REQUEST FOR STATEMENTS OF QUALIFICATIONS
HYDROGEOLOGICAL DESIGN SERVICES
Borax Drive

BACKGROUND AND PURPOSE
The Henderson Water Utility (HWU) is requesting Statements of Qualifications (SOQ) from qualified firms licensed in the Commonwealth of Kentucky to provide engineering services for investigation, evaluation and design of a well or wells to produce non-potable process water on property owned by the City of Henderson and the Henderson Water Utility, located on Borax Drive in Henderson, Kentucky.

The selected consultant will provide the following services:

- Project kickoff meeting with City of Henderson and HWU for proper identification of project scope and alignment of expectations.
- Review of historical test well results/studies.
- Survey of site and of any possible alternate location(s).
- Geotechnical investigation of site, including a test well(s). Consultant shall either self-perform this work or assist HWU in acquiring these services through a separate contract with a geotech firm.
- Preparation of a preliminary design report with alternatives for consideration by City and HWU, including detailed cost estimates. Report shall include a recommendation for proposed non-potable water rates.
- Preparation of “shovel ready” construction plans.

It is the intention of the City of Henderson to use the availability of non-potable process water as an incentive to prospective industrial park tenants. There is no guarantee that the well field will be constructed.

Response should be both thorough and concise, detailing experience, personnel, and references relevant to water well evaluation and design. Engineering firms that have not provided ongoing water well evaluation and design services for a period of at least five years need not apply.
EVALUATION CRITERIA
Statements of Qualifications will be evaluated on the following criteria with a total maximum score of 60 points.

I. **Experience**: 20 points
   Include information related to the respondent’s ability to satisfy the technical components described here. This information should include verifiable experience on similar projects in the last five years including project location, date, description, actual cost, time to completion, and description of engineering services provided.

II. **Existing Client References**: 20 points
    Include a list of five clients, and recent applicable water well projects performed for each, including project description, fees, and client contact information.

III. **Project Approach**: 20 points
    Provide a description of the firm’s approach to the project, including a general description of the proposed design effort, based on a notice to proceed within 45 days from the date the SOQ is due.

SELECTION PROCESS
There will be no formal opening of the proposals received.

The selection process will include an evaluation by staff of the Henderson Water Utility, who will make a recommendation to the Henderson Water and Sewer Commission.

Interested firms should submit six copies of their Statement of Qualifications to:

Tom Williams, P.E.
Henderson Water Utility
111 Fifth Street
Henderson KY 42420

Statements of Qualifications must be received no later than 1:30 p.m. (CDT), 20 June 2018.

Questions related to this Request for Qualifications should be directed to Tom Williams, P.E., 270.826.2421, or at williamst@hkywater.org.

RFQ’s, Clarifications and Addenda may be obtained from:

   HWU website:  [http://tinyurl.com/hwu-bids](http://tinyurl.com/hwu-bids)

   HWU Bobby Gish Administration Building: 111 Fifth Street, Henderson, KY 42420

The Water and Sewer Commission reserves the right to accept or reject any or all proposals in whole or in part and to waive informalities and/or technicalities. Conflicts of interest, gratuities and kickbacks as defined and provided for in KRS 45A.455 are absolutely prohibited.
BACKGROUND

The Henderson Water Utility (HWU) delivers water to approximately 45,000 customers from a centrally located Water Treatment Plant (the North WTP, or NWTP) in the City of Henderson. The raw water source is an intake located on the Ohio River at river mile 803.6, left bank. The NWTP has a rated capacity of 12.0 mgd.

At present, the capacity of the existing plant is sufficient to meet peak demand. HWU’s objectives over the next several years include managing the system to maintain capacity of the existing plant, water tanks and distribution system, while planning for future capacity expansion to meet long-term demands, improve redundancy of supply and protect water assets.

The current Raw Water Intake is a former power plant cooling water intake constructed in 1955. The power plant has been demolished, and the former owner of the facility (Henderson Municipal Power and Light) turned over the intake to HWU in 2008. In 2011-2012, HWU completed a renovation of the intake, which increased its capacity to 16 mgd. It is HWU’s plan to continue using the current intake for the foreseeable future.

In 2000 and 2001, an investigation was made, and test wells drilled in anticipation of using a different source for raw water. Results and data from that study are attached. The switch to bank filtration was not pursued.

In 2015, the City of Henderson purchased 123 acres at the current end of Borax Drive within the City for development as an industrial park. An additional 72 acres formerly owned by the Nature Conservancy was purchased later that year. The Nature Conservancy property is encumbered by a conservation easement that restricts its development. HWU currently owns 50 acres of undeveloped land adjacent to the future industrial park.

One of the test wells drilled in 2000 was on the City’s industrial park property. Based on that study, the City and HWU wish to investigate the practicality of providing non-potable industrial process water to future tenants in the industrial park, as an incentive to locate there. The conceptual plan includes HWU maintaining ownership of the well, pumping and distribution system, and operating the system in conjunction with our current status as the provider of potable water services.
September 8, 2000

John S. Tapp, Ph.D., P.E.
Shawn R. Wright
Henderson Water Utility
111 Fifth Street
Henderson, Kentucky 42420

REGARDING: RESULTS OF PHASE I TEST DRILLING
HENDERSON, KENTUCKY

Dear Sirs:

Reynolds, Inc., has recently completed exploratory test drilling for Phase I of the Water Supply Test Well Drilling and Evaluation project for Henderson Water Utility, Henderson, Kentucky. Test drilling was conducted in order to determine the depth and lithology of aquifer materials and to make recommendations as to which sites appear most favorable for potential water supply development.

**Test Drilling Procedures**

Test drilling was conducted August 21-24, 2000 at five previously-determined sites along the Ohio River (Exhibit 1). Drilling was accomplished using a CME Model 95 High-Torque Drill Rig equipped with 8 ¼” hollow stem augers. Sediment samples were collected from each hole beginning at 40’ utilizing a 6” diameter flat bottom bailer and sent to a laboratory for gradation analysis. Following drilling, each test hole was completed as a 2” diameter piezometer equipped with protective cover and locking cap.

**Test Drilling Results**

Well logs, gradation curves, and estimates of hydraulic conductivity for the sites are appended to this report. Results of the drilling are summarized in Tables 1 and 2.

A review of the drilling logs of the five sites suggests that three of them exhibit potential as host sites for radial collectors.
TW-1, drilled near existing Collector 3, generally exhibits a log of fine sand, in a shallow aquifer that bottoms out at 67 feet. Further, the aquifer is confined under impermeable silty clay to a depth of 32 feet, while the static water level rises to a depth of 23 feet. Given that the site offers only 34 feet of available drawdown to a collector, we will remove this site from further consideration (for now) in favor of more desirable site(s).

TW-3, drilled on the Prichett farm property, was a dry hole that encountered shale at a depth of 48 feet. This site is eliminated from further consideration for obvious reasons.

TW-4, drilled on the Nature Conservancy property, is quite similar to the TW-1 site. Both of these sites are in confined aquifers, of near equal depth, having near equal available drawdown (34' and 35'), and near equal hydraulic conductivity values (\(K = 1000\) gpd/ft\(^2\)). We will delete this site for now for further consideration in favor of the following two sites.

TW-2, drilled on Horseshoe Bend, is at first glance, the best site for further consideration. The site offers an aquifer of the greatest saturated thickness, 77 feet, the greatest available drawdown, 78 feet, and the best estimated hydraulic conductivity, \(K = 2200\) gpd/ft\(^2\), and transmissivity, \(T = 169,400\) gpd/ft. Of concern is the realization that the site appears to be one where the aquifer is confined under 25 feet of impermeable silty clay, while the static water rises to the depth of 17 feet. If the aquifer is truly confined (e.g. the silty clay continues under the river bed), then the direct recharge from the river is restricted and recharge will come from the aquifer only. If the silty clay is truly confining, the recharge to the aquifer from precipitation will be reduced, as the recharge from the river is restricted. Under this scenario, the aquifer can be overpumped by a high capacity collector because, although the K value is the best we see in the five sites, it is not exceptional. The site is promising and believed to contain permeable “windows” within the silty clay. Further drilling and test pumping will confirm, or deny, our expectations.

TW-5, drilled near Collector 1, may become the best of all sites. TW-5, while shallower than TW-2, is in an unconfined water table aquifer. Hydraulic conductivity (K) is estimated at 1900 gpd/ft\(^2\), and with a saturated aquifer thickness of 60 feet, transmissivity (T) is 114,000 gpd/ft. These estimated hydraulic values compare favorably with those expressed at the TW-2 site. This statement is particularly true if we can induce as much as 70% of our recharge from the river. Further drilling and test pumping at the TW-5 site is recommended.

**Recommendations**

Based upon the results of Phase 1 drilling, Sites TW-2 (Horseshoe Bend) and TW-5 (adjacent Collector 1) are recommended for Phase 2 testing. These sites exhibit a greater depth to bedrock, and subsequently a greater saturated aquifer thickness, than the others and have relatively coarse materials at depths conducive to groundwater development.
Both Sites TW-2 and TW-5 appear to be favorable for the development of yields of up to 10 MGD, should water table conditions exist. Additional drilling data should be obtained at Site TW-2 to better determine the nature and extent of overlying clay deposits. At Site TW-5, additional drilling can help us understand why the existing collector appears to be completed at a depth more shallow than the bedrock encountered in the recent test boring.

Respectfully submitted,

REYNOLDS, INC.
FEHLMANN DIVISION

[Signature]
Gregory B. Slone
Technical Representative

[Signature]
Robert E. Blattert
Division Director

Cc: Jay Burton, Reynolds
# TABLE 1

**SUMMARY OF PHASE 1 TEST DRILLING**  
Henderson Water Utility, Henderson, Kentucky

<table>
<thead>
<tr>
<th>Test Hole</th>
<th>Location</th>
<th>Depth to Bedrock (Feet)</th>
<th>Top of Aquifer (Feet)</th>
<th>Top of Gravel (Feet)</th>
<th>Static Level (Feet)</th>
<th>Saturated Aquifer Thickness (Feet)</th>
<th>Screen Interval (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TW-1</td>
<td>Adjacent Collector 3</td>
<td>68</td>
<td>26</td>
<td>32</td>
<td>23</td>
<td>42</td>
<td>58-68</td>
</tr>
<tr>
<td>TW-2</td>
<td>Site 4, Horseshoe Bend</td>
<td>102</td>
<td>25</td>
<td>35</td>
<td>Initial 25'; 17' Upon Completion</td>
<td>77</td>
<td>92-102</td>
</tr>
<tr>
<td>TW-3</td>
<td>Site 3, Canoe Creek</td>
<td>55</td>
<td>None</td>
<td>None</td>
<td>Dry</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TW-4</td>
<td>TNC, Adjacent Collector 2</td>
<td>77</td>
<td>41</td>
<td>41</td>
<td>Initial 47'; 29.5' Upon Completion</td>
<td>36</td>
<td>67-77</td>
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<tr>
<td>TW-5</td>
<td>Adjacent Collector 1</td>
<td>96</td>
<td>21</td>
<td>62</td>
<td>30.5</td>
<td>65.5</td>
<td>76-96</td>
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</tbody>
</table>
# TABLE 2

**SUMMARY OF SELECT GRADATION ANALYSES**

Henderson Water Utility, Henderson, Kentucky

<table>
<thead>
<tr>
<th>Test Hole</th>
<th>Depth Interval (Feet)</th>
<th>Lithologic Description</th>
<th>20% Retained</th>
<th>30% Retained</th>
<th>40% Retained</th>
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</thead>
<tbody>
<tr>
<td>TW-1</td>
<td>53-54</td>
<td>F.-m. sand, slight f. gravel</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
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<tr>
<td></td>
<td>58-59</td>
<td>Fine-med sand</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
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<tr>
<td></td>
<td>63-64</td>
<td>Fine-med sand</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
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<tr>
<td>TW-2</td>
<td>85-86</td>
<td>Fine-med sand</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>90-91</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.09</td>
<td>0.06</td>
<td>0.01</td>
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<tr>
<td></td>
<td>95-96</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.07</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>100-101</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.04</td>
<td>0.03</td>
<td>0.02</td>
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<tr>
<td>TW-3</td>
<td></td>
<td>Clay; No Gradations Performed</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TW-4</td>
<td>63-64</td>
<td>F.-m. sand, slight f. gravel</td>
<td>0.05</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>68-69</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.09</td>
<td>0.08</td>
<td>0.06</td>
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<tr>
<td></td>
<td>73-74</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.08</td>
<td>0.05</td>
<td>0.02</td>
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<tr>
<td>TW-5</td>
<td>83-84</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.04</td>
<td>0.02</td>
<td>0.02</td>
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<tr>
<td></td>
<td>88-89</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.07</td>
<td>0.03</td>
<td>0.02</td>
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<tr>
<td></td>
<td>93-94</td>
<td>F.-m. sand, scatt. f. gravel</td>
<td>0.09</td>
<td>0.05</td>
<td>0.02</td>
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</tbody>
</table>