

**RESOLUTION NO. 594-10**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ORANGE CITY, FLORIDA, AUTHORIZING THE INTERIM CITY MANAGER TO ENTER INTO AN AGREEMENT WITH THE CITY OF DELAND, THE CITY OF DELTONA, AND THE COUNTY OF VOLUSIA FOR FURTHER REFINEMENT AND PEER REVIEW OF THE WEST VOLUSIA TRANSIENT GROUNDWATER MODEL, IMPLEMENTATION OF AN ENVIRONMENTAL MONITORING PLAN AND ADDITIONAL CONSULTING WORK IN SUPPORT OF THE AFOREMENTIONED ACTIVITIES; AND PROVIDING FOR AN EFFECTIVE DATE.**

---

**WHEREAS**, the City of Orange City desires to enter into an agreement with the City of DeLand, the City of Deltona and the County of Volusia for the purpose of further refinement and peer review of the West Volusia transient groundwater model, implementation of an environmental monitoring plan and additional consulting work (Agreement) attached as Exhibit "A"; and

**WHEREAS**, the Saint Johns River Water Management District (District) has projected that groundwater pumping by the City of Orange City, the City of DeLand, the City of Deltona and the County of Volusia (Suppliers) will, in the near future, exceed the capacity of the groundwater supply in the West Volusia County area, and that the Suppliers will therefore need to pursue one or more alternative sources of water supply; and

**WHEREAS**, cost estimates prepared by the District and others indicate the cost of providing potable water from an alternative source will likely be five times the cost of providing potable water from groundwater sources; and

**WHEREAS**, the Suppliers desire to jointly contract with a Consultant to perform additional work to refine and peer review the previously prepared transient groundwater model, and implement an Environmental Monitoring Plan to collect field measured data needed to support the transient groundwater model; and

**WHEREAS**, the Suppliers have agreed on a consultant to perform the above work.

**NOW, THEREFORE, BE IT RESOLVED AND ENACTED BY THE CITY COUNCIL OF THE CITY OF ORANGE CITY, FLORIDA:**

**SECTION 1.** The City Council of the City of Orange City, Florida authorizes the Interim City Manager to enter into the Agreement attached hereto as Exhibit "A" with the City of DeLand, the City of Deltona and the County of Volusia for the purpose of further refinement and peer review of the West Volusia transient groundwater model, implementation of an Environmental Monitoring Plan and additional consulting work.

**SECTION 2.** The City Council of the City of Orange City, Florida approves the selection of a consultant as selected by the Suppliers.

**SECTION 3.** The City Council of the City of Orange City agrees to pay its pro-rata share of the cost of said study as stated in the Agreement.

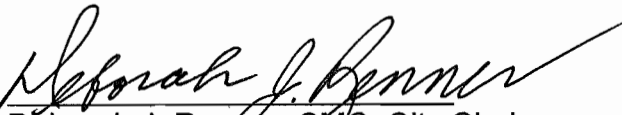
**SECTION 4.** That this Resolution shall take effect immediately upon its adoption by the City Council of the City of Orange City, Florida.

**ROLL CALL VOTE AS FOLLOWS (Resolution No. 594-10):**

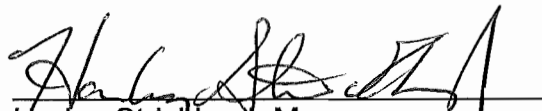
Gary Blair	<u>yes</u>	Anthony Pupello	<u>yes</u>
Bill Crippen	<u>yes</u>	Tom Abraham	<u>yes</u>
Tom Laputka, Vice Mayor	<u>yes</u>	Jeff H. Allebach,	<u>Absent</u>
Harley Strickland, Mayor	<u>yes</u>		

ADOPTED THIS 23<sup>rd</sup> DAY OF February, 2010.


ATTEST:

  
Deborah J. Renner, CMC, City Clerk

AUTHENTICATED:

  
Harley Strickland, Mayor

This Resolution approved  
as to form and legal sufficiency:

  
W. E. Reichmann, City Attorney

**AGREEMENT #2 BETWEEN THE  
CITY OF DeLAND,  
CITY OF DELTONA,  
CITY OF ORANGE CITY, AND  
COUNTY OF VOLUSIA  
FOR FURTHER REFINEMENT AND PEER REVIEW OF THE WEST VOLUSIA  
TRANSIENT GROUNDWATER MODEL, IMPLEMENTATION OF AN  
ENVIRONMENTAL MONITORING PLAN, AND ADDITIONAL CONSULTING  
WORK IN SUPPORT OF THE ABOVE ACTIVITIES**

This Agreement is made and entered into by and between the City of DeLand (DeLand), the City of Deltona (Deltona), the City of Orange City (Orange City), and the County of Volusia (Volusia), collectively referred to herein as (Suppliers).

**WITNESSETH:**

WHEREAS, the St. Johns River Water Management District (District) has projected that groundwater pumping by the Suppliers will, in the near future, exceed the capacity of the groundwater supply in west Volusia County area, and that the Suppliers will therefore need to pursue one or more alternative sources of water supply, and

WHEREAS, cost estimates prepared by the District and others indicate the cost of providing potable water from an alternative water source will likely be five times the cost to provide potable water from groundwater sources, and

WHEREAS, under a separate agreement, the suppliers jointly contracted with an engineering firm to prepare an independent transient groundwater model, and prepare a report quantifying costs associated with reclaimed water retrofit and implementation of various conservation efforts with the goal of reducing/quantifying the quantity of alternative water supply ultimately needed, and

WHEREAS, the Suppliers desire to contract with a Consultant to perform additional work to refine and peer review the previously prepared transient groundwater model, and implement an Environmental Monitoring Plan to collect field measured data needed to support the transient groundwater model.

WHEREAS, the Suppliers have agreed on a Consultant to perform the above work.

NOW, THEREFORE, in consideration of the foregoing premises, which are hereby made a part of this Agreement, and the mutual covenants, terms and conditions contained herein, and for other good and valuable consideration, the receipt and

sufficiency of which are hereby acknowledged, the Suppliers, each intending to be legally bound, agree to the following:

## **1. SCOPE OF WORK**

The Suppliers shall contract with consultant (Consultant), to be selected by the Suppliers, to perform the following:

- a. Improve the previously prepared transient groundwater model by entering Doppler radar generated rainfall data
- b. Contract with an independent hydrogeological expert to peer review the transient groundwater model
- c. Install measuring equipment and groundwater monitoring wells necessary to implement the Environmental Monitoring Plan prepared under the previous agreement
- d. Monitor and record data collected as part of the Environmental Monitoring Plan
- e. Provide professional services as directed by the suppliers in support of the above work

The above objectives are outlined in greater detail in the Scope of Work attached hereto as Exhibit A..

## **2. GOVERNANCE AND MANAGEMENT**

(a) Any decisions which are necessary for the proper day to day administration of the work being performed by the Consultant shall be made by collective decisions of the Suppliers. Each of the Suppliers shall appoint one representative who shall be the person authorized to communicate on behalf of the respective Supplier on issues relevant to this Agreement. In the event that a dispute arises regarding the administration of this Agreement and/or the contract with Consultant, then the representatives of the Suppliers shall vote on the issue in dispute, and such vote shall be binding upon all Suppliers. In the unlikely event of a tie vote, then the Suppliers agree first to enter into mediation.

(b) Volusia County shall serve as a project administrator (Project Administrator), and shall have overall administrative responsibility for implementing the terms of this Agreement. Under the direction of the Suppliers' representatives, the Project Administrator shall be responsible for implementing and overseeing the contract between the Suppliers and the Consultant. The Project Administrator shall have the responsibility of scheduling the kick-off and progress meetings with the Consultant, scheduling meetings of the Suppliers' representatives when necessary, keeping the Suppliers informed of the progress of the Consultant's work and other developments related to the work contemplated by this Agreement, and for such other administrative tasks necessitated by this Agreement and the contract between the Suppliers and the

Consultant. A majority of the suppliers may vote to appoint a new project administrator at any time after execution of this agreement.

### 3. FUNDING

(a) The Suppliers will pay the amounts set forth below as payment for the work to be performed by the Consultant:

Supplier	2007 Usage (mgd)	Percentage of Total	Equal Share 1/2 of Cost	Pro Rata Share of 1/2 Cost	Total Share
DeLand	6.8	27.3%	\$18,875.00	\$20,611.50	<b>\$39,486.50</b>
Deltona	12.8	51.4%	\$18,875.00	\$38,807.00	<b>\$57,682.00</b>
Orange City	1.7	6.8%	\$18,875.00	\$5,134.00	<b>\$24,009.00</b>
Volusia Co.	3.6	14.5%	\$18,875.00	\$10,947.50	<b>\$29,822.50</b>
Total	24.9	100.0%	\$75,500.00	\$75,500.00	<b>\$151,000.00</b>

(b) All contributions made by the Suppliers pursuant to this Agreement shall be paid to the Project Administrator. Within thirty (30) days of the execution of a contract with the Consultant, each Supplier shall remit one-third (1/3) of its contribution, as set forth in Section 3(a) above of the estimated cost. Thereafter, the Suppliers shall remit an additional 1/3 share within thirty (30) days following notification from the Project Administrator that the Consultant has reached 60% completion of its work, and the final 1/3 share within thirty (30) days following notification from the Project Administrator that the Consultant has completed its work. All amounts payable by the Suppliers pursuant to this Agreement are subject to appropriation of said funds by the governing body of the respective supplier. Any funds not expended shall be returned to suppliers on a pro-rata basis pursuant to the percentages forth in Section 3(a) of this Agreement

(c) Changes in the negotiated Scope of Work that will cause the Consultant's charges to increase must be unanimously approved by the Suppliers, and the Project Administrator shall not authorize the Consultant to undertake such additional or different work until he receives written notification from each Supplier that it has authorized payment of the additional funds. Any additional amounts charged by the Consultant will be paid by the Suppliers on a pro-rata basis using the same percentages of consumption as set forth in Section 3(a) of this Agreement/equally.

### 4. TERMS, AMENDMENT, TERMINATION

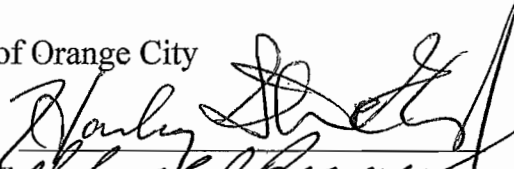
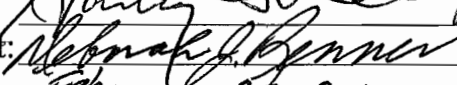
City of Deltona

By: \_\_\_\_\_  
Attest: \_\_\_\_\_  
Date: \_\_\_\_\_

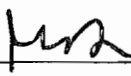
Approved by:

\_\_\_\_\_

City of Orange City

By:   
Attest:   
Date: February 23, 2010

Approved by:

  
\_\_\_\_\_

County of Volusia

By: \_\_\_\_\_  
Attest: \_\_\_\_\_  
Date: \_\_\_\_\_

Approved by:

\_\_\_\_\_

RICHARD W. FERNANDEZ, P.E.  
MARK A. HAMPTON, P.E.  
BRAD T. BLAIS, P.E.  
DAVID A. KING, P.E.  
ANDREW M. GIANNINI, P.E.

Quentin L. Hampton Associates, Inc.  
*Consulting Engineers*  
P.O. DRAWER 290247  
PORT ORANGE, FLORIDA 32129-0247

TELEPHONE: (386) 761-6810  
FAX: (386) 761-3977  
EMAIL: qlha@qlha.com

February 3, 2010

EXHIBIT "A"  
TO AGREEMENT  
# 2

Scott Mays, P.E.  
County of Volusia  
123 West Indiana Avenue  
Deland, FL 32721

***VOLUSIA COUNTY TASK ASSIGNMENT  
WEST VOLUSIA WATER SUPPLY PLAN, PHASE II***

Dear Scott,

We are pleased to offer the following as our proposal the referenced project.

The ENGINEER's Scope of Work will include the following:

**I. PURPOSE**

The St. Johns River Water Management District (District) has projected that groundwater pumping by the Cities of DeLand, Deltona, and Orange City, and the County of Volusia (West Volusia Suppliers) will, in the near future, exceed the capacity of the groundwater supply in west Volusia, and that the West Volusia Suppliers need to pursue one or more alternative source(s) of water supply. The Phase I model and study effort included development of an improved 'transient' groundwater model, monitoring plan and a 'Reclaimed Water Retrofit and Conservation Analysis'. The purpose of the study was to evaluate and present options which can reduce the amount of alternative water supply needed in the future.

The Phase II work includes implementation of the Environmental Monitoring Plan developed in Phase I, peer review of the 'transient' groundwater model, and assistance with 'SJRWMD 2010 Drinking Water Supply Plan' (2010 DWSP) project development.

The scope is defined as follows:

**Task A – Peer Review of Transient Groundwater Model**

Andreyev Engineering, Inc. (AEI) has prepared a transient groundwater flow model for western Volusia County. The model is being performed primarily to evaluate minimum flows and levels (MFL) issues related to Blue Springs.

Schlumberger Water Services, Inc. (SWS) will perform an independent review of the Andreyev model. The review will include an evaluation of the following items: conceptual

model, assumptions, boundary conditions, data and input files, packages, initial conditions, calibrations, sensitivity analysis, output, mass balance and report.

SWS will prepare a letter report documenting the results of the review. The report review will focus on the 'defendability' of the model, particularly whether the model construction and procedures, data used, calibration, and interpretations are appropriate.

### **Task B - Implementation of the Environmental Monitoring Plan (EMP) and Well Drilling**

For this task, we propose to implement the environmental monitoring plan as described in AEI's report dated August 16, 2009. The work will include installation of four (4) data loggers in the three (3) new wells and one (1) existing well, installation of two (2) data loggers in lakes, and associated engineering and field coordination services to implement the monitoring plan.

Two (2) new 4-inch monitoring wells will be installed by first driving an 8-inch steel surface casing to about 50 feet and then drilling an open hole to about 160 feet and finally installing a 4-inch steel casing into the Upper Floridan aquifer system, seated in competent limerock. The 4-inch casing will be fully grouted in place, using neat cement grout. Then, the 8-inch surface casing will be extracted. These will be added to the EMP.

### **Task C - Environmental Monitoring for One (1) Year**

Maintain and operate the monitoring stations that were installed as described in Task B above. Download the data sets from these stations and from the SJRWMS and USGS websites and maintain a complete database for the EMP. The monitoring will be conducted for a period of 1-year. At the completion of the monitoring period, all data will be compiled in a format suitable for correlative model input and for submitted of data in an acceptable electronic format. The scope of work includes time and materials, such as travel to each monitoring station to download data, travel and expense of equipment maintenance during the monitoring period and time spent converting the collected data into the right format for subsequent use in correlative models, if necessary.

### **Task D - Radar Rainfall Data**

Obtain radar data from the SJRWMD and review the format. The data provided in GIS shape file format for each month of the 9 year period selected for the transient model. Convert the data for groundwater model, pixel data will be intercepted by the model grid and a weighted average value of rainfall calculated and assigned to each model cell. The data will be converted to inches of rainfall for each model stress period, which range from 122 days to 365 days. The resulting cell by cell data will then have to be imported into the water balance and a new net recharge value will be calculated for each model cell and each model stress period. The resulting net recharge rate will then be entered into the regional groundwater model.

## **Task E – Meetings, Presentations and ‘SJRWMD 2010 Drinking Water Supply Plan’ (2010 DWSP) Coordination**

This task consists of attending meetings, making presentations, coordinating with SJRWMD and the West Volusia Group to identify alternative water supply projects, develop conceptual design, estimate implementation costs and other services as required. The AWS planning, public meetings and AWS project development continues to change over time and QLH/AEI will coordinate the inclusion of WVWS projects into the 2010 DWSP.

### **III. PROGRESS MEETINGS**

The ENGINEER shall schedule monthly meetings with representatives of the West Volusia Suppliers. An allowance for meetings is included in the fee schedule. Professional fees for attendance at meetings will be billed against the established allowance in accordance with the attached fee schedule.

### **IV. SCHEDULE**

The following schedule is proposed for each of the tasks:

Task A	3 months
Task B	3 months
Task C	12 months
Task D	1 month
Task E	8 months

It is the County's preference to have the ability to authorize the tasks, or groups of tasks, independently. Some of the tasks may be performed concurrently. The total time to complete all tasks shall not exceed 16 months.

### **V. COMPENSATION**

Payment for all services will be in accordance with the Standard Contract for Engineering Services. QLH fees include 10% administrative overhead charges applied to subconsultant charges. A copy of the QLH fee schedule is attached as Attachment B. If sales tax becomes due on professional services the County shall reimburse QLH for the additional sales tax cost. Total compensation for all services, materials, supplies and any other items or requirements necessary to complete the work described herein shall NOT EXCEED \$151,000. This amount being further broken down as follows:


<b>Task A.</b>	<u>Peer Review of Transient Groundwater Model</u>	
	1. Sub-Consultant Fees (see attached proposal from SWS)	\$ 20,000
	2. QLH Fees and charges	\$ 5,000
	Sub-total	\$ 25,000

<b>Task B.</b>	<u>Implementation of the EMP and Well Drilling</u>	
	1. Sub-Consultant Fees (see attached proposal from AEI)	\$ 53,685
	2. QLH Fees and charges	<u>\$ 6,315</u>
	Sub-total	\$ 60,000
<b>Task C.</b>	<u>Environmental Monitoring for One (1) Year</u>	
	1. Sub-consultant Fees (see attached proposal from AEI)	\$ 13,480
	2. QLH Fees and charges	<u>\$ 1,520</u>
	Sub-total	\$ 15,000
<b>Task D.</b>	<u>Radar Rainfall Data</u>	
	1. Sub-consultant Fees (see attached proposal from AEI)	\$ 9,460
	2. QLH Fees and Charges	<u>\$ 1,540</u>
	Sub-total	\$ 11,000
<b>Task E.</b>	<u>Meetings, Presentations and 'SJRWMD 2010 DWSP Coordination'</u>	
	1. Sub-consultant Fees (see attached proposal from AEI)	\$ 17,700
	2. QLH Fees and charges	\$ 21,300
	3. Printing Allowance	<u>\$ 1,000</u>
	Sub-total	\$ 40,000
	<b>Total Tasks A - E</b>	<b>\$151,000</b>

Thank you for this opportunity to continue to be of service. If you have additional questions, or required further assistance, please do not hesitate to call.

Respectfully,  
 QUENTIN L. HAMPTON ASSOCIATES, INC.

  
 Brad T. Blais, P.E.  
 Vice President

  
 Mark A. Hampton, P.E.  
 President

BTB/MAH:el

**TASK ASSIGNMENT  
NO.**

**TO THE  
CONTRACT FOR PROFESSIONAL CONSULTING SERVICES FOR  
UTILITIES ENGINEERING SERVICES  
BETWEEN THE COUNTY OF VOLUSIA  
AND THE FIRM OF**

**QUENTIN L. HAMPTON ASSOCIATES  
P.O. DRAWER 290247  
PORT ORANGE, FLORIDA 32129-0247**

**PROJECT TITLE: WEST VOLUSIA WATER SUPPLY PLAN, PHASE II**

**PROJECT NUMBER:**

**I. PURPOSE**

This is an attachment to the Contract for Professional Consulting Services for Utilities Engineering Services dated March 13, 2006 between the County of Volusia (COUNTY) and the consulting firm of Quentin L. Hampton Associates (CONSULTANT) and made a part thereof. The purpose of this Task Assignment is to specify the required services of the CONSULTANT.

**II. SCOPE OF WORK**

The CONSULTANT'S Scope of Work for **West Volusia Water Supply Plan, Phase II** shall include the following tasks as outlined and attached hereto as Exhibit A.

**III. WARRANTY**

The CONSULTANT warrants that the plans, specifications, and studies produced as a result of this contract are complete, correct, and suitable for the purpose intended.

**IV. AMERICANS WITH DISABILITIES**

The CONSULTANT shall ensure compliance with all applicable governmental accessibility standards, including without limitation those applicable under Section 35.151 CFR (this is for vertical construction).

**V. PLANS AND DOCUMENT OWNERSHIP**

The original plans and specifications shall become the property of the COUNTY upon completion of this project. Computer design systems are to be used in the preparation of the construction plans. A copy of all the electronic data and drawing

files are to be submitted on a CD media in AutoCAD version 2007 or earlier, but no earlier than version 2000. If other software is used, it is to be translated in the above-mentioned software. The supplied disks are to include all point and working files. All documents, except for the Bid form and plans, shall be prepared in Microsoft Word format (this is for plans).

#### **VI. DELIVERABLES**

The CONSULTANT shall submit to the COUNTY report outlining research and sources – One (1) hard copy and one (1) electronic file (Microsoft Word and PDF).

#### **VII. SCHEDULES AND TIME FOR COMPLETION**

This Task Assignment shall commence upon Notice to Proceed and continue until the scope of work is completed and accepted by the county. Within ten (10) days after receipt of Notice to Proceed (or other authorizing document), the CONSULTANT shall provide a proposed schedule of payments tied to deliverables which is acceptable to the COUNTY. If schedule is altered due to unforeseen delays the County's project manager shall be notified at once. Failure to meet the scheduled completion date may be grounds for Termination for Default.

#### **VIII. METHOD OF COMPENSATION**

Payment will be in accordance with the Contract for Professional Consulting Services No. 06-SQ-19RB for Utilities Engineering Services. Compensation for all services, material, supplies, training and any other items or requirements necessary to complete the work as described herein, shall not exceed a grand total amount of ONE HUNDRED FIFTY-ONE THOUSAND DOLLARS and 00/100 (\$151,000.00) for reimbursable expenses payable at the rates attached hereto as Exhibit "A". At no time shall work fees exceed said amount of compensation herein without a written and executed amendment.

IN WITNESS WHEREOF, the parties have made and executed this Agreement, the day and year first above written.

**CONSULTANT:** Quentin L. Hampton Associates, Inc. (CORPORATE SEAL)

BY: \_\_\_\_\_  
(Signature)

BY: \_\_\_\_\_  
Brad T. Blais, P.E., Vice President

Date: \_\_\_\_\_

ATTEST:  
\_\_\_\_\_

=====

**TECHNICAL PROVISIONS OF CONTRACT AND BUDGETARY REQUIREMENTS APPROVED**

BY: \_\_\_\_\_  
Gloria Marwick  
Director of Water Resources & Utilities

BY: \_\_\_\_\_  
George Recktenwald  
Director of Public Works

Date: \_\_\_\_\_

Date: \_\_\_\_\_

=====

**APPROVED AS TO COMPLIANCE WITH PURCHASING & CONTRACTS POLICIES AND PROCEDURES**

BY: \_\_\_\_\_  
Gregory B. Herlean, CPPO, CPCM  
Director of Purchasing & Contracts

Date: \_\_\_\_\_

=====

**COUNTY OF VOLUSIA**  
**BY: COUNTY MANAGER OF VOLUSIA COUNTY, FLORIDA**

(SEAL)

BY: \_\_\_\_\_  
Mary Anne Connors  
Deputy County Manager

Date: \_\_\_\_\_

ATTEST:  
\_\_\_\_\_

=====

**APPROVED AS TO FORM AND LEGALITY FOR THE USE AND BENEFIT OF VOLUSIA COUNTY ONLY**

BY: \_\_\_\_\_  
Daniel Eckert  
County Attorney

Date: \_\_\_\_\_

**ATTACHMENT 1 to EXHIBIT 'A'**

**Proposal from Schlumberger Water Services (SWS)  
For Transient Groundwater Model Peer Review  
Task A**

## EXHIBIT A

### Project Scope

Quentin L. Hampton Assoc., Inc. (the Client) has subcontracted Mr. Nick Andreyev to prepare a transient groundwater flow model for western Volusia County. The model is being performed primarily to evaluate minimum flows and levels (MFL) issues related to Blue Springs.

Schlumberger Water Services Inc. will perform an independent review of the Andreyev model. The review will include an evaluation of the following items:

- Conceptual model
- Assumptions
- Boundary conditions
- Data and input files
- Packages
- Initial conditions
- Calibrations
- Sensitivity analysis
- Output
- Mass balance
- Report

The model files and any documentation will be provided to SWS. SWS lead modeler, Weixing Guo, will spend one day meeting with Mr. Andreyev to discuss the model.

SWS will be prepare a letter report documenting the results of the review. The report review will focus on the 'defendability' of the model, particularly whether the model construction and procedures, data used, calibration, and interpretations are appropriate.

**EXHIBIT B**

**Project Cost/Rates**

SWS will provide consulting services on a lump sum for \$20,000.00.

Any additional requested work will be performed on a negotiated lump sum or time and materials basis.

## **EXHIBIT C**

### **Project Schedule**

The work will be completed within 6 weeks of receipt of authorization to proceed and copies of all model files and documentation.

**ATTACHMENT 2 TO EXHIBIT 'A'**

**Proposals from  
Andreyev Engineering, Inc. (AEI)  
For Tasks B, C, D and E**



# Andreyev Engineering, Inc.

SANFORD OFFICE  
4055 St. John's Parkway  
Sanford, Florida 32771  
407-330-7763  
Fax: 407-330-7765

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

October 21, 2009

**TO:** Quentin L Hampton Associates, Inc.  
P.O. Drawer 290247  
Port Orange, FL 32129-0247

Attention: Brad T. Blais, P.E.

**Subject:** **Proposal**, Implementation of EMP for Blue Spring, Monthly  
Monitoring Services and Technical Assistance & Meetings.  
Southwest Volusia County Region, Florida

---

Dear Mr. Blais:

Andreyev Engineering, Inc. (AEI) submits this proposal for continuing engineering and field testing/monitoring services associated with the on-going Southwest Volusia Utilities Group's efforts to assess the validity of the alternative water supply plan developed by the SJRWMD. Specifically, this proposal includes implementation of the Blue Spring monitoring plan, collection and compilation of data, technical assistance with alternative water supply (AWS) planning and conceptual project development, attend meetings and presentations as necessary.

The scope of work included in this proposal is based on the specific tasks needed to implement the environmental monitoring plan for Blue Spring and the subsequent data collection for a period of 1 year. We have also included the services anticipated for the on-going AWS planning with the SJRWMD, development of conceptual designs for various water source and aquifer recharge projects, attendance of meetings and presentations.

We trust that this proposal is acceptable. If you have any questions or comments, please do not hesitate to contact our office at 407-330-7763.

Sincerely,  
**Andreyev Engineering, Inc.**

Nicolas E. Andreyev, P.E.  
President

## Scope of Work

(Tasks 1 – 4 were included in August 18, 2008 proposal)

### Task 5: Implementation of the Environmental Monitoring Plan

For this task, we propose to implement the environmental monitoring plan as described in AEI's report dated August 16, 2009. However, the installation of the monitoring wells was excluded from this proposal, per our discussions, to allow the cities and the county to contract directly with well drillers. The work in our proposal will include installation of four (4) data loggers in the three (3) new wells and one (1) existing well, installation of two (2) data loggers in lakes, coordinate with well drillers to install the three (3) new wells and associated engineering and field coordination services to implement the monitoring plan.

The following is a breakdown of the scope of work and cost estimate for Task 5:

1. Mobilization of men and equipment to install data loggers.....	\$300.00
2. Water level and atmospheric pressure recorders (1 existing site and 3 new sites):	
4 level TROLL 500 pressure transducers @ \$1,400.00/ea. ....	\$5,600.00
4 vented installation cables @ \$720.00/ea.....	\$2,880.00
Software and connection cables .....	\$575.00
3. Lake level recorders (Three Island and Big Lake)	
2 Ecotone 80 level recorders @ \$1,300.00/ea .....	\$2,600.00
4. Installation of water level recorders	
3 crew days @ \$600.00/day.....	\$1,800.00
5. Engineering Services (estimated) .....	\$4,850.00
6. Field Geologist Services (estimated) .....	\$2,600.00
7. Drafting Services (estimated).....	\$440.00
8. Secretarial Services (estimated) .....	\$180.00
<b>Total for Task 5 .....</b>	<b>\$ 21,825.00</b>

**Task 6: Environmental Monitoring For One (1) Year**

For this task, we propose to maintain and operate the monitoring stations that were installed as described in Task 5 above. We will download the data sets from these stations and from the SJRWMD and USGS websites and maintain a complete database for the EMP. The monitoring will be conducted for a period of 1-year. At the completion of the monitoring period, all data will be compiled in a format suitable for correlative model input and for submitted of data in an acceptable electronic format. The scope of work includes time and materials, such as travel to each monitoring station to download data, travel and expense of equipment maintenance during the monitoring period and time spent converting the collected data into the right format for subsequent use in correlative models, if necessary.

The following is a breakdown of the scope of work and cost estimate for Task 6:

1. Download 4 well data loggers and 2 lake level logger Once a month for 12 months @ \$550/event.....	\$6,600.00
2. Download data from SJRWMD and USGS websites & convert data Once a month for 12 months @ \$250/event .....	\$3,000.00
3. Maintenance of data logger equipment & replacement of batteries Estimated total for all equipment.....	\$1,000.00
4. Engineering Services to Coordinate and Manage (estimated).....	\$2,000.00
5. Drafting/Technical Support Services (estimated).....	\$700.00
6. Secretarial Services (estimated).....	<u>\$180.00</u>
<b>Total for Task 6 .....</b>	<b>\$ 13,480.00</b>

**Task 7: Meetings, Presentations, AWS Planning**

This task will consist of attending meetings, making presentations, coordinating with SJRWMD and the West Volusia Group to identify alternative water supply projects, develop conceptual design, estimate implementation costs and other services as required. The AWS planning, public meetings and AWS project development continues to change over time and it is impossible to estimate the amount of time and effort that might be needed for this task. This work will be invoices on the basis of time and materials and the budget may need to be adjusted from time to time.

For budgetary purposes, we propose to allocate time for 5 to 6 meetings, develop conceptual plans for up to 8 AWS projects, estimate implementation costs for each AWS project and incorporate the projects into the SJRWMD's planning document. We will be working with Quentin L. Hampton & Associates and our scope of work will be limited to hydrogeologic services, geotechnical services, modeling, water capture analysis, development of conceptual plans for the AWS projects and attending various meetings and presentations, as needed.

The following is an estimate of time and cost associated with this task for a period of 6 months:

- 1. Engineering Services (estimated) .....\$12,000.00
- 2. Field Geologist Services (estimated) .....\$4,000.00
- 3. Drafting Services (estimated).....\$1,200.00
- 4. Secretarial Services (estimated) .....\$500.00

**Total for Task 7 .....\$ 17,700.00**

**TOTAL THIS PROPOSAL (TASK 5-7): 2009-2010 .....\$53,005.00**



# Andreyev Engineering, Inc.

*SANFORD OFFICE*  
4055 St. John's Parkway  
Sanford, Florida 32771  
407-330-7763  
Fax: 407-330-7765

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

December 8, 2009

**TO:** Quentin L Hampton Associates, Inc.  
P.O. Drawer 290247  
Port Orange, FL 32129-0247

Attention: Brad T. Blais, P.E.

**Subject:** **Proposal**, Installation of 2 Wells and Collection and Importing of  
Radar Rainfall Data. Southwest Volusia County Region, Florida

---

Dear Mr. Blais:

Andreyev Engineering, Inc. (AEI) submits this proposal to install two Upper Floridan monitoring wells and to upgrade the transient regional groundwater flow model with radar rainfall data. These two tasks will be in addition to the previously submitted proposals, which include Tasks 1 through 7.

### **Task 8: Well Installation for Environmental Monitoring Plan**

The proposed two (2) 4-inch monitoring wells will be installed by first driving an 8-inch steel surface casing to about 50 feet and then drilling an open hole to about 160 feet and finally installing a 4-inch steel casing into the Upper Floridan aquifer system, seated in competent limerock. The 4-inch casing will be fully grouted in place, using neat cement grout. Then, the 8-inch surface casing will be extracted.

It is estimated that competent limerock will be encountered at a depth of about 100 feet. However, if the limerock is found at a shallower or deeper depth, then the cost of installing the wells will be adjusted accordingly, using the unit rates included in this proposal. All other costs, such as mobilization, installation of surface casing, well development and permit fees are not expected to change.

We have assumed that the selected well sites will be accessible to the drilling rigs and will not require clearing or other work to make them accessible. Should clearing or other work be needed, we will request that the county or the city provide these services. We understand that the sites may include existing pumping stations. We have not included a cost to remove or replace existing fences, should it be necessary. A breakdown of the scope of work and cost estimate is provided in the attached "Scope of Work" section of this proposal.

### **Task 9: Radar Rainfall Data**

We have already obtained the radar data from the SJRWMD and reviewed the format. The data was provided to us in GIS shape file format for each month of the 9 year period selected for our transient model. The resolution of the radar data is a pixel of 2km by 2km (1,250 ft by 1,250 ft), which is larger than our model grid of 500 ft by 500 ft). To convert the data for our groundwater model, the pixel data will need to be intercepted by the model grid and a weighted average value of rainfall calculated and assigned to each model cell. Then the data will need to be converted to inches of rainfall for each model stress period, which range from 122 days to 365 days. The resulting cell by cell data will then have to be imported into the water balance and a new net recharge value will need to be calculated for each model cell and each model stress period. The resulting net recharge rate will then be entered into the regional groundwater model.

To complete this task we have estimate the approximate time and cost to make the necessary conversions of data, calculation of rainfall, water balance analyses, review of final data and enter the data into the regional groundwater model for continued calibration of the model. We estimate that we can complete this work in about two weeks. A breakdown of the scope of work and cost estimate is provided in the attached "Scope of Work" section of this proposal.

We trust that this proposal is acceptable. If you have any questions or comments, please do not hesitate to contact our office at 407-330-7763.

Sincerely,  
**Andreyev Engineering, Inc.**



Nicolas E. Andreyev, P.E  
President

## Scope of Work

### Task 8: Well Installation for Environmental Monitoring Plan

1. Mobilization & Demobilization of Drilling Equipment, 2 sites @\$1,500/site .....	\$3,000.00
2. Install DR 8-inch steel surface casing to 50 feet Install 8-inch steel surface casings 2 casings @ \$4,800/casing .....	\$9,600.00
3. Install two (2) 4-inch groundwater monitoring wells to 160 feet Drill open hole to 110 ft below 8-inch casing, 220 LF @ \$20.00/LF .....	\$4,400.00
Two 4-inch steel casings, grouted to 100 ft, 200 LF @ \$45.00/LF .....	\$9,000.00
Extract 8-inch steel casing, 100 LF @ \$10/LF .....	\$1,000.00
4. Locking Protection Assembly 6 inch riser, 2 wells @ \$280.00/ea .....	\$560.00
5. Develop Wells 6 hours @ \$150.00/hour .....	\$900.00
6. SJRWMD Well Permits 2 permits @ \$60.00/permit .....	\$120.00
7. Engineering Services to Coordinate and Manage (estimated) .....	\$2,500.00
8. Drafting/Technical Support Services (estimated) .....	\$600.00
9. Secretarial Services (estimated) .....	<u>\$180.00</u>
<b>TOTAL TASK 8 .....</b>	<b>\$31,860.00</b>

### Task 9: Radar Rainfall Data

1. Principal Engineer 20 hours @ \$150.00/hour .....	\$3,000.00
2. Senior Project Engineer/Modeler 40 hours @ \$125.00/hour .....	\$5,000.00
2. Technical Support Services, GIS and Processing 20 hours @ \$55.00/hour .....	\$1,100.00
3. Secretarial Services 8 hours @ \$45.00/hour .....	\$360.00
<b>TOTAL TASK 9 .....</b>	<b>\$9,460.00</b>

**TOTAL FOR TASKS 8 and 9 .....** **\$41,320.00**