WATER RESOURCES ENGINEER

DEFINITION

Under direction, performs the full range of professional engineering duties, with responsibility for a variety of water resource engineering field and office work in the design, construction, modification and maintenance of the Water Resources Agency's flood control, water quality, and water production, storage, treatment and distribution facilities and systems; ensures work quality and adherence to professional codes, standards and Agency specifications; and performs a variety of professional services relative to assigned area of responsibility.

DISTINGUISHING CHARACTERISTICS

The Water Resources Engineer is the journey level class within the professional Water Resource Engineering series. Incumbents in this class work under general supervision and may be assigned specific projects with minimal supervision; additionally, incumbents may direct the work of engineers, draftspersons, technicians, and others who assist in specific project assignments. Work is reviewed for application of sound professional judgment and close supervision is provided whenever new aspects or types of work are assigned. Typical duties and responsibilities require knowledge of engineering principles and techniques commonly employed in the specific area of assignment. As experience is gained, incumbents are assigned more complex or difficult work that involves conventional types of plans, investigations, surveys, structures or equipment, with relatively few complex features and for which there are precedents. Additionally, incumbents may occasionally be provided the opportunity to lead smaller, short-term projects or studies of limited scope.

The Water Resources Engineer is distinguished from the next higher level of Associate Water Resources Engineer in that the latter is regularly responsible for providing supervision of engineering work through subordinate personnel and is responsible for large scale, complex engineering assignments and projects.

The Water Resources Engineer is distinguished from the next lower level of Water Resource Technician in that the latter is class is the technical level position performing difficult technical assignments involving data collection, analysis and interpretation.

EXAMPLES OF DUTIES

Nothing in this specification restricts management's right to assign or reassign duties and responsibilities to this job at any time.

1. Performs a variety of professional civil engineering duties in the planning, design, development, construction, operation, and maintenance of Agency's flood control, water quality, and water production, storage, treatment and distribution facilities and systems; ensures adherence to professional standards, codes and Agency specifications
2. Conducts various engineering studies, investigations and analyses; participates in preparation of reports regarding issues such as the environmental, hydraulic, geotechnical, seismic, hydrologic, geomorphic, water quality, and treatment process aspects of water supply and flood control facilities and sites
3. Assists in the preparation of engineering specifications, drawings, sketches, cost estimates and other supporting documentation for proposed engineering projects; reviews drawings, plans and other work submitted by external consultants, engineers, contractors and developers for conformance with professional codes, standards and Agency specifications; drafts and prepares technical and administrative correspondence and reports

4. Conducts field, in-plant and office engineering studies related to the research, planning, design, construction, operation and maintenance of flood control and water supply facilities such as channels, culverts, bridges, roads, retaining walls, pipelines, dams, treatment plants, fishways and appurtenant structures
5. Participates in and may coordinate various engineering studies, regulatory or construction permit activities and related projects with Agency staff, outside agencies and consultants ensuring that deadlines, standards and specifications are met appropriately
6. Provides civil engineering support to Agency construction projects and contractors; assists in the inspection of contractor installations as necessary; provides technical support during project construction including design changes, submittal review, request for information from contractors, interpretation of contract documents and assistance with change orders; prepares and reviews construction contract documents as assigned
7. Develops and maintains various databases and computer files; uses engineering software or develops programs to solve specific engineering problems.
8. Reviews statutes and regulations; interprets and applies the regulations with respect to Agency compliance; develops compliance strategies for regulations; may analyze proposed regulations
9. Confers with Agency staff, contractors, the public, and other agencies or organizations as needed regarding assigned work
10. Analyzes programs and projects proposed by other agencies; determines their impact on the Agency; develops recommendations
11. Uses a variety of office and field equipment, such as hydrological measuring devices, surveying equipment, calculators, computers, and related software used in Water Resource engineering

QUALIFICATIONS

A combination of experience, education, and/or training which substantially demonstrates the following knowledge, skills and abilities:

Knowledge and Skills:

Working knowledge of:

1. Principles and practices of hydrology and civil engineering with emphasis on flood control, water quality, and water supply, storage, treatment and distribution systems and facilities
2. Hydrology and engineering math principles; advanced mathematics, including algebra, trigonometry and statistics; nomenclature, symbols, methods, practices, techniques, and instruments used in Water Resource management and planning; methods and techniques of statistical analysis
3. Construction materials, methods, testing, specifications, codes and equipment
4. Drafting techniques, nomenclature, symbols, methods & instruments used in field and office engineering work
5. Computer applications, languages and their engineering applications
6. Applicable codes, regulations, and standards related to Water Resource & civil engineering
7. Environmental regulations and documentation
8. Principles, practices, and theory of hydrogeology and water quality
9. Applicable safety practices
10. Principles and practices of site surveying related to flood control and water supply

11. Terminology, methods, practices and techniques used in technical engineering report preparation
12. Civil engineering theory and design concepts for flood control/hydraulic structures, buildings, bridges, pipelines, dams and water treatment plants

Some knowledge of:

1. Contract administration, grants and project budget reports, contract compliance review for contract specification adherence
2. Geotechnical applications in the design of levees, earthfill dams, soil stability analysis, groundwater quality monitoring and contamination investigation and cleanup.
3. Principles and practices of project scheduling and management including work plans and budgets
4. Construction cost estimating principles and practices
5. Requirements for safe construction methods and performance of operations and maintenance (e.g. close space regulations)

Skill and Ability to:

1. Apply engineering principles and techniques to evaluate and solve difficult water resource and civil engineering problems
2. Read, understand and interpret and effectively communicate complex technical information, such as engineering data, maps, survey notes, legal descriptions and other materials
3. Independently perform detailed analysis of designs, specifications, and plans
4. Perform complex engineering and mathematical calculations
5. Plan, assign and check the work of subordinate staff and consultants/contractors
6. Exercise sound, independent judgment in managing assigned projects
7. Develop and maintain close-working relationships with those contacted in the course of work, such as the public, management and co-workers
8. Deal tactfully and effectively with the public, staff, other agencies, engineering firms, contractors, etc.
9. Provide excellent and courteous customer service
10. Prepare and/or review reports, such as environmental impact reports, data, and correspondence
11. Maintain accurate data and records
12. Operate computer equipment and use computerized mapping, drawing and analysis software, and other related software programs
13. Communicate effectively, both orally and in writing, in order to prepare reports and correspondence, and make presentations before groups for the purpose of explaining complex data
14. Prepare scopes of work, resource allocation, work scheduling, and completion timelines for assigned work and projects

REQUIRED CONDITIONS OF EMPLOYMENT

As a condition of employment, the incumbent will be required to:

1. Possess a valid California Class C Driver's License and maintain a satisfactory driving record, or provide suitable transportation that is approved by the appointing authority.

2. Work under adverse conditions such as inclement weather, dust or silica dust, heat, wind, or environments subject to sudden changes and/or extremes in air temperature, pressure or humidity, work outdoors, on uneven and/or slippery and/or wet ground surfaces, at elevations above ground level, in confined or extremely small work spaces, come into contact with water, petroleum products, lubricants, cleaning solutions or solvents, toxic fumes, liquids or gases, allergens, chemical products requiring MSDS sheets, plant, animal or food material or waste, around moving machinery, vehicles, equipment, hand and/or power tools, electricity, vibration, and in extremely noisy environments.
3. Be available to work weekends, evenings, shifts, and holidays during storm monitoring duty, and during times of emergency and/or disaster situations.
4. Demonstrate the ability to swim safely for 50 yards in order to safely work on and around large bodies of water.
5. Wear and use safety clothing and equipment as required, i.e. safety glasses, gloves, etc.

EXAMPLES OF EXPERIENCE/EDUCATION/TRAINING

Any combination of training, education and/or experience which provides the knowledge, skills and abilities and required conditions of employment listed above is qualifying. An example of a way these requirements might be acquired is:

Experience

Two years of experience in engineering, hydrology, geology, hydrogeology, or a closely related field

AND

Education

Equivalent to completion of a Bachelor's degree in water resources, civil engineering, or a closely related discipline from an accredited college program

OR

Certification

Possession of a valid California Engineer-in-Training (EIT) Certificate with two years of associated professional engineering experience

PHYSICAL AND SENSORY REQUIREMENTS

The physical and sensory abilities required for this classification include:

1. Visual acuity sufficient to function in a typical office environment; to see and read gauges, meters, and other calibrated or precision measuring instruments; read fine print, such as on forms, citations, and labels, standard text and data on electronic screen of a personal computer terminal, and apply visual color discrimination and depth perception.
2. Hearing and speech sufficient to communicate over the radio and on cell phones in field or noisy environments, and to distinguish and identify sounds and voices in a noisy environment; ability to recognize potential danger; to project a voice that can be heard over loud noises.
3. Ability to work outdoors, on uneven ground or floor surfaces, and on slippery surfaces, or come into contact with water, and to work under adverse weather conditions with varying environments, which may include exposure to dusts, heat, cold, odors, toxic agents, noise, smoke, vibrations, wetness, humidity, machinery, bright or dim light, and electrical currents.

4. Dexterity, mobility, and ability to stand, stoop, kneel, reach, bend, crawl, climb, and balance to perform strenuous physical activity and manual labor.
5. Ability to sit for up to an approximate seven to eight (7 to 8) hour timeframe working at a personal computer terminal and performing other duties; some positions may be required to sit in a boat performing duties.
6. Ability to stand in one position without significant movement for up to two (2) hours per workday performing duties; some positions may be required to stand in a boat performing duties.
7. Ability to walk approximately up to six (6) hours per workday performing duties, and mobility to walk on uneven, elevated, slippery or wet ground surfaces to reach worksites to collect data and/or conduct testing.
8. The ability to lift, pull and/or carry stream measuring equipment and materials weighing up to approximately 50 pounds.
9. Eye and hand coordination to drive a vehicle to and from work and field test sites, and manual dexterity to use weight apparatus and perform hydrologic water testing and/or data collection.
10. Sense of smell sufficient to detect and/or distinguish between normal odors and chemical used in water treatment of water quality testing.
11. Mobility and ability to operate light motor vehicles and water vessels.
12. Ability to swim in order to work safely in and around water while performing duties.

CLASS HISTORY

		CLASS DATA	
Class Code:	41E11	Job Group:	06
Established Date:	1991	EEO Category:	P
Revised Date:	October 2008	Work Comp. Code:	7520
Former Title:	WRA Water Resources Engineer	Bargaining/Employee Unit:	J
		FLSA:	E
		MOCO OT:	Y

Prepared by: Gerta McClay, SPHR, IPMA-CP
Management Specialist

Approved by:

/s/ Diane Dinsmore
County Administrative Office

12/31/2008
Date