~~#3181, 3182~~

~~County of El Dorado~~
~~July 1999~~

~~GIS~~GEOGRAPHIC INFORMATION SYSTEMS ANALYST I/II

DEFINITION

Under general supervision or direction, performs ~~a variety of~~ professional, technical, and analytical ~~duties in the operation of the County's~~ geographic information ~~system (GIS); performs~~ systems (GIS) duties, including application design, modification, programming, scripting, spatial database design and management, and user support; evaluates and personally participates in the functions necessary to implement and sustain the creation, maintenance, and use of the GIS databases and applications; and performs related duties as assigned.

SUPERVISION RECEIVED AND EXERCISED

Receives general supervision or direction from the Geographic Information Systems Manager. Exercises no direct supervision over staff.

CLASS CHARACTERISTICS

GIS Analyst ~~design, modification and programming~~*I:* This is the entry-level professional classification in the GIS Analyst series. Incumbents perform the more routine duties GIS duties. As experience is gained, assignments become more varied, complex, and difficult; close supervision and frequent review of work lessen as incumbents demonstrate skill to perform the work independently. Positions at this level usually perform most of the duties required of the positions at the II-level, but are not expected to function at the same skill level and usually exercise less independent discretion and judgment in matters related to work procedures and methods. Work is usually supervised while in progress and fits an established structure or pattern. Exceptions or changes in procedures are explained in detail as they arise.

GIS Analyst II: ~~a routine to complex nature in support of the County's GIS; analyses customer and systems~~ This is the fully qualified journey-level professional classification in the GIS Analyst series. Successful performance of the work requires advanced knowledge of GIS analytics, web programming, distributed platforms, and map services to assist GIS clients (internal, external, and the public) in defining their data requirements~~; performs work related to installation, maintenance and modification of GIS~~ and developing and implementing systems ~~and database management; provides user support as needed; performs related work as assigned. Incumbents in this classification will be~~ that meet those requirements, and skill in proactively evaluating program goals and objectives to define and integrate the requirements of clients. Positions at this level are distinguished from the I-level by the performance of the full range of duties as assigned ~~one or more of the following functions: Applications development, systems design and maintenance, database management and networking.~~, working independently, and exercising judgment and initiative. Positions at this level receive only occasional instruction or assistance as new or unusual situations arise and are fully aware of the operating procedures and policies of the work unit.

~~DISTINGUISHING CHARACTERISTICS~~

This class is distinguished from the Sr. GIS Analyst ~~I~~in that the latter is the ~~entry~~ advanced lead-level class and is responsible for planning, scheduling, prioritizing, and overseeing the work of ~~this professional~~ assigned staff.

Positions in the GIS Analyst class series~~. Initially under close supervision, incumbents perform the more routine duties of the class in one or more of the functions listed above. Incumbents may be assigned duties in the County's GIS unit in~~ are flexibly staffed and positions at the ~~Surveyor's Office or in a GIS user department. Incumbents may advance to~~ II-level can be filled by advancement from the ~~higher~~ I-level, after gaining the knowledge, skill, and experience ~~and demonstrating proficiency,~~ which meet the qualifications for and demonstrating the ability to perform the work of the higher-level class.

~~GIS Analyst~~ ~~II is the journey level, fully competent to independently perform duties related to one or more GIS operational function including systems/application design and maintenance, programming, database development and maintenance, networking and/or user support activities. This class is distinguished from GIS Manager in that the latter class has managerial responsibility for operation of the County's GIS system.~~

EXAMPLES OF ~~DUTIES~~ TYPICAL JOB FUNCTIONS (Illustrative Only)

➢ Consults with County departments and the Information Technologies Department, regarding GIS needs and requirements, including identifying, designing, and developing GIS applications, strategies, and procedures for the display, access, as well as the integration and access of geospatial data.
➢ Performs complex GIS database and graphical user interface research, design, analysis, and programming for desktop, web, and mobile applications.
➢ Gathers and analyzes information regarding GIS user and system requirements and develops and/or modifies automated systems to fulfill these needs.
➢ Assists in the development and enforcement of GIS standards and operating procedures.
- ~~Gathers and analyzes information regarding GIS user systems and requirements; develops or modifies automated systems to fulfill these needs.~~
- ~~Conducts feasibility studies and develops system, time, equipment and cost requirements.~~
- Develops ~~GIS program logic and processing steps; codes programs using high level~~ spatially enabled applications using application templates, widgets, scripting languages ~~or fourth generation (state of the art) languages using structural programming techniques.~~
➢ Recommends, and ~~implements~~ development kits as appropriate ~~applications design; plans and develops test data to validate new or modified programs; designs input and output forms and documents~~.
➢ Performs a variety of professional-level work, including modeling applications, spatial analysis, site selection, constraint modeling, maps, graphics, and related materials for internal and external clients in a variety of computing environments including desktop, cloud, and mobile
➢ Performs database administration duties related to table design, view creation, system backup, file maintenance, and user access.
- Installs, tests, and implements vendor supplied modifications to existing software~~.~~
- ~~Develops macro programs, menu interfaces, data entry screen, or other high level programs as required by users; prepares ad hoc reports, maps and cartographic products;~~ functions as ~~required.~~

- ~~Performs assembler and higher language programming to support inter-database and inter-system interfaces required for effective GIS operations.~~
- ~~Analyzes and solves hardware and~~ a liaison with software ~~problems as needed for GIS users and other agencies.~~ vendors on user issues.
- Develops new applications and queries to create and updates map and facilitate analysis.
- Analyzes and maintains ~~overall design of~~ the GIS database, including ~~analysis of goals and objectives~~ gathering and incorporating data and creating tables or layers, standard data definitions, data dictionary, physical database design, security and privacy, and recovery ~~systems~~.
- ~~Plans, coordinates and directs data acquisition and maintenance in support of the County's GIS program; performs layer development, spatial analysis and data analysis projects.~~
- ~~Coordinates data exchange with other departments and agencies.~~
- ~~Identifies, analyzes and maintains the GIS operating environment, including search strategies, access methods, file membership, record relationships and data compression techniques.~~
- ~~Identifies and analyzes new GIS applications on the database; advises staff and users on design strategy.~~
- ~~Writes program documentation, user~~ Serves as a technical resource to County departments, including providing assistance and training in the proper use of GIS data and systems, and recommending, troubleshooting, and providing support for GIS software, databases, and other related applications.
- Designs and programs web-based applications for use by in-house County staff as well as internet applications for County and public GIS users; creates and maintains webpages.
- Implements policies, procedures, and ~~instructions; assists user staff in implementing new or modified programs~~ standards to ensure County-wide consistency and carry-over of applications for multiple users.
- Provides technical direction to GIS Analysts, GIS Technicians, and GIS-users on a project or day-to-day basis.
- Prepares a variety of written correspondence, reports, procedures, documentation, instructions, and other material.
- Maintains accurate records and files related to the GIS function; tracks and evaluates project and system progress.
- ~~Maintains records and prepares periodic and special reports of work performed.~~
- ~~Directs or reviews the work of others on a project or day-to-day basis.~~
- ~~Attendance and punctuality that is observant of scheduled hours on a regular basis.~~
- Monitors changes in GIS system utilization, technology, and applications, recommends improvements and upgrades, and implements changes after approval.
- Attends meetings, conferences, workshops, and training sessions; reviews publications and audio-visual material to become and remain current on principles, practices, and new developments pertinent to GIS and the County.
- Performs ~~other~~ related duties as assigned.

QUALIFICATIONS

Some knowledge and abilities may be gained by employees at the entry (I) level while in a learning capacity.

Knowledge of:

- ~~Systems analysis, design and testing procedures and techniques.~~
- ~~Operating principles and characteristics of computer software/~~The function and role of the County in developing and coordinating a broad-based GIS program with applications for County departments, public agencies, private clients, and the general public.
- Technology, hardware ~~utilized~~and software, and current applications related to GIS systems, including database management, cloud computing and services, implementation, access, security, mapping, report generation, and desktop publishing systems.
- Principles and practices of spatial technology, including geo-databases, feature classes, raster and image processing, event processing, remote sensing, LIDAR, and UAS/URV integration.
- Principles and practices of developing field and mobile data collection applications.
- Principles and practices of publishing, consuming, and securing cloud and internet-based services.
- Principles and techniques in programming, and programming languages used in the County's GIS operations.
- ~~Principles and, techniques of programming, and programming languages utilized in the County's GIS operations.~~
- ~~Job planning, prioritizing and scheduling techniques.~~
- ~~Backup, restore, restart and recovery concepts.~~
- ~~Principles and practices of technical problem solving.~~
- ~~Principles, practices and techniques of providing customer service.~~
- ~~Basic accounting, statistical, business administration and office procedures.~~
- ~~Principles and~~, methods, and terminology of ~~computer aided design or graphic simulation.~~
- ~~Form and document design techniques.~~
- ~~Principles and methods of~~ geography, cartography, geographic information systems, and cartographic composition ~~techniques.~~.
- ~~Automated mapping, and~~Principles and practices of identifying technology needs and issues; researching and evaluating technology and applications, identifying the most effective course of action; and implementing solutions.
- Mathematics used in the creation of maps, tables, and reports showing geographic and ~~spatial~~topographic information ~~processing methods~~and to manipulate tabular/spatial data.
- Topological relationships and principles of geodatabase design.
- Applicable federal, state, and local laws, regulatory codes, ordinances, and procedures relevant to assigned area of responsibility; GIS-related ethical issues.
- Principles and practices of Global Positioning Satellite (GPS) systems, Global Navigation Satellite Systems (GNSS), and other location detection systems.
- Recordkeeping principles and procedures.
- Principles and techniques~~for working with groups and fostering effective team interaction to ensure teamwork is conducted smoothly.
- ~~Database management systems theory, design, implementation, access and security.~~
- ~~Database testing concepts and practices.~~

Skill in:

- Analyzing systems and problems, and developing new or modified Techniques for providing a high level of customer service by effectively dealing with the public, vendors, contractors, external agencies, and County staff.
- The structure and content of the English language, including the meaning and spelling of words, rules of composition, and grammar.
- Modern equipment and communication tools used for business functions and program, project, and task coordination.
- Computers and software programs (e.g., Microsoft software packages) to meet conduct, compile, and/or generate documentation.

Ability to:

- Coordinate a broad-based GIS program that includes effective database development, management, and accessibility through internal local area network (LAN), the County's GIS website, and cloud-based facilities for a variety of County departments, external agencies, and the public.
- Assess user, department or agency needs.
- Analyzing system requirements and selecting and recommend appropriate hardware and software for system design.
- Developing logical procedures and coding their steps into programming instructions.
- Analyzing technical database requirements of GIS applications and users.
- Developing tests to analyze functioning of new or modified hardware, software or database structure in the County's GIS.
- Troubleshooting hardware and, software problems and debugging programs and applications.
- Coordinating activities with vendors, clients and staff.
- Reading detailed technical manuals, program upload/download and interface procedures and programs.
- Preparing clear and concise program documentation, user procedures, reports of work performed, and other written material.
- Translating, and systems to meet these needs; translate GIS user needs into operational programs or systems.
- Instructing Interpret and understand data in various forms, including GIS files, computer-aided drawing files, database files, images, events, and associated metadata, as well as printed maps of various types and sources.
- Perform modeling, mapping, database maintenance, and other GIS professional-level tasks.
- Analyze, design, code, test, and implement GIS and related application software.
- Implement, update, and maintain GIS software, hardware, and related supplemental equipment.
- Understand, interpret, apply, explain, and ensure compliance with federal, state, and local policies, procedures, laws, and regulations; technical written material; and departmental policies and procedures.
- Understand the organization and operation of County departments and outside agencies as necessary to assume assigned responsibilities.
- Instruct both technical and non-technical user staff in the operation of new or revised GIS applications, system modifications, or database structure, including explaining system concepts to non-technical users.
- Exercising sound Prepare clear and effective reports, correspondence, policies, procedures, and other written material, including reports of work performed and tables and/or summaries of analytical results.
- Make accurate arithmetic and statistical computations.
- Analyze situations and identify pertinent problems/issues; collect relevant information; evaluate realistic options; and recommend/implement appropriate course of action.

- Effectively represent the office and the County in meetings with governmental agencies; community groups; various business, professional, and regulatory organizations; and in meetings with individuals.
- Independently organize work, set priorities, meet critical deadlines, and follow-up on assignments.
- Effectively use computer systems, software applications, and modern business equipment to perform a variety of work tasks.
- Communicate clearly and concisely, both orally and in writing, using appropriate English grammar and syntax.
- ~~o~~ Use tact, initiative, prudence, and independent ~~decisions~~judgment within ~~established~~general policy, procedural, and legal guidelines.
- ~~o~~ ~~Establishing and maintaining~~Establish, maintain, and foster positive and effective working relationships with those contacted in the course of ~~the~~ work.

Education and Experience:

~~**GIS**~~*Any combination of the required experience, education, and training that would provide the essential knowledge, skills, and abilities is qualifying.*

Geographic Information Systems Analyst I:

Equivalent to graduation from ~~a~~ an accredited four--year college or university with major ~~course work in~~coursework in geographic information systems, computer science, ~~mathematics~~management information systems, GIS, geography, or a closely related field ~~and one~~:

AND

One (1) year of responsible experience using GIS software.

Geographic Information Systems Analyst II:

Equivalent to graduation from an accredited four-year college or university with major coursework in geographic information systems, computer science, management information systems, GIS, geography, or a closely related field;

AND

Two (2) years of professional GIS experience performing ~~programming and/or database development support work in an automated mapping environment. Additional experience, as outlined above, may be substituted for the education requirement on a year for year basis.~~

~~GIS Analyst II:~~ ~~In addition to the above, two years experience in performing~~ systems analysis, design and maintenance, spatial database analysis and design, or ~~applications~~application development and programming in an automated mapping environment at a level equivalent to the County's class of ~~GIS~~Geographic Information Systems Analyst I.

~~NOTE:~~ ~~The level~~Licenses and ~~scope~~Certifications:

- Possession of, or ability to obtain, a valid California Driver's License by time of appointment and a satisfactory driving record.

PHYSICAL DEMANDS

Must possess mobility to work in a standard office setting and use standard office equipment, including a computer; may need to operate a motor vehicle and visit various County and meeting sites; vision to read printed materials and a computer screen; and hearing and speech to communicate in person, before groups, and over the ~~knowledge and skill listed above are related to~~ telephone. This is primarily a sedentary office classification although standing and walking between work areas may be required. Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate standard office equipment. Positions in this classification occasionally bend, stoop, kneel, reach, push, and pull drawers open and closed to retrieve and file information. Employees must possess the ~~job duties defined~~ability to lift, carry, push, and pull materials and objects weighing up to 15 pounds. Reasonable accommodations will be made for individuals on a case-by-case basis.

ENVIRONMENTAL CONDITIONS

Employees work in an office environment with moderate noise levels, controlled temperature conditions, and no direct exposure to hazardous physical substances. Some positions may be work in the field and occasionally be exposed to loud noise levels, cold and hot temperatures, inclement weather conditions, road hazards, and hazardous physical substances and fumes. Employees may interact with members of the public or with staff under ~~Distinguishing Characteristics.~~emotionally stressful conditions while interpreting and enforcing departmental policies and procedures.