All Bidders and other interested parties are hereby notified of the following additions and/or revisions to the Plans and Specifications of the referenced project.

RECEIPT OF THIS ADDENDUM MUST BE ACKNOWLEDGED ON THE BID PROPOSAL.

PROJECT CLARIFICATION

1. Please replace the Bid Form with the attached Bid Form noted “Addendum No. 1 – April 15, 2020”.
2. Attached is the geotechnical report prepared for the adjacent UV structure. No claims are made or applied that this information is representative for the septage receiving station project.
3. Although the manhole designated for pipe tie-in is not located within the fence line, it is located on NCSD property.
4. The point of contact for scheduling site visits is Mr. Chad Maurer with NCSD. His email is: chad.maurer@ncsd.sc.gov. He is available 4/20 and 4/21, 6:30 – 5:00 and can make
arrangements to meet at the Plant on the 23rd if he is given notice. Please contact him directly to make arrangements.

5. The Bidder is to include applicable sales tax for the project.

6. Please replace the Vaughn Chopper Pump appendix with the attached dated 04/13/20, which includes the control panel to be provided with the pump.

7. The septage receiving station is to be 316 stainless steel regardless of manufacturer.

ATTACHMENTS

1. Bid Form noted “Addendum No. 1 – April 15, 2020”
2. Geotechnical Report
3. Vaughn Chopper Pump appendix dated 04/13/2020

End of Addendum #1
TO: North Charleston Sewer District Purchasing Department  
PO Box 63009  
North Charleston, SC 29419

FROM: ____________________________________  
____________________________________  
____________________________________

of the City of___________________, County of_________________, and  
State of________________________, hereinafter called “Bidder”.

PROJECT:  NCSD SEPTAGE STATION

Gentlemen:

The Bidder, in compliance with your Advertisement or Invitation for Bids for the construction of  
above-referenced project, having examined the Specifications with related documents and the site  
of the proposed work, and being familiar with all of the conditions surrounding the construction  
of the proposed project, including the availability of materials and labor, hereby proposes to  
furnish all labor, materials, and supplies, and to construct the project in accordance with the  
Contract Documents, within the time set forth therein, and the prices stated below. These prices  
are to cover all expenses incurred in performing the work required under the Contract Documents,  
of which this proposal is a part.

The Bidder declares that he has carefully examined the site of the proposed Work and fully  
informed and satisfied himself as to the conditions there existing, the character and requirements  
of the proposed Work, and the difficulties attendant upon its execution, and that he has carefully  
read and examined the Drawings, and the Specifications and other Contract Documents therein  
referred to, and knows and understands the terms and provisions thereof.

Bidder understands that information relative to existing structures, apparent and latent conditions,  
and natural phenomena, as furnished to him on the Drawings, in the Contract Documents, or by  
the Owner or the Engineer, carries no guarantee expressed or implied as to its completeness or  
accuracy, and he has made due allowance therefore.

TIME FOR COMPLETION AND LIQUIDATED DAMAGES: Bidder hereby agrees to  
commence work under this contract within 15 days of receipt of the Notice to Proceed and to fully  
complete the project within 180 consecutive calendar days thereafter.
Bidder also agrees to pay $500/day as liquidated damages for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

ADDENDA: Bidder acknowledges receipt of the following Addenda:

Addendum No.__________ Date__________
Addendum No.__________ Date__________
Addendum No.__________ Date__________
Addendum No.__________ Date__________

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Price</th>
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<td>1.</td>
<td>Septage Station (Inc. sales tax)</td>
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<td>LS</td>
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<td></td>
</tr>
<tr>
<td>2.</td>
<td>Wetwell Pump and Control Panel (inc. sales tax)</td>
<td>1</td>
<td>LS</td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Construct, install and startup of a fully functioning septage receiving station as shown on the construction plans and project specifications</td>
<td>1</td>
<td>LS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL

NOTE: ALL QUANTITIES ARE APPROXIMATE.

TOTAL BASE BID (ITEMS 1-3, INCLUSIVE) $____________________

Additions to work and deletions from work shall be paid in accordance with these unit prices.

The above unit prices shall include all labor, materials, dewatering, shoring, removal, overhead, profit, insurance, taxes, fees, etc., to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The Bidder agrees that this Bid shall be good and may not withdraw for a period of 90 calendar days after the scheduled closed time for receiving bids.

Upon receipt of written notice of the acceptance of this Bid, Bidder will execute the formal Agreement attached with 10 days, and deliver Surety bonds as required by the General Conditions. The bid security attached in the sum of ______________________ ($____________________) is to become the property of the Owner in the event the Agreement and Bond are not executed within the time above set forth as liquidated damages for the delay and additional expense to the Owner caused thereby.
The undersigned declares that the person or persons signing this proposal is fully authorized to sign the proposal on behalf of the firm listed and to fully bind the firm listed to all the conditions and provisions thereof.

It is agreed that no person or persons or company other than the firm listed below or as otherwise indicated hereinafter has any interest whatsoever in this proposal or the contract that may be entered into as a result thereof, and that in all respects the proposal is legal and fair, submitted in good faith, without collusion or fraud.

Respectfully Submitted:

____________________________________
Contractor

By:_________________________________

_________________________________
_________________________________

(Title)

_________________________________

(Address)

SC General Contractor’s License No.______________  (End Bid)
Geotechnical Investigation

Felix C. Davis WWTP
UV Disinfection System
Mt. Pleasant, SC

WPC Project # CHS-05-123
J-1639/7 963

Prepared for
Mr. Mark Yodice, PE
c/o Thomas & Hutton Engineering Co.
935 Houston Northcutt Blvd.
PO Box 1522
Mt. Pleasant, SC 29465-1522

April 15, 2005

Prepared by
WPC
1017 Chuck Dawley Boulevard
Mount Pleasant, SC 29464
April 15, 2005

Mr. Mark Yodice, PE
Thomas & Hutton Engineering Co.
935 Houston Northcutt Blvd
PO Box 1522
Mt. Pleasant, SC 29465-1522

Geotechnical Investigation
Waste Water Treatment Plant
UV Disinfection System
Felix C. Davis
North Charleston, SC
WPC Project #CHS-05-123

Dear Mr. Yodice:

WPC has completed the geotechnical investigation for the proposed UV disinfection system to be built at the existing Felix C. Davis waste water treatment plant located in North Charleston, SC. The purpose of this exploration was to determine the subsurface conditions with respect to the proposed construction. This report details our understanding of the planned construction, the exploration procedures used, the subsurface conditions encountered, and provides recommendations for site preparation and foundations. Recommendations are based on the subsurface conditions encountered and our past experience with similar projects.

PROJECT DESCRIPTION
The proposed expansion includes a UV channel and a UV electrical building. The expansion will be built adjacent to the existing modified U.V. disinfection Channel. The bottom of the channel will be at an approximate finished floor elevation of -2.55 feet. The electrical building will be built with an elevated slab on grade at an approximate elevation of 18 feet. The existing ground elevation is approximately 14 to 15 feet. We understand that the existing UV disinfection channel is not pile supported. The structures will be designed to the International Building Code, 2003 Edition (IBC 2003).

EXPLORATION PROCEDURES
Our field investigation consisted of two (2) Piezocone Penetration Tests (CPTu) (ASTM D5778) in the proposed construction footprints. Seismic shear wave velocity data was collected during one of the CPTu soundings (SC2). The CPTu soundings were terminated at depths of 46 and 72 feet below the existing ground surface. The near surface conditions were explored with Hand Auger Borings (HAB’s) at the testing locations. Each HAB was conducted to a depth of four (4) feet. The site location plan in the Appendix shows the approximate subsurface test locations.
The CPTu Logs in the Appendix graphically illustrate the relative strength of the soils encountered and provide an approximate soil stratigraphy. Stratification lines on the Logs represent approximate boundaries between soil types based on current accepted correlations. A more detailed explanation of the CPTu testing can be found in the Appendix. HAB’s allow for physical sampling of the near surface soils for classification and to delineate the depth of topsoil. The HAB logs are also presented in the report Appendix.

SUBSURFACE CONDITIONS
Our subsurface exploration encountered 3 inches of topsoil underlain by 6 to 10 feet of medium dense clayey to silty sand. Trace gravel was encountered within the upper 4 feet. Below the surficial crust is a medium stiff to stiff clayey silt and silty clay to an average depth of 12 feet. Beneath the clay is medium dense to dense silty to clean sands with interbedded clay layers that extend to a depth of 25 feet. Below the sands is a stiff clay to an average depth of 44 feet, which is underlain by a medium dense to dense silty sand to a depth of 63 feet below existing grades. Beneath the sand is a stiff sandy to clayey silt, known locally as the Cooper Marl Formation, which extends to the termination of the deepest sounding (SC2) at 72 feet. This stratum is typically 100 to 200 feet thick in the Charleston area and is comprised of a stiff, olive green calcareous sandy to clayey silt of the Miocene Age.

Groundwater
At the time of our exploration, the top of the groundwater table was estimated to be approximately 6½ feet below the existing ground surface at the sounding locations. The groundwater depth was determined from calculating the hydrostatic line (height of water below the ground surface) on the penetration porewater pressure (U) graph in the Piezocene Penetration Logs. Groundwater was not encountered in either of the HAB’s performed. Rainfall events, drainage constraints, and seasonal weather patterns can vary with time and influence the level of the groundwater table.

Seismic Evaluation
Due to the high seismicity of the Charleston, South Carolina area, a liquefaction potential analysis for the site was performed. Ground shaking at the foundation of structures and liquefaction of the soil under the foundation are the principle seismic hazards to be considered in design of earthquake-resistant structures. Liquefaction occurs when a rapid buildup in water pressure, caused by the ground motion, pushes sand particles apart, resulting in a loss of strength and later densification as the water pressure dissipates. This loss of strength can cause bearing capacity failure while the densification can cause excessive settlement. Potential earthquake damage can be
mitigated by structural and/or geotechnical measures or procedures common to earthquake resistant design.

According to IBC 2003, we understand the proposed expansion is required to be designed to a design earthquake from a 50 year exposure period with a 2% Probability of Exceedance (PE) (i.e. a 2475-year design earthquake).

The 2% PE in 50 year design earthquake has a Moment Magnitude ($M_w$) of 7.3 and a Peak Ground Acceleration (PGA) of 0.39g, as determined from data provided by the 2000 National Earthquake Hazards Reduction Program (NEHRP) Recommended Provisions for Seismic Regulations for New Building and Other Structures (FEMA 368 and 369), IBC 2003, and the United States Geological Survey (USGS) National Seismic Hazard Mapping Project. Our analysis indicated that isolated layers of sandy soils below the groundwater table have the potential to liquefy during this magnitude earthquake. Based on this liquefaction potential, the site would normally be classified as Site Class F.

IBC 2003 provides an exception to the Site Class recommendation for a structure with a fundamental period equal to or less than 0.5 second, which states that a site can be classified as whatever Site Class it would be without considering liquefaction to determine spectral accelerations for structural design. Based on this exception and the collected in situ test data, structures with a period less than 0.5 seconds would be classified as Site Class D.

Seismic design parameters for the site are as follows: $F_s = 1.0$, $F_r = 1.58$, $S_{DS} = 0.97$, and $S_{DP} = 0.44$. The determination for Site Class D was based on the weighted average shear wave velocity ($V_s$) from the SCPTu test data and the procedures outlined in IBC 2003. The weighted average shear velocity was equal to approximately 770 feet/sec for this site.

Figure 1 presents the Design Response Spectrum for this site (Note – This is not a Site Specific Evaluation). If the proposed structure has a fundamental period greater than 0.5 seconds, WPC can provide a site-specific response curve.
While the amount of the settlement is dependent on the magnitude and distance from the seismic event, we estimate that settlements from the design earthquake will be less than 1 inch. Based on the depth of the potentially liquefiable soils, we anticipate that settlements would be fairly uniform on these structures as well.

RECOMMENDATIONS
The soils underlying the site appear to be suitable for supporting the structures on shallow foundations. Based on our conversation, we anticipate approximately 3 feet of fill will be needed to grade the pad area of the electrical building. We further understand that the building will be relatively lightly loaded. Based on the loading conditions for the structure founded at grade, we anticipate that static settlement will
range from 1 to 1.5 inches. Differential settlement for the structure would be approximately 1\% of the total settlement. If this amount of static settlement is cause for concern, we recommend that remediation of the on site soils in the form of preloading or surcharging be performed to reduce the settlements on site. The following sections discuss the recommended procedures for each structure.

**Preloading**
If time is available, we recommend that the electrical building pad area be cut and filled as needed and then monitored for settlement prior to beginning construction of the foundations. The area being preloaded should be allowed to consolidate under the weight of the fill. We anticipate a time frame of three (3) to four (4) weeks will be needed to allow the soils to complete a majority of primary settlement due to fill loads. If the time frame is not available then surcharging should be considered for the building pads.

**Surcharging**
Surcharging involves mounding soil above the finished subgrade to simulate a whole or portion of the anticipated fill loads and consolidating the underlying soils in a shorter timeframe than would be possible without the extra fill. Surcharging will also decrease the amount of post construction settlement anticipated. Once the underlying soils have been consolidated a sufficient amount, the excess fill can be removed and the structure constructed. The surcharge fill should be graded to promote drainage to prevent excess water from ponding within the surcharge.

Based on the settlement predictions and the structural loading, two (2) to three (3) feet of common soils should be used as the surcharge load. The structure footprint should be filled above finished grade and then be allowed to consolidate under the weight of the fill prior to beginning pavement construction. We anticipate a time frame of 3 to 8 weeks to allow completion of the primary consolidation settlement due to the expected loading. Once the surcharge is complete, the excess soil can be used to grade the remaining portions of the site or be removed. Depending on the soils excavated from the wet well, it may be possible to use a portion of these soils for surcharge.

**Settlement Monitoring**
Two (2) to three (3) settlement plates should be installed in the preload/surcharge area if this option is used. The use of settlement plates will allow the Geotechnical Engineer to document the settlement that occurs and determine when the preload/surcharge can be concluded.
Electrical Building  Once the preloading/surcharging have been completed the foundations for wall footings can be designed based on an allowable soil contact pressure of 2,000 psf. We anticipate settlements will be less than 1 inch of total settlement with differential settlement equal to ½ of the total if the preload/surcharge procedures are followed. To prevent punching failure of the foundations, minimum widths of 18 inches should be used for sizing of the wall footings and 30 inches for column footings. The footings should bear on competent fill soils. From a frost standpoint, the footings should be embedded a minimum of 12 inches below the finished ground surface. A Geotechnical Engineer should inspect the footings prior to pouring concrete and areas that are soft or wet should be undercut and replaced with Controlled Fill, crushed stone or over-poured with lean concrete.

: Grade Structural Slabs  Concrete structural slabs constructed on grade should be designed using a Modulus of Subgrade Reaction (Ks) of 200 kcf if the soils are properly prepared with compaction to 95% Maximum Dry Density a Modified Proctor Compaction Test (ASTM D 1557). Concrete floor slabs should be designed utilizing the requirements for constructions joints, expansion joints, and saw cuts as recommended by the American Concrete Institute (ACI).

Interior slabs and/or monolithic slabs with stem walls should be constructed on a properly prepared stone mat with a minimum thickness of 6 inches. This mat will serve as a construction drainage layer for the structure. It should consist of a free draining stone such as #57 or 3-inch surge stone with a maximum of 5% fines by weight passing through the No. 200 sieve.

UV Disinfection Channel  Based on preliminary finished slab elevations provided for this structure, it appears that the subgrade will consist of firm sandy silts to medium dense silty sands. These soils may become soft or loose when exposed during construction in a saturated state. Dewatering will be required and is detailed further elsewhere in this report. Based on this, establishment of a stable subgrade will be important to founding the UV channel. The subgrade should be prepared with a stone mat consisting of a free draining stone such as #57 or 3-inch surge stone with a maximum of 5% fines by weight passing through the No. 200 sieve and a minimum thickness of 18 inches. This mat will also serve as a construction drainage layer and help prevent heaving during construction. A separation geotextile fabric may be needed depending on how sandy the foundation soils are at the time of excavation. With the stone mat, foundations for wall footings can be designed based on an allowable soil contact
pressure of 2,000 psf. Interior slabs and/or monolithic slabs with stem walls can be designed based on a Modulus of Subgrade Reaction (Ks) of 350 kcf.

**Deep Foundation**
Alternatively, if the time frame to surcharge at the grade structures is not available, the use of a deep foundations system could be used to support the structures. A deep foundation system consisting of driven 8-inch timber piles or driven 10-inch square precast concrete (PSC) piles can be used to support the structure.

In either case, the driven piles should be installed into the underlying dense sands and will gain the majority of their capacity in end bearing. Timber piles having a minimum tip diameter of 8 inches and 10-inch PSC piles driven to a nominal depth of 43 to 48 feet below the existing ground surface will have a safe axial compressive capacity of 20 tons and 25 tons, respectively. These values are based on a factor of safety of 2.5.

**Installation of Driven Foundation Systems**
Upon selection of the desired pile type, pile length, and the contractor’s driving system, a wave equation (WEAP) analysis should be conducted. The WEAP analysis will determine if the selected hammer has sufficient energy to install the desired pile type to the required length and if the driving stresses (both compressive and tensile) are within acceptable limits. Hammer and/or pile types and lengths can be varied until an acceptable hammer-pile system is found. An engineering technician should be present during pile installation to continuously monitor driving resistance. Pre-augering should be limited to no more than 5 feet during installation. We can provide assistance in evaluating the selected hammer and determining the pile driving criteria.

**Permanent Lateral Earth Pressures**
For permanent structures, Table 1 indicates the equivalent fluid pressures based on a SP-SM soil type used as backfill.
<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Earth Pressure Method</th>
<th>Earth Pressure Coefficient</th>
<th>Earth Pressure Value</th>
<th>Equivalent Fluid Pressure without Water, psf</th>
<th>Equivalent Fluid Pressure with Water, psf</th>
<th>Earth Pressure Diagram</th>
<th>Load Application Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM-SP² (γ₁=110pcf) (ϕ=30°)</td>
<td>Rankine</td>
<td>Kₐ</td>
<td>0.33</td>
<td>37</td>
<td>78</td>
<td>Triangular</td>
<td>.33 H up from base of wall</td>
</tr>
<tr>
<td></td>
<td>Rankine</td>
<td>Kₚ</td>
<td>3.00</td>
<td>110</td>
<td>205</td>
<td>Triangular</td>
<td>.33 H up from base of wall</td>
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<tr>
<td></td>
<td>Jaky/Terzaghi</td>
<td>Kₒ</td>
<td>0.50</td>
<td>55</td>
<td>87</td>
<td>Triangular</td>
<td>.33 H up from base of wall</td>
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<tr>
<td></td>
<td>Mononobe-Okabe³ and Lam and Martin</td>
<td>ΔKₑ</td>
<td>0.60</td>
<td>11</td>
<td>16</td>
<td>Inverted Triangular</td>
<td>.6 H up from base of wall</td>
</tr>
</tbody>
</table>

Note 1. Density acting over 1 foot wide vertical strip
Note 2. Assumes that Controlled Fill will be used to backfill the excavation around the wet well
Note 3. These values are in addition to the design earth pressure loading

We recommend that fixed wall structures be designed based on an at rest earth pressure (K₀).

Temporary or retaining type structures using backfill should be designed based on Kₐ and Kₚ values as necessary. Temporary retaining structures placed against the existing soils can be designed based on an approximate ø and Sᵤ values with safety factors applied. Several formulas are provided in Campanella & Robertson that we can provide if needed.

Temporary excavation slopes should not exceed 5 feet in depth without temporary support. Slope configurations should not be steeper than two (2) horizontal to one (1) vertical and should have adequate erosion protection due to the propensity of the upper fine sands to ravel and pipe.
Dewatering During Construction

A combination of sand wells points and bottom sump pumps will be necessary for the deeper excavations. The deeper excavations may require a positive cut off extending significantly below the excavation bottom to help prevent seepage and bottom heave.

We recommend that construction dewatering and retaining systems be designed by a registered engineer in the State of South Carolina who is familiar with the local soil conditions and structural systems. The system should be designed for less than 1 inch of movement if near existing structures. The system should also meet OSHA requirements for safety.

Corrosion Protection Measures

Based on the type of soils encountered and the existing treatment plants past performance, we did not encounter soils in our soundings that have deleterious materials in sufficient quantities to recommend special corrosion protection measures.

Site Preparation

The site should be stripped and cleared of topsoil and vegetation prior to placing Controlled Fill (subsequently described). Depending on the time frame and weather occurrences between placing the Controlled Fill and constructing the foundations, the subgrade should be proofrolled with a loaded dump truck or other similar heavy construction equipment prior to placing reinforcing steel and concrete. A geotechnical engineer should monitor the proofrolling operations. Areas that pump or rut excessively should be undercut and replaced with Controlled Fill.

Controlled Fill

Controlled Fill material should be free of organics and debris. Fill soils should be sands classified as SP or SM according to the Unified Soil Classification System, with a Maximum Dry Density of at least 95 pounds per cubic foot (pcf) as per a Modified Proctor Compaction Test (ASTM D 1557). The percent passing the No. 200 sieve should be limited to 15%. Controlled Fill should be placed in uniform lifts and compacted to at least 95% of its Maximum Dry Density as determined by ASTM D 1557. The upper 1-foot of floor slab and footing areas should be compacted to 100% of its Maximum Dry Density.
WPC appreciates the opportunity to be of service to you on this project. If you have questions concerning the contents herein, please contact us. Should the project change significantly, we can review and modify our recommendations as needed. This report is for the sole use of this project and should not be relied upon otherwise.

Respectfully submitted,
WPC

William B. Wright, P.E.
Senior Engineer

Thomas J Casey, P.E.
Senior Geotechnical Engineer

Attachments: Test Location Plan
Piezocone Penetration Logs
Piezocone Penetration Classification
Shear Wave Velocity Profile
Hand Auger Log
TEST LOCATION PLAN
PIEZOCONE PENETRATION LOGS
PIEZOCONE PENETRATION CLASSIFICATION
Cone Penetration Classification

The tip resistance \( q_t \) is measured as the maximum force over the projected area of the tip. It is a point stress related to the bearing capacity of the soil. The measured \( q_t \) must be corrected for porewater pressure effects (Lunne et al, 1997), especially in clays and silts where porewater pressures typically vary greatly from hydrostatic. This corrected value is known as \( q' \), which is reported in the Piezocone Penetration Logs. The \( u_2 \) position element is required for the measurement of penetration porewater pressures and the correction of tip resistance. The sleeve friction \( f_s \) is used as a measure of soil type and can be expressed by friction ratio: \( FR = f_s / q_t \).

The estimated stratigraphic profiles included in the Piezocone Penetration Logs are based on relationships between \( q_t \), \( f_s \), and \( u_2 \). The normalized friction ratio \( (FR)_n \) is calculated by using:

\[
(FR)_n = \frac{f_s}{q_t - u_2} \times 100\% 
\]

and is indicative of soil behavior and is used to classify the soil behavior type. Typically, cohesive soils, such as plastic silts and clays, have high FR values, low \( q_t \) values, and generate large excess penetration porewater pressures. Cohesionless soils, such as sands, have lower FR’s, high \( q_t \) values, and typically do not generate excess penetration porewater pressures. The following graph (Robertson, 1990) presents one of the accepted correlations used to classify soils behavior types.

### Table

<table>
<thead>
<tr>
<th>Zone</th>
<th>( q'/N )</th>
<th>Description</th>
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<td>Sensitive, Fine Grained</td>
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<td>2</td>
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<td>Organic Soils-Peats</td>
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<tr>
<td>3</td>
<td>1.5</td>
<td>Chpe-Clay to Silty Clay</td>
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<td>4</td>
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<td>Silty Muds-Sandy Silt to Silty Clay</td>
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<td>5</td>
<td>3</td>
<td>Sand Mixtures-Silts to Sandy Silt</td>
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<td>6</td>
<td>4.5</td>
<td>Sand-Clean Sand to Silty Sand</td>
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<td>7</td>
<td>6</td>
<td>Gravelly Sand to Sand</td>
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<td>8</td>
<td>1</td>
<td>Very Stiff Sand to Clayey Sand</td>
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<tr>
<td>9</td>
<td>2</td>
<td>Very Stiff, Fine Grained</td>
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(*) Heavily Overconsolidated or Compacted
SHEAR WAVE VELOCITY PROFILE
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<td>2.0</td>
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<td>951</td>
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<td>70.8</td>
<td>1246</td>
</tr>
</tbody>
</table>

**Tip to Geophone (ft): 0.96**

**Cone to Source (ft): 1.64**

\[
V_s = 771 \text{ ft/s}
\]

**Site Class**: D

*Per IBC 2000 Weighted Shear Wave Velocity Criterion*  
(Liquefaction, Soft Clay, etc, Not Considered in This Calculation)
HAND AUGER BORING LOG
<table>
<thead>
<tr>
<th>BORING NUMBER</th>
<th>DEPTH (inches)</th>
<th>SOIL DESCRIPTION</th>
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</thead>
<tbody>
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<td>HA by C1</td>
<td>0 to 3</td>
<td>Top Soil</td>
</tr>
<tr>
<td></td>
<td>3 to 26</td>
<td>Light Brown Silty SAND (SM) with some gravel</td>
</tr>
<tr>
<td></td>
<td>26 to 48</td>
<td>Gray Silty SAND (SM) with trace gravel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Groundwater Encountered</td>
</tr>
<tr>
<td>HA by SCPT2</td>
<td>0 to 3</td>
<td>Top Soil</td>
</tr>
<tr>
<td></td>
<td>3 to 24</td>
<td>Light Brown Silty SAND (SM) with some gravel</td>
</tr>
<tr>
<td></td>
<td>24 to 48</td>
<td>Gray Silty SAND (SM) with trace gravel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Groundwater Encountered</td>
</tr>
</tbody>
</table>
# NCSD Septage Receiving Station

## Quote # WC41459

Dated: 4/13/2020

### Project: NCSD Septage Receiving Station

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 EA</td>
<td>1</td>
<td>EA</td>
<td>VAUGHAN MODEL V4KR-080 VERTICAL WETWELL RECIRCULATING CHOPPER PUMP 7 FEET LONG CONSISTING OF:</td>
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<td></td>
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<td></td>
<td>- CASING, cast ductile iron.</td>
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<td></td>
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<td></td>
<td>- IMPELLER, CUTTER BAR, UPPER CUTTER AND CUTTER NUT, cast steel, heat treated to minimum 60 Rockwell C Hardness. Impeller dynamically balanced.</td>
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<td></td>
<td>- DISCHARGE FLANGE, 4&quot; 150 LB ANSI rated.</td>
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<td></td>
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<td></td>
<td>- RECIRCULATION VALVE ASSEMBLY, cast ductile iron with 316 stainless steel valve disk, manually operated for recirculation or discharge. Includes reach rods through deck plate with handles.</td>
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<td></td>
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<td></td>
<td>- RECIRCULATION NOZZLE, 1018 steel, includes nozzle deflector (adjustable 180° horizontally and 45° vertically).</td>
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<td></td>
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<td>- BEARINGS, oil bath lubricated ball type except top bearings are grease packed.</td>
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<td>- MECHANICAL SEAL, cartridge type with SC faces, as manufactured by Vaughan.</td>
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<td>- ELASTOMERS, BUNA N</td>
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<td></td>
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<td></td>
<td>- AUTOMATIC OIL LEVEL MONITOR, 316 Stainless steel reservoir with 110 volt switch and relay.</td>
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<td>- COUPLING, elastomeric type by TB Woods.</td>
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<td>- MOTOR MOUNT, 1018 steel, piloted for &quot;C&quot; flanged mounted motor.</td>
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<td>- MOUNTING BASE, 1018 steel.</td>
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<td></td>
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<td></td>
<td>- SUBMITTAL FINISH: Sandblasted and single coat of Tnemec 27wb primer (5-8 MDFT) and finish coat of Tnemec 27WB Epoxy (5-8 MDFT). (Except Motor)</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
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<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 EA</td>
<td>1</td>
<td>EA</td>
<td>ELECTRIC MOTOR CONSISTING OF:</td>
<td></td>
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<td></td>
<td>- DRIVE, 10 HP, 1200 RPM, 460/3/60, 1.15 SF, &quot;C&quot; flanged TEFC electric motor.</td>
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</tbody>
</table>

"First and Only Chopper Pump – Worldwide"

---

Mike Dillard | WC Equipment Sales |
[www.wcequipment.com](http://www.wcequipment.com) | 4324 Brogdon Exchange, Suite 200, Suwanee, GA 30024 |
| +1 678.730.0997 o | +1 770.614.5992 f | mdillard@wcequipment.com
Project: NCSD Septage Receiving Station

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</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>OP</td>
<td>SERVICES CONSisting OF:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- FACTORY PERFORMANCE TESTING</td>
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<td></td>
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<td></td>
<td>- FACTORY SUBMITTALS AND O&amp;M MANUALS</td>
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<td></td>
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<td></td>
<td>- FREIGHT TO THE JOB SITE</td>
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<td>- START-UP</td>
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<td></td>
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<td></td>
<td>- SIMPLEX CONTROL PANEL PER THE SPECIFICATIONS</td>
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</tbody>
</table>

TOTAL BUDGET COST $28,000

Freight quotes are for informational purposes only and is not a guarantee of the final shipping charge. Shipping charges are not finalized until the equipment leaves Vaughan’s warehouse. Partial shipments are subject to additional freight charges.

PUMP PERFORMANCE: 500 GPM @ 10 FT. TDH
APPLICATION: Septage Receiving
INDUSTRY: Municipal

PRODUCTION TIME: ESTIMATED 6-8 WEEKS SHIPMENT AFTER RECEIPT OF APPROVED SUBMITTALS OR RELEASE TO PRODUCTION AND EXECUTED PURCHASE ORDER. ESTIMATED SHIP DATES ARE SUBJECT TO CHANGE DEPENDENT ON MOTOR AVAILABILITY. VAUGHAN CO. WILL ARRANGE SHIPMENT UPON THE RECEIPT OF APPROVED FACTORY TESTS, IF APPLICABLE.

TERMS: NET 30 DAYS, CONTINGENT ON CREDIT APPROVAL

“First and Only Chopper Pump – Worldwide”

Mike Dillard WC Equipment
<table>
<thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;First and Only Chopper Pump – Worldwide&quot;</td>
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</tr>
</tbody>
</table>

“First and Only Chopper Pump – Worldwide”
PRODUCT WARRANTY, TERMS & CONDITIONS FOR SALES MADE BY VAUGHAN CO., INC.

GENERAL: The Terms & Conditions herein established by Vaughan Co., Inc. ("us", "we", "our") as may be amended by us from time to time ("Terms and Conditions") apply to all dealings with our potential and actual customers ("you" and "your"), whether made by you or us, for any solicitation, submission, inquiry, offer, request or arrangement (a "Communication") or sale by us with respect to goods we sell ("Product(s)").

SCOPE OF SUPPLY: Scope of supply will be limited to accepted quotation.

ACCEPTANCE: No Communication is binding on us unless we actually receive it and we agree, either in writing or by delivery of Product(s) identified in such Communication, to accept it as an order for Product(s) (an "Accepted Order"). Any sample provided by us is not part of an Accepted Order.

NO CANCELLATION: Accepted Orders cannot be cancelled or modified, in whole or in part, without our prior written consent, which consent may be withheld or subject to conditions and reasonable charges we may impose.

PRICE INCREASE: Price of Product(s) is subject to increase if equipment is not shipped within twelve months from the date of the purchase order.

TAXES: All prices are subject to all applicable sales and use taxes and any other taxes now or hereafter imposed and/or levied by any governmental authority with respect to the sale of the Product(s) ("Applicable Taxes"). Unless we agree to an express provision to the contrary, Applicable Taxes will be added to the price you pay. Our failure to charge or collect Applicable Taxes when due shall not relieve you of your obligation for its payment. Regardless of any other payment terms, Applicable Taxes are due 30 days from the invoice date.

PAYMENT TERMS: Terms of sale will be shown on each invoice, and it is agreed that invoices will be paid in full when due. If payment in full on any invoice is not received when due, or if your credit worthiness is deemed unsatisfactory by us at any time, we may, without incurring any liability, one or more of the following actions: (a) impose a service charge at the rate that is the lesser of (i) 1.5% per month or (ii) the maximum rate allowed by applicable law, on any amount past due commencing from the date of such invoice, (b) modify or accelerate payments terms, (c) withhold delivery of Product(s) under any Accepted Order not yet shipped and/or delay, recall or reclaim shipments of Product(s) en route to you or delivered until arrangements satisfactory to us are made to secure payment for any outstanding invoice and for all open Accepted Orders and/or (d) file a lien for any unpaid labor or material.

DATES OF DELIVERY: Delivery dates are approximate and subject to change based upon Product(s) availability, production schedules, and other prevailing conditions. Shipment date is contingent upon the receipt of approved submittals. You must accept delivery after approval of submittals and production time or issue us a change to the Accepted Order that must be accepted by us in writing.

LONG TERM STORAGE: We will hold Product(s) in long term storage contingent upon payment of full purchase order price less retainage. Long term storage duration, fees, and other considerations will be evaluated on a case by case basis.

YOUR ACCEPTANCE OF PRODUCT(S): You are responsible to promptly inspect Product(s) delivered and notify us within five (5) calendar days following receipt of the Product(s) for which a claim is filed, of any shortages or non-conformance of the Product(s) with the Accepted Order.

RETURNS: Product(s) may not be returned for any reason without the authorization by us. Please refer to the “Returned Goods Authorization Policy” for further information on returns.

WARRANTY: Vaughan Co., Inc. warrants to the original purchaser/end user all pumps and pump parts manufactured by Vaughan Co. to be free from defects in workmanship or material for a period of one (1) year from date of startup or eighteen (18) months from the date of shipment from Vaughan Co., whichever occurs sooner. If during said warranty period, any pump or pump parts manufactured by Vaughan Co. prove to be defective in workmanship or material under normal use and service, and if such pump or pump parts are returned to Vaughan Co.'s factory at Montessano, WA, or to a Vaughan authorized Service Facility under this warranty, the pump or pump parts will be replaced or repaired by Vaughan Co. free of charge. Products repaired or replaced from the Vaughan Co. factory or a Vaughan authorized Service Facility under this warranty will be returned freight prepaid.

INDEMNITY CLAUSE: You shall pay all costs and expenses, including without limitation reasonable attorneys' fees, to defend against any claim for personal injury or property damage as a result of the improper use of the product(s) or any repair service or parts. This warranty shall not apply to any product or product part of which has been subjected to misuse, accident, negligence, operated in the dashed portion of the published pump curves, used in a manner contrary to Vaughan's printed instructions or damaged due to a defective power supply, improper electrical protection or faulty installation, maintenance, or repair. Wear caused by pumping abrasive or corrosive fluids or by cavitation is not covered under this warranty. Equipment and accessories purchased by Vaughan Co. from outside sources which are incorporated into any Vaughan Co. pump or any pump part are warranted only to the extent of and by the original manufacturer's warranty or guarantee, if any, which warranty, if appropriate, will be assigned by Vaughan Co. to the purchaser/end user. THIS IS VAUGHAN CO.'S SOLE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WHICH ARE HEREBY EXCLUDED INCLUDING IN PARTICULAR ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Vaughan Co. neither assumes, nor authorizes anyone or company to assume for it, any other obligation in connection with the sale of its equipment with the exception of a valid Vaughan “Performance Guarantee” or “Extended Warranty”, if applicable. Any other enlargement or modification of this warranty by a representative or other selling agent shall not be legally binding on Vaughan Co.

RETAINAGE: Retainage, if applicable, is limited to 5% of the total Accepted Order price less applicable taxes and is due (a) net 60 days after start up or (b) net 10 days upon owners acceptance, not to exceed 120 days from the invoice date.

BACK CHARGES: You shall not charge us back charges without first receiving written approval from us.

COLLECTION CHARGES: You shall pay all costs and expenses, including without limitation reasonable attorneys fees and administrative charges, we incur in endeavoring to protect our rights arising out of your failure to perform your obligations to us, including without limitation any attempt to collect any amount you owe us.

EARNED AUTHORIZATION: If Product(s) are exported by us, we provide the following statement: “these commodities, technology or software were exported from the United States in accordance with the export Administration Regulations. Diversion contrary to U.S. law is prohibited.”

GOVERNING LAW: The transactions between you and us are made in Washington State, shall be governed by the laws of Washington State, and you agree to submit exclusively to jurisdiction and venue of such state with respect to any dispute arising out of any transaction between you and us. YOU AND WE KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVE THE RIGHT TO TRIAL BY JURY IN ANY ACTION OR PROCEEDING ARISING OUT OF ANY SUCH DISPUTE.

NO RIGHT OF SET-OFF: Each Accepted Order constitutes a separate and distinct contract when accepted by us and you may not withhold payment for an invoice or offset same, in whole or in part, against sums you claim are due you by us with respect to another Accepted Order, invoice or for any other cause or reason whatsoever.

INDEMNITY CLAUSE: To the extent that conditions, acts, activities or conduct involve the contributory negligence or misconduct of you or other third parties, liability will be apportioned between the parties according to comparative fault.

OUR RIGHTS ARE NOT EXCLUSIVE: Our rights hereunder are additional to and not in lieu of any other rights and remedies available to us at law or in equity.

NOTICES: All notices of claims or disputes given by either you or us with respect to any Communication, Accepted Order or these Terms & conditions shall be in writing and sent by (a) first class mail with a copy by certified mail, return receipt requested, postage pre-paid, or (b) overnight delivery service, charges prepaid, and address as follows: (i) if to us, our address to which a Communications was sent or an Accepted Order was placed, and (ii) if to you, at your address last known to us. Notice will be effective the first business day after notice is sent.

NO OTHER TERMS & CONDITIONS OR ORAL AGREEMENTS: No Communication is binding on us unless we actually receive it and we agree, either in writing or by delivery of Product(s) identified in such Communication, to accept it as an order for Product(s) (an "Accepted Order") and no agreement or understanding in any way adding to or otherwise modifying these Terms and Conditions shall be binding on us unless set forth in writing and signed by us.

MISCELLANEOUS: No waiver of any rights or remedies shall be deemed a waiver by us of any future default by you or of any future right or remedy available to us. The Section, Paragraph and other heading in these Terms & Conditions are for convenience of reference only, and shall not limit or otherwise affect the meaning of any provision contained in these Terms and Conditions. The invalidity of enforceability of any Terms and Conditions shall in no way affect the validity or enforceability of any other provision.