



## **GIS ANALYST SENIOR**

**501**

**DEPARTMENT:** James City Service Authority

### **NATURE OF WORK:**

Performs technical work maintaining complex and multilevel mapping systems with the use of Geographic Information Systems (GIS) technology. Involves routine digital geographic information processing and analysis. Applies Computer-Aided Design and Drafting (CADD), and other technical and administrative work, in association with the James City Service Authority (JCSA) water and sanitary sewer systems. Acts as lead worker coordinating day-to-day assignments of GIS Technician, student intern, and JCSA's Global Positioning System (GPS) Operators during the collection of coordinates, and associated infrastructure data.

Work involves the application of administrative and advanced technical skills to a variety of projects, programs, and assignments focused around development and maintenance of the water and sanitary sewer components of the James City County GIS. Work is performed under the general supervision of the JCSA Chief Engineer for Wastewater.

### **ESSENTIAL FUNCTIONS OF THE JOB:**

Develops, revises, and maintains a variety of GIS-generated map layers and cartographic products; performs research and data collection necessary to compile, draft, digitize, code, query, edit, link plans and documents to GIS, and prepare computer-generated maps for dissemination to members of the JCSA staff, public and private industry.

Manages the GPS operation; participates in the collection of global position system (GPS) data for water and sanitary sewer systems and incorporates data into GIS.

Trains and directs operators in the use of GPS and GIS equipment, including acquiring and entering infrastructure data into the GIS system. Troubleshoots problems with system.

Sets standards and objectives for work unit; administers all program areas to include procedural and record-keeping requirements.

Furnishes technical assistance to JCSA Chief Engineers and technical personnel with assignments related to hydraulic modeling of water and sanitary sewer systems.

Performs CADD assignments on an as-needed basis to develop drawings, maps, and standard details for JCSA projects, presentations, and reports.

Researches plans for correct location of structures and easements.

Performs field verification as needed.

Trains and coordinates work with additional JCSA GIS and ArcView users.

Participates in collection of engineering data; performs engineering computations and analysis of collected data; makes recommendations; and assists in preparation of technical studies and reports.

Manages the linking of GIS data to the Hansen work order system. Responsible for coordinating changes and updates with JCSA operations personnel.

Manages the record drawings and filing systems.

Maintains GIS information of JCSA server; including the updating of information and uploading of all data to the server. Maintains computers used and updates data as necessary for GIS operations.

Develops special and complex GIS applications.

Provides map data to, and assists consultants and contractors hired by the county.

Practices continuous learning through individual study, classroom training, seminars, and conferences.

Performs work safely in accordance with department safety procedures and the County Safety Program. Operates equipment safely and reports any unsafe work condition or practice to Supervisor.

May be required to report to work to serve customers during emergency conditions. May be assigned to report at a different time and location and to perform different duties as necessary.

Performs related work as required.

#### **JOB LOCATION AND EQUIPMENT OPERATED:**

Duties are performed primarily in an office setting with occasional visits to sites and facilities located throughout the County. Operates computer hardware/software related to County/JCSA GIS (ArcView) GPS (Pathfinder Office) and CADD (Auto CAD), and other routine office applications. Requires occasional walking, sometimes over rough terrain. Operates GPS equipment in the field when necessary to collect location data for physical features. May operate County vehicle on occasion.

#### **REQUIRED KNOWLEDGE, SKILLS AND ABILITIES**

Comprehensive knowledge of Geographic Information Systems and cartographic principles, including map projections, datum, spatial data types and formats, and topology.

Thorough knowledge of computers, plotters, other associated hardware, computerized databases, and data files.

Considerable knowledge of computer-aided drafting and mapping techniques, uses, and procedures.

Knowledge of GPS data collection, post processing and conversion of data to GIS.

Knowledge of engineering, design, and construction methods, techniques, and procedures.

Knowledge of the mathematical calculations used in the engineering and utility field.

Knowledge of surveying and related computations.

Knowledge of computer programming language, such as Visual Basic, with ability to modify or write programming scripts.

Ability to organize project assignments, maintain maps and other information accurately and systematically, obtain and apply data, and analyze and process such information.

Ability to work with initiative and creativity and a minimum of direct supervision.

Ability to coordinate work with others.

Ability to establish and maintain effective working relationships with coworkers, County officials, consultants, contractors, and the public.

Ability to communicate effectively, both orally and in writing; ability to perform technical writing.

Ability to assist in the maintenance of GIS and GPS equipment and supplies.

Ability to perform physical activity, including walking, climbing, stooping, bending, and occasional lifting.

### **MINIMUM QUALIFICATIONS**

Bachelor's Degree in Engineering, Geography, Cartography, GIS Studies, or related field, or Associate's Degree supplemented by technical level courses in Cartography, GIS, or related field, and considerable related work experience in one or more of these fields; or any equivalent combination of training and experience which provides the above knowledge, skills, and abilities.

### **NECESSARY SPECIAL QUALIFICATIONS:**

Must possess a valid Virginia driver's license and have an acceptable driving record based upon James City County's criteria.

Requires a post-offer drug test.

Successfully complete a college-level course in Visual Basic or equivalent applicable programming language.

Date: October 2006  
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# IDENTIFICATION OF GENERAL APTITUDES AND PHYSICAL REQUIREMENTS

Position Title: GIS Analyst Senior

Position Number: 507

Department: JCSA

Division: Engineering

The Americans with Disabilities Act requires that we identify the general aptitudes and physical requirements needed to perform the job listed above. Individuals who have the position must be able to perform all essential job functions unaided or with reasonable accommodation.

**I. *Mental Abilities:*** General learning ability. The ability to “catch on” or understand instructions and underlying principles.

- Ability to reason and make judgments
- Ability to understand and follow oral instruction
- Ability to understand and follow written instruction
- Ability to guide and/or give instructions
- Ability to make decisions in accordance with established procedures and policies
- Not essential to job function

**II. *Verbal Abilities:*** Ability to understand meanings of words and ideas associated with them and to use them effectively. To comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs. To present information or ideas clearly.

## **1. Speaking/Talking:**

- Answer telephone, radio or switchboard
- Communicating with County officials
- Communicating with general public
- Communicating with vendors
- Communicating with supervisors and/or with other employees
- Communicating with others \_\_\_\_\_
- \_\_\_\_\_
- Not essential to job functions

## **2. Hearing/Listening:**

- Ability to distinguish between different tones
- For communication with County officials, public, vendors, supervisors and/or other employees
- Not essential to job function.

## **3. Reading:** (ability to read and understand text)

- Essential to job function
- Not essential to job function

**III. Numerical:** Ability to perform arithmetic operations quickly and accurately.

- Ability to mentally perform accurate two digit calculations
- Ability to perform accurate calculations aided by a calculator, adding machine or measurement device

**IV. Spatial Abilities:** Ability to comprehend forms in space and understand relationships of plane and solid objects. May be used in such tasks as blue print reading and in solving geometry problems. Frequently described as the ability to “visualize” objects of two or three dimensions, or to think visually of geometric forms.

- Essential function
- Not essential function

**V. Motor Coordination:** Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and quickly.

**1. Manual Dexterity:** Ability to move the hands easily and skillfully. To work with the hands in placing and turning motions.

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Use telephone      | <input checked="" type="checkbox"/> Manipulate computer keyboard and mouse |
| <input type="checkbox"/> Use switchboard               | <input type="checkbox"/> Use postage machine                               |
| <input type="checkbox"/> Use radio/console             | <input type="checkbox"/> Use hand tools                                    |
| <input checked="" type="checkbox"/> Use a calculator   | <input type="checkbox"/> Use power tools                                   |
| <input checked="" type="checkbox"/> Use a copy machine | <input checked="" type="checkbox"/> Other: <u>Digitizer, plotter</u>       |
| <input checked="" type="checkbox"/> Use a fax machine  | <input type="checkbox"/> Not essential to job function                     |

**2. Finger Dexterity:** Ability to move the fingers and manipulate small objects with the fingers rapidly or accurately. For example: electrical wiring.

- Essential to job function
- Not essential to job function

Explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VI. Physical Demands:**

1. **Strength:** The quality, state or property of being strong. The power to withstand strain, force, or stress.

Please check (✓) in appropriate boxes below.

Ability to manipulate materials and/or equipment (lbs)							Frequency of Manipulation		
	5-	5-10	10-15	15-25	25-50	50+	Occasionally	Frequently	Continuously
<b>Lift</b>			✓				✓		
<b>Push/Pull</b>									
<b>Hold/Carry</b>			✓				✓		

Manipulation done from:  ground to waist     waist level     waist to shoulder     above shoulder  
(Check all that apply)

Not essential to job function:  Lift     Push/Pull     Hold/Carry    (Check all that apply)

2. **Climbing:** To move up or mount by using the hands or feet.

<u>Ladders</u>	<u>Stairways</u>	<u>Steps</u>
<input type="checkbox"/> Step stool	<input type="checkbox"/> 1 flight	<input type="checkbox"/> 1-2
<input checked="" type="checkbox"/> 8' to 10' step ladder	<input checked="" type="checkbox"/> 2 flights	<input type="checkbox"/> 2-3
<input type="checkbox"/> Extension ladder	<input type="checkbox"/> 3 or more flights	<input checked="" type="checkbox"/> 4 or more
<input type="checkbox"/> Other _____	<input type="checkbox"/> Other _____	<input type="checkbox"/> Other _____
<input type="checkbox"/> Not essential to job function	<input type="checkbox"/> Not essential to job function	<input type="checkbox"/> Not essential to job function

3. **Ability to Stand, Sit, Walk, and Run:**

Please check (✓) in appropriate boxes below.

	Duration (hours/day)						Occasionally	Frequently	Continuously
	0-1	1-3	3-5	5-7	7-9	9+			
<b>Stand</b>		✓						✓	
<b>Sit</b>					✓			✓	
<b>Walk</b>	✓						✓		
<b>Run</b>									

If walking or running, over what type of terrain?     flat     rough     both

Not essential to job function:     Stand     Sit     Walk     Run    (Check all that apply)

**4. Stooping, Kneeling, Crouching, and /or Crawling:**

To bend forward or down from the middle of the waist or the middle of the back, to bend downwards, to lower oneself and/or to move freely on hands and knees.

**Daily Amounts**

- 0-5x     
  5-20x     
  20-50x     
  50+x  
 Other \_\_\_\_\_     
  Not essential to job function

**5. Reaching, Handling, Fingering, and/or Feeling:**

To stretch out, extend, or put forth a bodily part. To touch or grasp something, by extending or stretching. To touch, lift, hold or operate with the hands.

**Daily Amounts**

- 0-5x     
  5-20x     
  20-50x     
  50+x  
 Other \_\_\_\_\_     
  Not essential to job function

**6. Seeing: To perceive or comprehend by the sense of sight.**

Essential to job function: These characteristics are necessary (Check all that apply)

- Peripheral vision
- Night vision
- Focus (distinctness or clarity)
- Color perception (discriminate between colors)
- Depth perception (determine distance relationship between objects)

**VII. Driving: The ability to transfer or convey in a vehicle.**

<b>Transmission</b>	<b>Standard</b>	<b>Automatic</b>	<b>Multi-Gears</b>
Car	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Van	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Small Truck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medium Truck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Large Truck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Truck w/Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy Bus Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not essential to job function	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (list) _____			