980**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	11.62	0.0100						11.60	0.172	20	H

Sample ID: **1405765-005DDUP** Client ID: **SW 003** Units: **pH Units** Prep Date: Run No: **267290**
SampleType: **DUP** TestCode: **Hydrogen Ion (pH) by SM4500 H+ B** BatchID: **R267290** Analysis Date: **05/09/2014** Seq No: **5634983**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	6.370	0.0100						6.320	0.788	20	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **R267480**

Sample ID: **MB-R267480** Client ID: Units: **mg/L** Prep Date: Run No: **267480**
SampleType: **MBLK** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R267480** Analysis Date: **05/12/2014** Seq No: **5639925**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	BRL	1.00									

Sample ID: **LCS-R267480** Client ID: Units: **mg/L** Prep Date: Run No: **267480**
SampleType: **LCS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R267480** Analysis Date: **05/12/2014** Seq No: **5639927**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	24.40	1.00	25.00		97.6	90	110				

Sample ID: **1405765-004EMS** Client ID: **SW TC UP** Units: **mg/L** Prep Date: Run No: **267480**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R267480** Analysis Date: **05/12/2014** Seq No: **5639936**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	30.44	1.00	25.00	5.816	98.5	90	110				

Sample ID: **1405765-008EMS** Client ID: **SW 006** Units: **mg/L** Prep Date: Run No: **267480**
SampleType: **MS** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R267480** Analysis Date: **05/12/2014** Seq No: **5639958**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	28.96	1.00	25.00	4.995	95.9	90	110				

Sample ID: **1405765-004EMSD** Client ID: **SW TC UP** Units: **mg/L** Prep Date: Run No: **267480**
SampleType: **MSD** TestCode: **Inorganic Anions by IC E300.0** BatchID: **R267480** Analysis Date: **05/12/2014** Seq No: **5639937**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfate	30.53	1.00	25.00	5.816	98.8	90	110	30.44	0.281	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **R267745**

Sample ID: **MB-R267745** Client ID: Units: **mg/L** Prep Date: Run No: **267745**
SampleType: **MBLK** TestCode: **Acidity by SM2310B** BatchID: **R267745** Analysis Date: **05/14/2014** Seq No: **5645697**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R267745** Client ID: Units: **mg/L** Prep Date: Run No: **267745**
SampleType: **LCS** TestCode: **Acidity by SM2310B** BatchID: **R267745** Analysis Date: **05/14/2014** Seq No: **5645698**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	97.90	10.0	100.0		97.9	80	120				

Sample ID: **1405764-001BDUP** Client ID: Units: **mg/L** Prep Date: Run No: **267745**
SampleType: **DUP** TestCode: **Acidity by SM2310B** BatchID: **R267745** Analysis Date: **05/14/2014** Seq No: **5645711**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: R267747

Sample ID: **MB-R267747** Client ID: Units: **mg/L** Prep Date: Run No: **267747**
SampleType: **MBLK** TestCode: **Acidity by SM2310B** BatchID: **R267747** Analysis Date: **05/15/2014** Seq No: **5645715**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0									

Sample ID: **LCS-R267747** Client ID: Units: **mg/L** Prep Date: Run No: **267747**
SampleType: **LCS** TestCode: **Acidity by SM2310B** BatchID: **R267747** Analysis Date: **05/15/2014** Seq No: **5645716**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	97.90	10.0	100.0		97.9	80	120				

Sample ID: **1405765-007BDUP** Client ID: **SW 001** Units: **mg/L** Prep Date: Run No: **267747**
SampleType: **DUP** TestCode: **Acidity by SM2310B** BatchID: **R267747** Analysis Date: **05/15/2014** Seq No: **5645723**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Acidity	BRL	10.0						0	0	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: EarthCon Consultants, Inc.
Project Name: Ridgeholm
Workorder: 1405765

ANALYTICAL QC SUMMARY REPORT

BatchID: **R267769**

Sample ID: **MB-R267769** Client ID: Units: **mg/L** Prep Date: Run No: **267769**
SampleType: **MBLK** TestCode: **Alkalinity by SM2320B** BatchID: **R267769** Analysis Date: **05/16/2014** Seq No: **5646109**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1.000	3.00									J

Sample ID: **LCS-R267769** Client ID: Units: **mg/L** Prep Date: Run No: **267769**
SampleType: **LCS** TestCode: **Alkalinity by SM2320B** BatchID: **R267769** Analysis Date: **05/16/2014** Seq No: **5646110**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	123.0	3.00	125.0	1.000	97.6	75	125				

Sample ID: **1405764-001CDUP** Client ID: Units: **mg/L** Prep Date: Run No: **267769**
SampleType: **DUP** TestCode: **Alkalinity by SM2320B** BatchID: **R267769** Analysis Date: **05/16/2014** Seq No: **5646116**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Alkalinity, M (pH 4.5) (CaCO3)	103.0	3.00						104.0	0.966	30	
Alkalinity, P (pH 8.3) (CaCO3)	BRL	3.00						0	0	30	
Alkalinity, Total (As CaCO3)	103.0	3.00						104.0	0.966	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

SURFACE WATER
FIELD

Surface Water Sampling Station
Flow Estimate Calculations
Ridgeholm Energy Partners
April 18, 2013

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.6	0.6	2.2	0.6
2.6	0	2.2	0
Total	avg depth	Total	avg depth
5.2	0.3	4.4	0.3
Cross Sectional area	1.56	Cross Sectional area	1.32

Average Cross Sectional Area (sq. ft.)	1.44	
Travel Time (sec)	25.8	
	25.7	
	24.6	
Average Travel Time (sec)	25.36667	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**1.02**	

SW002

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.5	0.S	2.15	0.3
2.5	0	2.15	0
Total	avg depth	Total	avg depth
5	0.25	4.3	0.15
Cross Sectional area	1.25	Cross Sectional area	0.645

Average Cross Sectional Area (sq. ft.)	0.9475	
Travel Time (sec)	18.8	
	26.72	
	24.92	
Average Travel Time (sec)	23.48	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.7264**	

SW003

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.8	0.15	1.25	0.3
0.8	0	1.25	0
Total	avg depth	Total	avg depth
1.6	0.075	2.5	0.15
Cross Sectional area	0.12	Cross Sectional area	0.375

Average Cross Sectional Area (sq. ft.)	0.2475	
Travel Time (sec)	19.16	
	25.32	
	21.72	
Average Travel Time (sec)	22.06667	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.1795**	

SW004

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.75	0.2	0.8	0.4
0.75	0	0.8	0
Total	avg depth	Total	avg depth
1.5	0.1	1.6	0.2
Cross Sectional area	0.15	Cross Sectional area	0.32

Average Cross Sectional Area (sq. ft.)	0.235	
Travel Time (sec)	32.8	
	40.9	
	33.4	
Average Travel Time (sec)	35.7	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.1185**	

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
4.5	0.7	S	0.7
4.5	0	5	0
Total	avg depth	Total	avg depth
9	0.35	10	0.35
Cross Sectional area	3.15	Cross Sectional area	3.5

Average Cross Sectional Area (sq. ft.)	3.325	
Travel Time (sec)	22.77	
	18.5	
	23.98	
Average Travel Time (sec)	21.75	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**2.446**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1.25	0.6	1.5	0.4
1.25	0	1.5	0
Total	avg depth	Total	avg depth
2.5	0.3	3	0.2
Cross Sectional area	0.75	Cross Sectional area	0.6

Average Cross Sectional Area (sq. ft.)	0.675	
Travel Time (sec)	37.3	
	28.9	
	34.3	
Average Travel Time (sec)	33.5	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.3627**	

Surface Water Sampling Station
Flow Estimate Calculations
Ridgeholm Energy Partners
July 23, 2013

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.9	1	2.5	0.8
2.9	0	2.5	0
Total	avg depth	Total	avg depth
5.8	0.5	5	0.4
Cross Sectional area	2.9	Cross Sectional area	2

Average Cross Sectional Area (sq. ft.)	2.45	
Travel Time (sec)	19.7	
	21.2	
	18.9	
Average Travel Time (sec)	19.93333	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**2.21**	

SW002

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.5	0.6	2.25	0.4
2.5	0	2.25	0
Total	avg depth	Total	avg depth
5	0.3	4.5	0.2
Cross Sectional area	1.5	Cross Sectional area	0.9

Average Cross Sectional Area (sq. ft.)	1.2	
Travel Time (sec)	19.9	
	22.7	
	21.2	
Average Travel Time (sec)	21.26667	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**1.0157**	

SW003

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1	0.1	1.25	0.2
1	0	1.25	0
Total	avg depth	Total	avg depth
2	0.05	2.5	0.1
Cross Sectional area	0.1	Cross Sectional area	0.25

Average Cross Sectional Area (sq. ft.)	0.175	
Travel Time (sec)	24.3	
	20.4	
	19.8	
Average Travel Time (sec)	21.5	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.1302**	

SW004

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.5	0.3	2	0.1
2.5	0	2	0
Total	avg depth	Total	avg depth
5	0.15	4	0.05
Cross Sectional area	0.75	Cross Sectional area	0.2

Average Cross Sectional Area (sq. ft.)	0.475	
Travel Time (sec)	67	
	80	
	73	
Average Travel Time (sec)	73.33333	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.1166**	

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.5	0.3	4	0.6
2.5	0	4	0
Total	avg depth	Total	avg depth
5	0.15	8	0.3
Cross Sectional area	0.75	Cross Sectional area	2.4

Average Cross Sectional Area (sq. ft.)	1.575	
Travel Time (sec)	17	
	14.8	
	15.23	
Average Travel Time (sec)	15.67667	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**1.6075**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2	0.5	1	0.3
2	0	1	0
Total	avg depth	Total	avg depth
4	0.25	2	0.15
Cross Sectional area	1	Cross Sectional area	0.3

Average Cross Sectional Area (sq. ft.)	0.65	
Travel Time (sec)	26.1	
	27.2	
	23.7	
Average Travel Time (sec)	25.66667	
Length of Stream Reach (feet)	14	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.3191**	

Surface Water Sampling Stations
Flow Estimate Calculations
Ridgeholm Energy Partners
November 13 & 14, 2013

Sample No.	Temp. (°C)	Spec. Cond. (uS/cm)	pH	Turbidity (NTU)		Latitude	Longitude
SW001	6.57	26	6.07	27			
SW002	DRY - NO FLOW						
SW003	DRY - NO FLOW						
SW004	DRY - NO FLOW						
SW005	6.73	38	7.04	12.1			
SW006	10.83	75	6.41	114			
SW-POND1	13.94	61	6.47	3.6		34° 32.916'	-85° 43.029'
SW-TC-DOWN	6.91	55	7.07	2.1		34° 32.931'	-85° 43.162'
SW-TC-UP	5.47	40	6.93	3		34° 34.174'	-85° 42.166'

FLOW CALCULATIONS

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.3	0.2	0.3	0.2
0.3	0	0.3	0
Total	avg depth	Total	avg depth
0.6	0.1	0.6	0.1
Cross Sectional area	0.06	Cross Sectional area	0.06

Average Cross Sectional Area (sq. ft.)	0.06	
Travel Time (sec)	24	
	26	
	35	
Average Travel Time (sec)	28.33333	
Length of Stream Reach (feet)	10	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.02**	

SW002

Dry - No Flow

SW003

Dry - No Flow

SW004

Dry - No Flow

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1	0.3	1	0.5
1	0	1	0
Total	avg depth	Total	avg depth
2	0.15	2	0.25
Cross Sectional area	0.3	Cross Sectional area	0.5

Average Cross Sectional Area (sq. ft.)	0.4	
Travel Time (sec)	8	
	9	
	13	
Average Travel Time (sec)	10	
Length of Stream Reach (feet)	5	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.16**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.5	0.2	0.5	0.2
0.5	0	0.5	0
Total	avg depth	Total	avg depth
1	0.1	1	0.1
Cross Sectional area	0.1	Cross Sectional area	0.1

Average Cross Sectional Area (sq. ft.)	0.1	
Travel Time (sec)	38	
	38	
	38	
Average Travel Time (sec)	38	
Length of Stream Reach (feet)	10	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.0237**	

SW-TC-DOWN

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
10	2	9	1.6
10	0	9	0
Total	avg depth	Total	avg depth
20	1	18	0.8
Cross Sectional area	20	Cross Sectional area	14.4

Average Cross Sectional Area (sq. ft.)	17.2	
Travel Time (sec)	81	
	86	
	75	
Average Travel Time (sec)	80.66667	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**3.838**	

SW-TC-UP

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
20	2.5	22.5	2.25
20	0	22.5	0
Total	avg depth	Total	avg depth
40	1.25	45	1.125
Cross Sectional area	50	Cross Sectional area	50.625

Average Cross Sectional Area (sq. ft.)	50.3125	
Travel Time (sec)	95	
	112	
	86	
Average Travel Time (sec)	97.66667	
Length of Stream Reach (feet)	10	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**4.6363**	

Surface Water Sampling Stations
Flow Estimate Calculations
Ridgeholm Energy Partners
February 4, 2014

Sample No.	Temp. (°C)	Spec. Cond. (uS/cm)	pH	Turbidity (NTU)		Latitude	Longitude
SW001	6.88	35	5.64	16.5			
SW002	8.25	57	5.92	10.1			
SW003	6.27	93	6.01	25.1			
SW004	7.31	126	6.48	44.9			
SW005	7.18	87	7.34	18.1			
SW006	7.53	69	6.75	13.0			
SW-POND1						34° 32.916'	-85° 43.029'
SW-TC-DOWN	5.60	90	6.29	46.3		34° 32.931'	-85° 43.162'
SW-TC-UP	6.99	77	5.54	39.5		34° 34.174'	-85° 42.166'

FLOW CALCULATIONS

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12.5	1.2	15	1.2
12.5	0	15	0
Total	avg depth	Total	avg depth
25	0.6	30	0.6
Cross Sectional area	15	Cross Sectional area	18

Average Cross Sectional Area (sq. ft.)	16.5	
Travel Time (sec)	6000	
	6000	
	6000	
Average Travel Time (sec)	6000	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.05**	

SW002

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1.67	0.3	1.6	0.4
1.67	0	1.6	0
Total	avg depth	Total	avg depth
3.34	0.15	3.2	0.2
Cross Sectional area	0.501	Cross Sectional area	0.64

Average Cross Sectional Area (sq. ft.)	0.57	
Travel Time (sec)	12	
	13	
	10	
Average Travel Time (sec)	11.67	
Length of Stream Reach (feet)	10	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.4401**	

SW003

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.75	0.2	1.25	0.2
0.75	0	1.25	0
Total	avg depth	Total	avg depth
1.5	0.1	2.5	0.1
Cross Sectional area	0.15	Cross Sectional area	0.25

Average Cross Sectional Area (sq. ft.)	0.2	
Travel Time (sec)	15	
	13	
	15	
Average Travel Time (sec)	14.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.2233**	

SW004

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1.75	0.2	0.5	0.3
1.75	0	0.5	0
Total	avg depth	Total	avg depth
3.5	0.1	1	0.15
Cross Sectional area	0.35	Cross Sectional area	0.15

Average Cross Sectional Area (sq. ft.)	0.25	
Travel Time (sec)	12	
	15	
	13	
Average Travel Time (sec)	13.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.3375**	

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
3.5	0.7	4	1.5
3.5	0	4	0
Total	avg depth	Total	avg depth
7	0.35	8	0.75
Cross Sectional area	2.45	Cross Sectional area	6

Average Cross Sectional Area (sq. ft.)	4.23	
Travel Time (sec)	11	
	10	
	13	
Average Travel Time (sec)	11.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**5.9647**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2	0.7	3	0.4
2	0	3	0
Total	avg depth	Total	avg depth
4	0.35	6	0.2
Cross Sectional area	1.4	Cross Sectional area	1.2

Average Cross Sectional Area (sq. ft.)	1.3	
Travel Time (sec)	9	
	14	
	13	
Average Travel Time (sec)	12	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**1.95**	

SW-TC-DOWN

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
10	3	12.5	3
10	0	12.5	0
Total	avg depth	Total	avg depth
20	1.5	25	1.5
Cross Sectional area	30	Cross Sectional area	37.5

Average Cross Sectional Area (sq. ft.)	33.75	
Travel Time (sec)	5	
	6	
	6	
Average Travel Time (sec)	5.67	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**107.21**	

SW-TC-UP

Upstream			Downstream		
Interval Width (feet)		Depth (feet)	Interval Width (feet)		Depth (feet)
15		4.5	15		4.25
15		0	15		0
Total		avg depth	Total		avg depth
30		2.25	30		2.125
	Cross Sectional area	67.5	Cross Sectional area	63.75	

Average Cross Sectional Area (sq. ft.)	65.63	
Travel Time (sec)	12	
	8	
	10	
Average Travel Time (sec)	10	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**118.13**	

Surface Water Sampling Stations
Flow Estimate Calculations
Ridgeholm Energy Partners
March 12, 2014

Sample No.	Temp. (°C)	Spec. Cond. (uS/cm)	pH	Turbidity (NTU)
SW001	12.69	33	5.97	486
SW002	11.39	38	5.41	62.3
SW003	13.72	68	6.39	49.3
SW004	13.32	85	6.28	28.2
SW005	14.89	56	7.20	231
SW006	16.1	49	6.07	322
SW-POND1	16.46	70	6.28	63.3
SW-TC-DOWN	13.95	59	6.16	0
SW-TC-UP	13.57	59	6.55	339

FLOW CALCULATIONS

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12.5	1.2	15	1.2
12.5	0	15	0
Total	avg depth	Total	avg depth
25	0.6	30	0.6
Cross Sectional area	15	Cross Sectional area	18

Average Cross Sectional Area (sq. ft.)	16.5	
Travel Time (sec)	6000	
	6000	
	6000	
Average Travel Time (sec)	6000	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.05**	

SW002

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.5	0.2	1.15	0.3
0.5	0	1.15	0
Total	avg depth	Total	avg depth
1	0.1	2.3	0.15
Cross Sectional area	0.1	Cross Sectional area	0.345

Average Cross Sectional Area (sq. ft.)	0.22	
Travel Time (sec)	8	
	9	
	8	
Average Travel Time (sec)	8.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.4806**	

SW003

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.75	0.2	1	0.4
0.75	0	1	0
Total	avg depth	Total	avg depth
1.5	0.1	2	0.2
Cross Sectional area	0.15	Cross Sectional area	0.4

Average Cross Sectional Area (sq. ft.)	0.275	
Travel Time (sec)	23	
	27	
	19	
Average Travel Time (sec)	23.00	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.1913**	

SW004

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.5	0.1	1	0.3
0.5	0	1	0
Total	avg depth	Total	avg depth
1	0.05	2	0.15
Cross Sectional area	0.05	Cross Sectional area	0.3

Average Cross Sectional Area (sq. ft.)	0.175	
Travel Time (sec)	25	
	17	
	19	
Average Travel Time (sec)	20.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.1549**	

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2.5	0.4	4	1.3
2.5	0	4	0
Total	avg depth	Total	avg depth
5	0.2	8	0.65
Cross Sectional area	1	Cross Sectional area	5.2

Average Cross Sectional Area (sq. ft.)	3.10	
Travel Time (sec)	18	
	15	
	14	
Average Travel Time (sec)	15.67	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**3.166**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1.5	0.7	0.75	0.5
1.5	0	0.75	0
Total	avg depth	Total	avg depth
3	0.35	1.5	0.25
Cross Sectional area	1.05	Cross Sectional area	0.375

Average Cross Sectional Area (sq. ft.)	0.7125	
Travel Time (sec)	21	
	19	
	17	
Average Travel Time (sec)	19	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.675**	

SW-TC-DOWN

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12.5	3.25	11.5	2.7
12.5	0	11.5	0
Total	avg depth	Total	avg depth
25	1.625	23	1.35
Cross Sectional area	40.625	Cross Sectional area	31.05

Average Cross Sectional Area (sq. ft.)	35.8375	
Travel Time (sec)	7	
	5	
	6	
Average Travel Time (sec)	6.00	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**107.51**	

SW-TC-UP

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
17.5	2	17.5	3
17.5	0	17.5	0
Total	avg depth	Total	avg depth
35	1	35	1.5
Cross Sectional area	35	Cross Sectional area	52.5

Average Cross Sectional Area (sq. ft.)	43.75	
Travel Time (sec)	9	
	10	
	7	
Average Travel Time (sec)	8.67	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**90.865**	

Surface Water Sampling Stations
Flow Estimate Calculations
Ridgeholm Energy Partners
April 9, 2014

Sample No.	Temp. (°C)	Spec. Cond. (uS/cm)	pH	Turbidity (NTU)
SW001	16.94	36	6.26	22.5
SW002	13.13	45	6.39	6.99
SW003	18.08	69	6.82	4.71
SW004	16	107	6.62	67.4
SW005	13.82	72	7.65	13.0
SW006	14.91	59	6.93	8.1
SW-POND1	16.46	70	6.28	63.3
SW-TC-DOWN	12.01	64	5.9	15.2
SW-TC-UP	13.49	64	6.81	21.3

FLOW CALCULATIONS

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12.5	1.2	15	1.2
12.5	0	15	0
Total	avg depth	Total	avg depth
25	0.6	30	0.6
Cross Sectional area	15	Cross Sectional area	18

Average Cross Sectional Area (sq. ft.) 16.5

Travel Time (sec)
6000
6000
6000

Average Travel Time (sec) 6000

Length of Stream Reach (feet) 20

Stream Bottom correction factor 0.9 muddy

Flow (cu. Ft./sec) 0.05

SW002

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1	0.3	1.5	0.4
1	0	1.5	0
Total	avg depth	Total	avg depth
2	0.15	3	0.2
Cross Sectional area	0.3	Cross Sectional area	0.6

Average Cross Sectional Area (sq. ft.) 0.45

Travel Time (sec)
7
5
6

Average Travel Time (sec) 6.00

Length of Stream Reach (feet) 20

Stream Bottom correction factor 0.9 muddy

Flow (cu. Ft./sec) 1.35

SW003

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1	0.3	1.5	0.3
1	0	1.5	0
Total	avg depth	Total	avg depth
2	0.15	3	0.15
Cross Sectional area	0.3	Cross Sectional area	0.45

Average Cross Sectional Area (sq. ft.)	0.375	
Travel Time (sec)	15	
	13	
	12	
Average Travel Time (sec)	13.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.45**	

SW004

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2	0.2	1	0.3
2	0	1	0
Total	avg depth	Total	avg depth
4	0.1	2	0.15
Cross Sectional area	0.4	Cross Sectional area	0.3

Average Cross Sectional Area (sq. ft.)	0.35	
Travel Time (sec)	11	
	10	
	12	
Average Travel Time (sec)	11.00	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.5727**	

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
6	0.7	4.5	1.1
6	0	4.5	0
Total	avg depth	Total	avg depth
12	0.35	9	0.55
Cross Sectional area	4.2	Cross Sectional area	4.95

Average Cross Sectional Area (sq. ft.)	4.58	
Travel Time (sec)	10	
	13	
	11	
Average Travel Time (sec)	11.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**6.4588**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
2	0.8	1.5	0.3
2	0	1.5	0
Total	avg depth	Total	avg depth
4	0.4	3	0.15
Cross Sectional area	1.6	Cross Sectional area	0.45

Average Cross Sectional Area (sq. ft.)	1.025	
Travel Time (sec)	14	
	16	
	19	
Average Travel Time (sec)	16.33333	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**1.1296**	

SW-TC-DOWN

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12.5	3.5	11.5	3.2
12.5	0	11.5	0
Total	avg depth	Total	avg depth
25	1.75	23	1.6
Cross Sectional area	43.75	Cross Sectional area	36.8

Average Cross Sectional Area (sq. ft.)	40.275	
Travel Time (sec)	8	
	7	
	7	
Average Travel Time (sec)	7.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**98.857**	

SW-TC-UP

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
19	2.8	20	3.8
19	0	20	0
Total	avg depth	Total	avg depth
38	1.4	40	1.9
Cross Sectional area	53.2	Cross Sectional area	76

Average Cross Sectional Area (sq. ft.)	64.60	
Travel Time (sec)	14	
	16	
	10	
Average Travel Time (sec)	13.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**87.21**	

Surface Water Sampling Stations
Flow Estimate Calculations
Ridgeholm Energy Partners
May 7, 2014

Sample No.	Temp. (°C)	Spec. Cond. (uS/cm)	pH	Turbidity (NTU)
SW001	21.6	39	5.94	78
SW002	15.26	37	5.37	4.9
SW003	25.22	83	6.56	2.3
SW004	19.39	118	6.81	12.9
SW005	17.08	56	6.91	3.6
SW006	24.67	59	6.71	1.8
SW-POND1	16.46	70	6.28	63.3
SW-TC-DOWN	16.62	66	6.68	3.8
SW-TC-UP	17.99	56	6.90	5.7

FLOW CALCULATIONS

SW001

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12.5	1.2	15	1.2
12.5	0	15	0
Total	avg depth	Total	avg depth
25	0.6	30	0.6
Cross Sectional area	15	Cross Sectional area	18

Average Cross Sectional Area (sq. ft.) 16.5

Travel Time (sec) 6000, 6000, 6000

Average Travel Time (sec) 6000

Length of Stream Reach (feet) 20

Stream Bottom correction factor 0.9 muddy

Flow (cu. Ft./sec) 0.05

SW002

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.4	0.2	1	0.2
0.4	0	1	0
Total	avg depth	Total	avg depth
0.8	0.1	2	0.1
Cross Sectional area	0.08	Cross Sectional area	0.2

Average Cross Sectional Area (sq. ft.) 0.14

Travel Time (sec) 8, 7, 8

Average Travel Time (sec) 7.67

Length of Stream Reach (feet) 20

Stream Bottom correction factor 0.9 muddy

Flow (cu. Ft./sec) 0.3287

SW003

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1	0.1	1.5	0.1
1	0	1.5	0
Total	avg depth	Total	avg depth
2	0.05	3	0.05
Cross Sectional area	0.1	Cross Sectional area	0.15

Average Cross Sectional Area (sq. ft.)	0.125	
Travel Time (sec)	10	
	12	
	10	
Average Travel Time (sec)	10.67	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**0.1875**	

SW004

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
0.5	0.1	0.5	0.3
0.5	0	0.5	0
Total	avg depth	Total	avg depth
1	0.05	1	0.15
Cross Sectional area	0.05	Cross Sectional area	0.15

Average Cross Sectional Area (sq. ft.)	0.1	
Travel Time (sec)	12	
	16	
	14	
Average Travel Time (sec)	14.00	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.1286**	

SW005

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
3	0.3	4.5	1
3	0	4.5	0
Total	avg depth	Total	avg depth
6	0.15	9	0.5
Cross Sectional area	0.9	Cross Sectional area	4.5

Average Cross Sectional Area (sq. ft.)	2.70	
Travel Time (sec)	10	
	12	
	10	
Average Travel Time (sec)	10.67	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.8	rocky
Flow (cu. Ft./sec)	**4.05**	

SW006

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
1.5	0.3	0.75	0.2
1.5	0	0.75	0
Total	avg depth	Total	avg depth
3	0.15	1.5	0.1
Cross Sectional area	0.45	Cross Sectional area	0.15

Average Cross Sectional Area (sq. ft.)	0.3	
Travel Time (sec)	16	
	13	
	14	
Average Travel Time (sec)	14.33333	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**0.3767**	

SW-TC-DOWN

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
10	2.5	9.5	2.3
10	0	9.5	0
Total	avg depth	Total	avg depth
20	1.25	19	1.15
Cross Sectional area	25	Cross Sectional area	21.85

Average Cross Sectional Area (sq. ft.)	23.425	
Travel Time (sec)	9	
	9	
	7	
Average Travel Time (sec)	8.33	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**50.598**	

SW-TC-UP

Upstream		Downstream	
Interval Width (feet)	Depth (feet)	Interval Width (feet)	Depth (feet)
12	1.5	13	1
12	0	13	0
Total	avg depth	Total	avg depth
24	0.75	26	0.5
Cross Sectional area	18	Cross Sectional area	13

Average Cross Sectional Area (sq. ft.)	15.50	
Travel Time (sec)	17	
	17	
	19	
Average Travel Time (sec)	17.67	
Length of Stream Reach (feet)	20	
Stream Bottom correction factor	0.9	muddy
Flow (cu. Ft./sec)	**15.792**	

ATTACHMENT II.H

DETERMINATION OF PROBABLE HYDROLOGIC CONSEQUENCES

ATTACHMENT II.H
DETERMINATION OF PROBABLE HYDROLOGIC CONSEQUENCES

The Probable Hydrologic Consequences (PHC) of surface mining at the John Poe Mine were determined using site-specific hydrologic and geologic data gathered between August 2012 and May 2014. Surface water data are presented in Attachment II.G, and geologic and hydrogeologic data are presented in Attachments II.E and II.F, respectively.

PHC on Surface Water Hydrology

Surface water flow in the Permit Area shows considerable seasonal variability. Many tributary streams to Town Creek carry wet weather flow and are seasonally dry. Anticipated consequences of mining on surface water hydrology and quantities include the following:

- Surface water within the proposed mine area will be limited to short-term overland flow due to precipitation events and groundwater discharge,
- Reduced overland flow to offsite areas on the periphery of the active mining area,
- Reduced infiltration and increased runoff due to vegetation loss in active mine areas,
- Surface water runoff and groundwater discharge within the active mine area can be partially accommodated by infiltration and storage in overburden spoils,
- Pumping of surface water in active mining areas to sediment basins will be used to manage excess surface water on an as needed basis,
- Bulk porosity and permeability of the spoiled overburden material will be higher than the porosity and permeability of the undisturbed overburden, and the capacity to store and discharge water will increase,
- Surface water runoff will be contained and treated in the nine proposed sediment basins,
- Revegetation of disturbed areas will be conducted as soon as practical to limit erosion and the potential for increased runoff,
- During active mining, total water discharge and flow duration from the mined area will likely increase as a result of lowered infiltration,

Upon completion of active mining and reclamation, there will be no significant impact to offsite surface water quantity. The post-mining topography may redirect local overland flow, but the surface water will be discharged into Town Creek, and the base flow of Town Creek will not be affected.

There are no surface water sources in the area used for domestic industrial use. Several ponds in the area are used for livestock watering. If it is determined that mining operations at the John Poe Mine have resulted in the contamination, diminution or interruption of the surface water supply to the extent that a pond can no longer be used, a remedy will be implemented to the satisfaction of both the landowner and the operator.

This may include pond upgrades, diverting surface water flow in the active mine vicinity, and/or supplying alternate source water for agricultural use.

PHC on Groundwater Hydrology

The water table in the mine area is 20 to 70 feet below ground surface and is primarily recharged by infiltration during rain events. It is likely that during dry seasons, some of the streams in the area are sources of groundwater recharge. Anticipated consequences of mining on groundwater hydrology and quantities include the following:

- In general, groundwater recharge rates are expected to increase due to increases in overburden bulk porosity and permeability created by mining.
- The potentiometric surface elevation will decrease in the active mine areas as mining proceeds below the water table.
- Groundwater flow directions may be marginally altered around the boundary of active mining areas as groundwater discharges into the surface mine..
- Long-term groundwater hydrology is not likely to be affected outside of active mine areas and after reclamation is implemented.
- Because relatively impermeable strata are present below the targeted coal seams, groundwater hydrology in deeper portions of the section is not anticipated to be significantly affected.

There are no documented public supply wells, public supply springs, or wellhead protection areas on the Permit Area. Two shallow water wells were noted within Increment 2. Groundwater yields to wells in the area are reportedly low, and most of the wells in this area are used for agricultural purposes. Potable water for personal use is supplied by DeKalb County.

If it is determined that mining operations at the John Poe Mine have resulted in the contamination, diminution or interruption of groundwater supply that is being used for domestic, agricultural, or industrial use, one of the following remedies will be implemented:

- A new well may be installed to utilize alternate water producing zones, such as deeper portions of the aquifer,
- A connection to the municipal water supply may be provided for the residence,
- Any other method to replace the groundwater supply that satisfies the user and the operator.

If it is proven that surface coal mining operations at the John Poe Mine has disrupted the domestic water supply well, the operator will provide a temporary replacement of the domestic water supply within 24 hours until a permanent alternative source can be provided.

PHC on Surface Water and Groundwater Quality

The following summarizes the PHC on surface water and groundwater quality at the John Poe Mine:

- Initial increase in suspended solids from sediments in runoff is expected, which will be treated by sedimentation basins,
- Potential increased dissolved solids from infiltration of surface water into spoils as overburden removal advances,
- Potential increase in Fe and Mn concentrations due to chemical weathering of spoils,
- Minimal surface water quality degradation due to precipitation onto coal stockpiles,
- Because a phased mining plan is proposed, limited areas will be disturbed at any given time. Sediment yield based on 90% basin trap efficiency is estimated to not result in surface water degradation.
- Based on historic and present mining operations in the area and sampling conducted for this assessment, the mining operations will not result in surface water quality impact exceeding discharge permit limits.

Overburden Analysis & Summary of Acid-Base Accounting

To evaluate the PHC due to acid-forming materials, particularly due to chemical weathering of spoiled overburden material, an Acid-Base Accounting analysis was performed. Samples were collected from four borings (X-2, X-10, X-11, X-15) to assess the potential for acid formation from overburden. Samples were collected of drill cuttings every 5 feet from each of the borings. Samples were analyzed for paste pH, total sulfur, and neutralization potential by Standard Laboratories, Inc. (Jacksboro, TN) using EPA methods 600 3.2.2, 600 3.2.4, and 600 3.2.3, respectively. The laboratory reports are provided as **Attachment II. G**

Note that total sulfur concentrations are assumed to all be derived from pyrite. The presence of non -acid producing sulfate minerals, such as gypsum and barite, and organic sulfur may result in over-estimation of the acid potential.

Price and others (1997) provided guidelines for interpretation of static tests. For rocks with sulfide sulfur less than 0.3% and paste pH higher than 5.5, there is no potential for acid production, and no additional testing is recommended. Note that sulfide-sulfur results will be equal to or less than total sulfur results.

Based on these criteria, the following overburden intervals are the only ones identified with a potential to form acid:

- Boring X-2, 0 to 40 foot depths
- Boring X-10, 0 to 20 foot depth
- Boring X-10, 25 to 40 foot
- Boring X-11, 5 to 10 foot depth
- Boring X-11, 140 to 145.5 foot depth
- Boring X-15, 0 to 15 foot depth
- Boring X-15, 20 to 30 foot depth

Field data suggests that overburden within these intervals are not likely to be acid producing. Most of these intervals are above the water table, and field logging indicates that the rocks are weathered. No pyrite was noted in the shallow weathered rocks in the Permit Area, and it is unlikely that pyrite is present in the weathered rocks. Perry (1998) notes that weathered overburden lacks the ability to generate either significant acidity or alkalinity.

In boring X-2, the total sulfur concentrations in the upper 40 feet are extremely low, and no sulfur was detected in the upper 15 feet. The highest sulfur concentrations were recorded for the 25 to 30 foot sample, which was contaminated by coal.

In boring X-10, the total sulfur concentration in the upper 40 feet is 0.02 percent or less.

In boring X-11, total sulfur was not detected in the 5- to 10-foot interval. Samples from the 140- to 145.5-foot interval were contaminated by coal, and total sulfur concentrations are likely over-estimated for overburden in that part of the section.

The upper 15 feet in boring X-15 was noted to be weathered, and it is unlikely that pyrite or other acid-producing minerals are present in that interval. The 20- to 30- foot interval in boring EB-1 (adjacent to X-15) contains a thin coal seam and organic clays. It is likely that total sulfur concentrations for this interval primarily reflect the presence of organic sulfur, which is not generally acid-forming.

In summary, evaluation of the field observations and static test results suggests the following:

- Total sulfur concentrations are generally low in the overburden
- Higher sulfur concentrations detected in the overburden likely come from non-acid-forming organic sulfur
- Paste pH is higher than 4.6 in all samples
- Total sulfur values likely greatly overestimate the potential for acid formation

Results of geochemical analysis of the overburden were evaluated using mass-weighted acid-base accounting methods (Smith and Brady, 1990) and are included in Appendix II.E.2-C. The areas of influence of the four overburden borings were approximated using the Thiessen polygon method. The four resulting polygons are designated T-1 through T-4 , and the areas of each mine Increment within each polygon was calculated as follows:

T-1	Increment 1	50.00 ac
	Increment 2	52.84 ac
	Increment 3	84.00 ac
T-3	Increment 2	4.16 ac

Overburden volume calculations in each mine Increment followed the procedures and interpolation methods in Smith and Brady (1990). For more accurate volumes, each mine area was divided into two sections. The section below the lowest surface topography within each area was treated by setting the upper and lower areas to be equal to the total acreage. Volumes of overburden at elevations above the lowest topographic portion of the area were interpolated.

For example, the Increment 1 mining area is entirely within polygon T-1; this polygon is constructed around boring X-2. The lowest topographic elevation within the Increment 1 area is at 1,350 feet mean sea level (ft-msl). Overburden intervals at elevations equal to or less than 1,350 ft-msl are assigned an area of 50.0 acres, equal to the total area of the Increment 1 mining area. To determine the volume of overburden in the portion of the section above 1,350 ft- msl, the area was interpolated between the area at the elevation of the control boring and the area of the total Increment 1 area. The surface elevation for boring X-2 is 1,410 ft-msl. The area enclosed by the 1,410 ft-msl contour within the Increment 1 mine area was measured to be 35.1 acres. For intervals between elevations 1,410 and 1,350 ft-msl, the areas were interpolated between 35.1 acres and 50.0 acres.

Results of the acid-base accounting are presented in Appendix II.E.2-C. The acid-base accounting suggests an excess neutralization potential for areas in polygons T-1 (all areas of mine Increment 1 and 97% of the mine Increment 2 area) as follows:

	Increment 1	Increment 2	Increment 3
Total Overburden Volume (ac-ft):	1098.75	4626.56	7752.14
Percent Sandstone:	29	82	80
NP/MPA Ratio:	1.45	1.66	1.65
Tons/ac Required (1:1):	93 (Excess)	472 (Excess)	489 (Excess)

A neutralization deficiency is suggested for the portion of mine Increment 2 in polygon T-3 (3% of the mine Increment 2 area) as follows:

	Increment 2
Total Overburden Volume (ac-ft):	250.75
Percent Sandstone:	80
NP/MPA Ratio:	0.11
Tons/ac Required (1:1):	-73 (Deficient)

The analysis suggests that overburden from both portions of Increment 2 can be mixed or stockpiled together to effectively neutralize potential acid forming materials.

As noted previously, the low sulfur content and high paste pH of the overburden strongly indicates little potential for acid formation. In general, no appreciable carbonates were noted in borings from the Permit Area, and the indication of neutralization deficiency is more a function of the absence of carbonates rather than the presence of acid-forming minerals.

Surface water and groundwater sampling in the Permit Area suggests that the overburden is not likely to be acid forming. Surface water pH ranged from 5.96 to 6.64 and groundwater pH ranged from 5.18 to 7.21. Pond-1, an off-site pond related to a former surface coal mine located south of the Permit Area, had a pH range from 6.47 to 7.58, an alkalinity of 16.6 to 33.4 milligrams per liter (mg/L), and acidity was below the reporting limit of 10 mg/L. There was no indication of acid formation related to leaching of the overburden at the Pond-1 location.

Summary

The following summarizes the findings of the PHC:

- Surface water and groundwater hydrology will be marginally affected within active mining areas, but the hydrologic balance in the permit area and adjacent areas should not be adversely affected.
- The proposed surface mining is not expected to result in increased flooding potential or significant streamflow alteration.
- Surface water and groundwater use is limited in the permit area and adjacent areas. Municipal water is available for domestic water use in the area. No significant interruption of water supplies is anticipated due to the proposed mining.
- Total sulfur concentrations are generally low in the overburden
- Higher sulfur concentrations detected in the overburden likely come from non-acid-forming organic sulfur

- Paste pH is higher than 4.6 in all samples
- Total sulfur values likely greatly overestimate the potential for acid formation
- An excess neutralization potential for all areas of mine Increments 1 and 2.
- Because a phased mining plan is proposed, limited areas will be disturbed at any given time. Sediment yield based on 90% basin trap efficiency is estimated to not result in surface water degradation.
- Based on historic and present mining operations in the area and sampling conducted for this assessment, the mining operations will not result in surface water quality impact exceeding discharge permit limits.

REFERENCES

Perry, E.F., 1998, Interpretation of Acid-Base Accounting, in *Coal Mine Drainage Prediction and Pollution Prevention in Pennsylvania*, K. B.C. Brady, T. Kania, M. W. Smith and R. J. Hornberger, eds Pennsylvania Department of Environmental Protection, Harrisburg, PA.

Price, W.A., Morin, K. and Hutt, N. (1997), *Guidelines for the Prediction of Acid Rock Drainage and Metal Leaching for Mines in British Columbia: Part II - Recommended Procedures for Static and Kinetic Testing*, Proc. 4th International Conference on Acid Rock Drainage, Vancouver, BC, p15-30.

Smith, M.W., and Brady, K.B.C., 1990, *Evaluation of acid base accounting data using computer spreadsheets,* in Skousen, J., Sencindiver, J., and Samuel, D., eds., Proceedings of the 1990 Mining and Reclamation Conference and Exhibition, Charleston, West Virginia, April 23-26, 1990: Morgantown, W.Va., West Virginia University, v. 1, p. 213-219.

Probable Hydrologic Consequences Certification Statement:

The Probable Hydrologic Consequences section of this permit application was prepared by Joseph McKinney, who is a licensed by the State of Alabama as a Professional Geologist. I certify that the information in this section is correct and accurate to the best of my knowledge and belief.

EarthCon Consultants, Inc.

7/11/14

Joseph McKinney, P.G.
Alabama PG No. 1359

Date

I, Gary R. Horwitch, P.E., a Registered Professional Engineer in the State of Alabama, hereby certify that the information, contained in the Probable Hydrologic consequences section of this permit application was prepared by EarthCon Consultants, Inc., under my direct supervision, and that the information in this section is correct and accurate to the best of my knowledge and belief.

EarthCon Consultants, Inc.

Gary R Horwitch

7-11-14

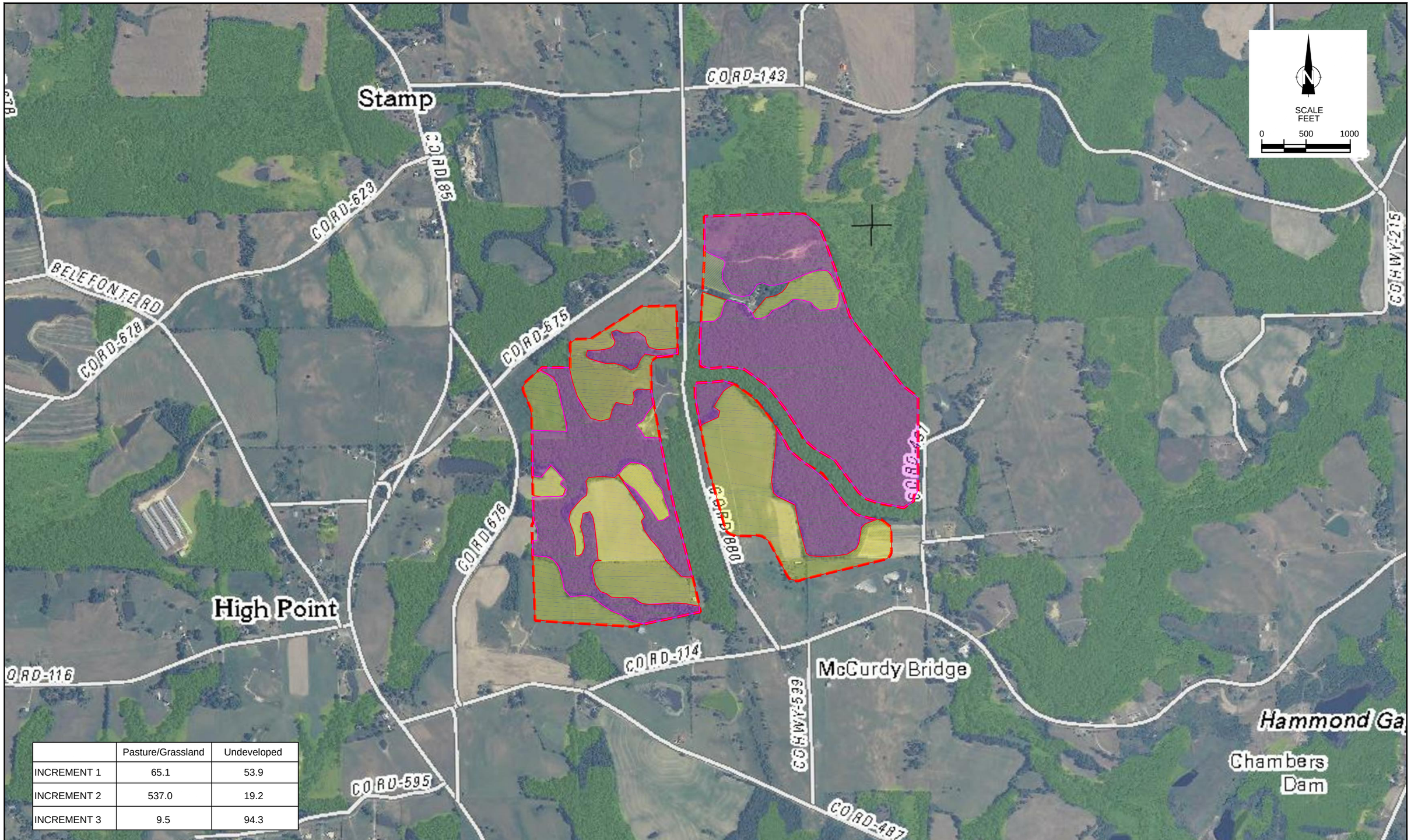
Gary R. Horwitch, P.E.
Alabama PE No. 32845-PE

Date

ALABAMA LICENSED No. 32845-PE PROFESSIONAL ENGINEER GARY RUSSELL HORWITCH

Gary R Horwitch
7-11-14

APPENDIX II.I.1



	Pasture/Grassland	Undeveloped
INCREMENT 1	65.1	53.9
INCREMENT 2	537.0	19.2
INCREMENT 3	9.5	94.3

Legend:

Pasture/Grassland

Undeveloped

Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

Ridgeholm Energy Partners, LLC
100 Oxmoore Road, Suite 110
Birmingham, Alabama 35209

PROJ. NO: 02.20120195.00

EARTHCON®
Environmental Challenges
BUSINESS SOLUTIONS ®
14405 Walters Rd, Suite 700
Houston, TX 77014

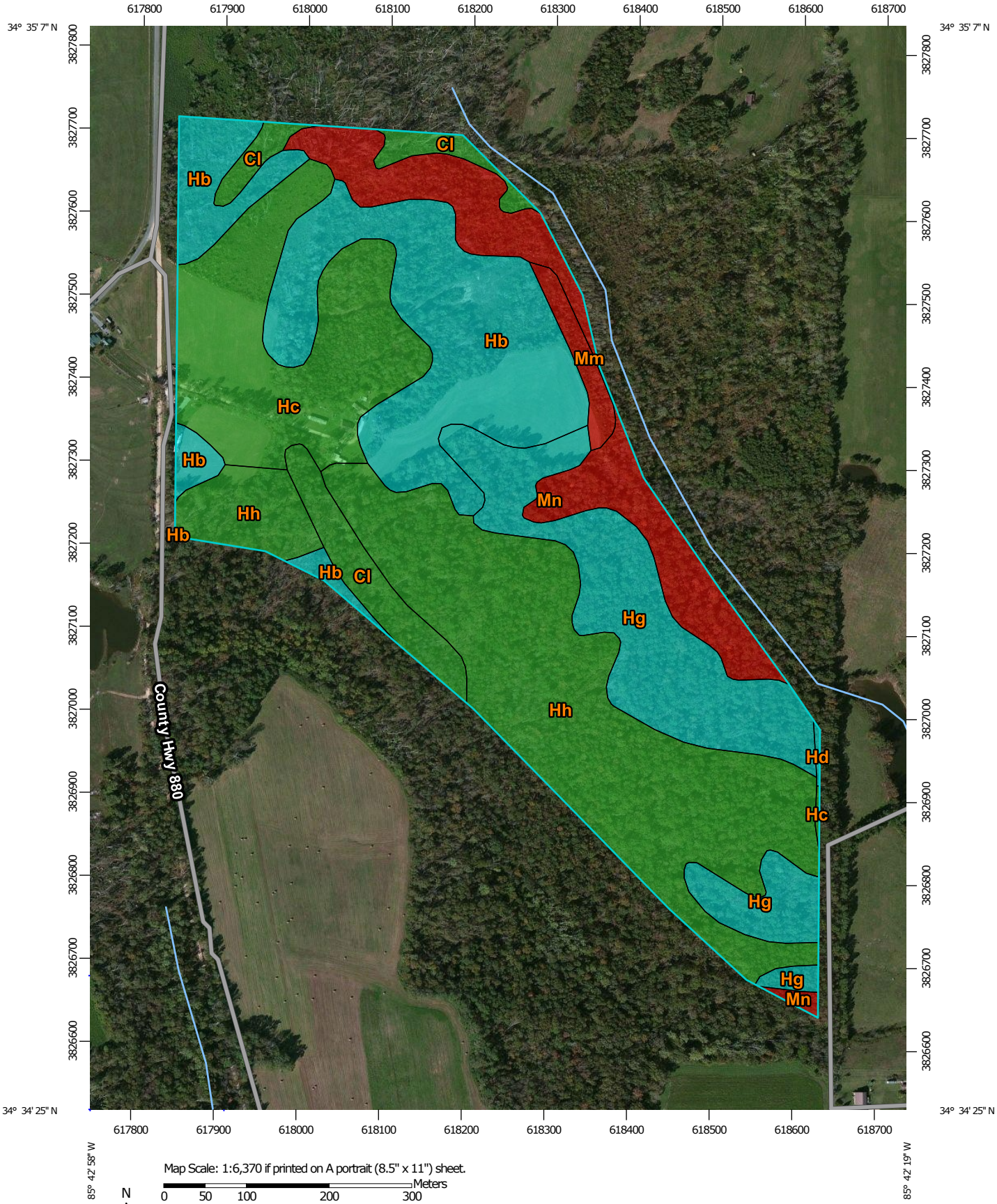
SURFACE WATER SAMPLING MAP
John Poe Mine
Dekalb County, Alabama

DRAWN:	CHECKED:	DATE:	FIGURE:
JMT	RAD	06/14	II.I.1-1

T:\PROJECT FILES\Ridgeholm\Dekalb County Project\Maps\CAD\NPDES MAP 2013\12\2013 PHASE MAP.dwg, SEDIMENT_POND, 6/5/2014 9:53:39 PM

APPENDIX II.I-3

Farmland Classification—DeKalb County, Alabama
(Jophn Poe Mine Increment 3)



Map Scale: 1:6,370 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: DeKalb County, Alabama
Survey Area Data: Version 5, Dec 19, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 12, 2011—Jan 4, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — DeKalb County, Alabama (AL049)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Cl	Cotaco-Barbourville loams	All areas are prime farmland	5.5	5.3%
Hb	Hartsells fine sandy loam, eroded, rolling	Farmland of statewide importance	22.5	21.3%
Hc	Hartsells fine sandy loam, eroded, undulating	All areas are prime farmland	16.2	15.4%
Hd	Hartsells fine sandy loam, eroded, rolling, shallow	Farmland of statewide importance	0.1	0.1%
Hg	Hartsells fine sandy loam, rolling, shallow	Farmland of statewide importance	16.4	15.6%
Hh	Hartsells fine sandy loam, undulating	All areas are prime farmland	31.5	30.0%
Mm	Muskingum fine sandy loam, hilly	Not prime farmland	1.4	1.4%
Mn	Muskingum stony fine sandy loam, hilly	Not prime farmland	11.6	11.0%
Totals for Area of Interest			**105.3**	**100.0%**

Description

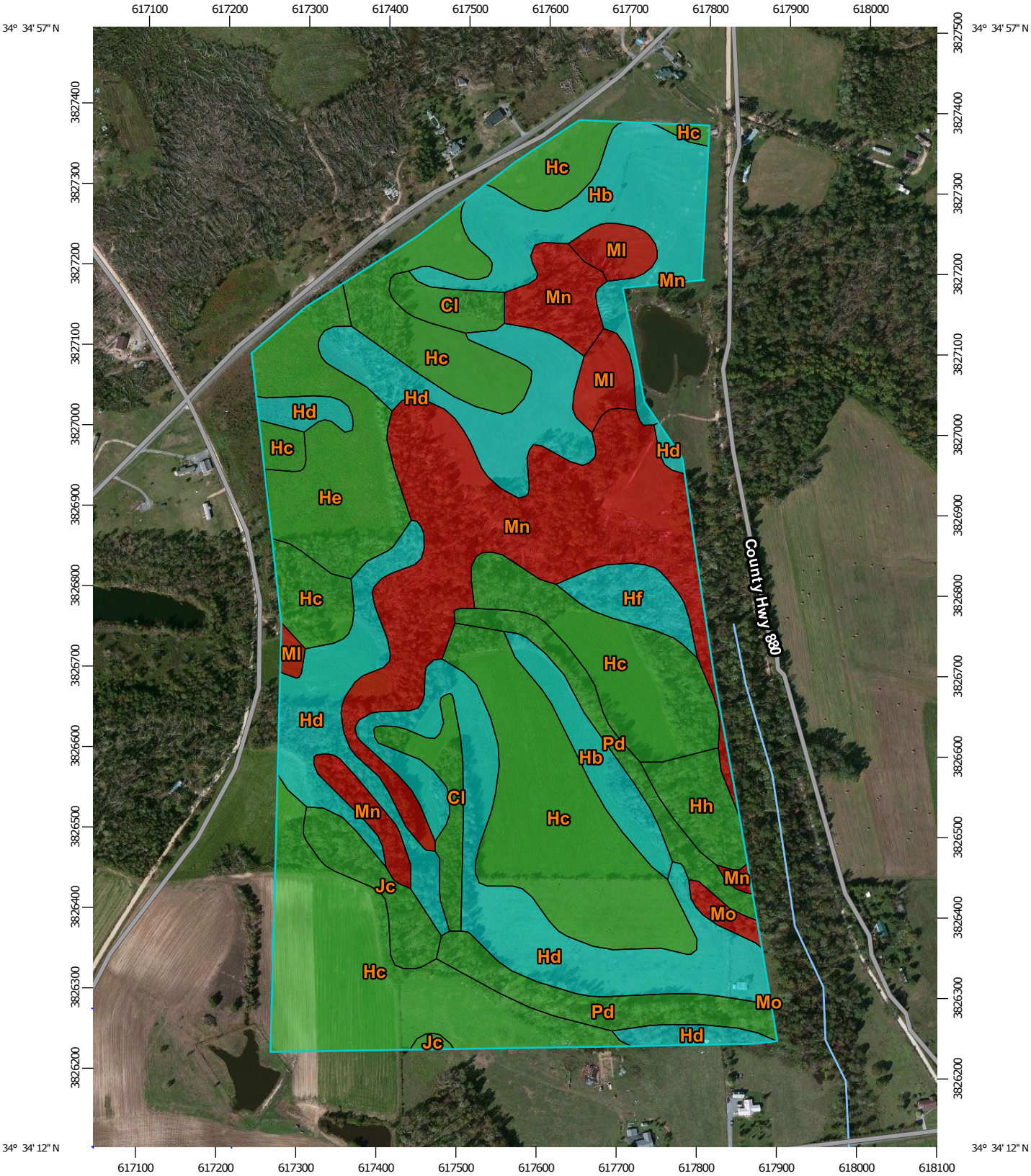
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Farmland Classification—DeKalb County, Alabama
(John Poe Mine - Increment 1)



Map Scale: 1:6,790 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: DeKalb County, Alabama
Survey Area Data: Version 5, Dec 19, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 12, 2011—Jan 4, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — DeKalb County, Alabama (AL049)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Cl	Cotaco-Barbourville loams	All areas are prime farmland	4.0	2.8%
Hb	Hartsells fine sandy loam, eroded, rolling	Farmland of statewide importance	12.5	8.8%
Hc	Hartsells fine sandy loam, eroded, undulating	All areas are prime farmland	45.7	31.9%
Hd	Hartsells fine sandy loam, eroded, rolling, shallow	Farmland of statewide importance	27.9	19.5%
He	Hartsells fine sandy loam, eroded, undulating, shallow	All areas are prime farmland	9.1	6.4%
Hf	Hartsells fine sandy loam, rolling	Farmland of statewide importance	2.4	1.7%
Hh	Hartsells fine sandy loam, undulating	All areas are prime farmland	2.7	1.9%
Jc	Johnsburg loam	All areas are prime farmland	3.0	2.1%
Ml	Muskingum fine sandy loam, eroded, hilly	Not prime farmland	3.3	2.3%
Mn	Muskingum stony fine sandy loam, hilly	Not prime farmland	24.4	17.1%
Mo	Muskingum stony fine sandy loam, rolling	Not prime farmland	0.7	0.5%
Pd	Philo loam	All areas are prime farmland	7.4	5.1%
Totals for Area of Interest			**143.1**	**100.0%**

Description

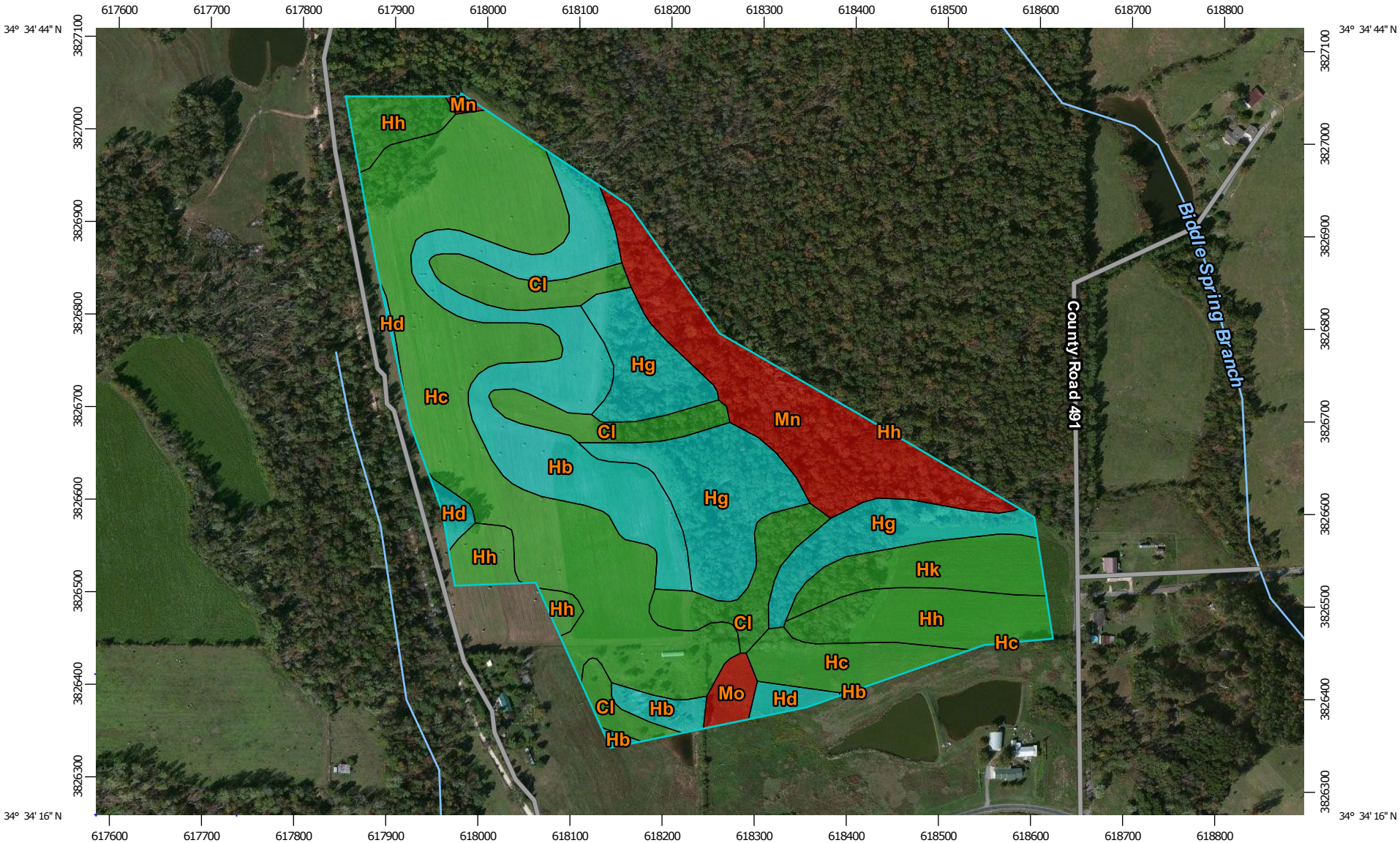
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Farmland Classification—DeKalb County, Alabama
(John Poe Mine Increment 2)



Map Scale: 1:6,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
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- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
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- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: DeKalb County, Alabama
Survey Area Data: Version 5, Dec 19, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 12, 2011—Jan 4, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — DeKalb County, Alabama (AL049)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Cl	Cotaco-Barbourville loams	All areas are prime farmland	6.6	9.5%
Hb	Hartsells fine sandy loam, eroded, rolling	Farmland of statewide importance	10.6	15.3%
Hc	Hartsells fine sandy loam, eroded, undulating	All areas are prime farmland	21.1	30.4%
Hd	Hartsells fine sandy loam, eroded, rolling, shallow	Farmland of statewide importance	1.0	1.5%
Hg	Hartsells fine sandy loam, rolling, shallow	Farmland of statewide importance	10.9	15.8%
Hh	Hartsells fine sandy loam, undulating	All areas are prime farmland	6.5	9.4%
Hk	Hartsells fine sandy loam, undulating, shallow	All areas are prime farmland	3.3	4.8%
Mn	Muskingum stony fine sandy loam, hilly	Not prime farmland	8.4	12.1%
Mo	Muskingum stony fine sandy loam, rolling	Not prime farmland	0.8	1.1%
Totals for Area of Interest			**69.2**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower