

STATE OF SOUTH DAKOTA CLASS SPECIFICATION

Class Title: Senior Geologist

Class Code: 40522

A. Purpose:

Oversees and conducts geologic projects, investigations, and research to provide information for proper management, development, conservation, and protection of the earth's mineral and natural resources and the environment.

B. Distinguishing Feature:

Senior Geologists are assigned complete geologic projects, research studies, and investigations; independently carry out assigned portions of natural resources regulatory programs; and work under general supervision.

Geology Specialists provide direct departmental oversight to geologic projects, research, and data collection and analyses; and routinely provide comprehensive geologic information and evaluations to the department secretary, division directors, program administrators, and department boards for critical decisions regarding the development, monitoring, and protection of the earth's mineral and natural resources.

Geologists are entry-level positions and work under direct supervision of other staff for a minimum of one year.

C. Functions:

(These are examples only; any one position may not include all of the listed examples nor do the listed examples include all functions which may be found in positions of this class.)

1. Conducts geologic research to provide data for use in the management, development, conservation, and protection of the earth's mineral and natural resources.
 - a. Prepares work and study plans including requests for personnel, equipment, and supplies.
 - b. Formulates geologic reports and draws maps and cross-sections to explain findings of geologic investigations.
 - c. Plans and supervises test drilling programs to delineate subsurface geologic conditions.
 - d. Maps and interprets geologic conditions by using test hole data, air photos, topographic maps, previous geologic work, and geologic exposures.
 - e. Develops or adapts techniques for collection of geologic samples.
 - f. Compiles and interprets geologic and hydrogeologic data.
2. Conducts geologic projects to provide data required by the department to fulfill contracted agreements or project objectives.
 - a. Compiles and maps geologic and hydrogeologic data.
 - b. Plans and supervises drilling operations.
 - i. Sets number and location of test holes and wells.
 - ii. Oversees construction of test wells.
 - iii. Oversees procedures for test hole and well abandonment.
 - iv. Manages field personnel.
 - c. Writes reports of findings and constructs geologic maps and cross sections to include in reports.
 - d. Purchases equipment and supplies.
3. Conducts inspections and enforces regulations to conserve mineral resources and protect public safety and the environment.

- a. Performs field inspections of mineral development activities such as oil and gas wells, identifies compliance issues, prepares inspection reports, and recommends enforcement actions.
 - b. Scouts drilling sites submitted in permit applications.
 - c. Inspects and provides state criteria for plugging of test holes and wells.
 - d. Investigates spills from oil and gas operations.
 - e. Inspects and recommends approval or disapproval of reclamation of sites disturbed by oil and gas operations.
 - f. Witnesses Mechanical Integrity Tests (MIT) of underground injection control wells and provides test criteria to private operators during tests to ensure compliance with rules.
 - g. Reviews proposed mineral development projects and identifies and recommends solutions related to geologic conditions and problems.
4. Provides technical support to other programs by interpreting well logs, reviewing permit applications, conducting file research and geologic map interpretation, ensuring mineral development operators comply with spill clean-up requirements and underground injection control requirements, and conducting final inspections to ensure effective application of environmental regulations.
5. Performs administrative work to assist department team leaders and program administrators.
 - a. Maintains databases of individual wells of all types.
 - b. Reviews drilling permit applications, sundry notices, plugging procedures, etc., and makes recommendations.
 - c. Prepares, edits, and evaluates reports, maps, and files; and disseminates information to the public, industry, and other government agencies.
 - d. Updates oil and gas test hole maps annually.
 - e. Maintains historical files of geologic information.
 - f. Provides answers to requests for information.
 6. Performs other work as assigned.

D. Reporting Relationships:

Reports to a Natural Resources Administrator. Does not supervise.

E. Challenges and Problems:

Challenged to interpret surface and subsurface geologic conditions. This is difficult because it requires planning and conducting investigative work, most of which is original research, and determining technical research methods. Further challenged to enforce regulations designed to protect the environment while realizing the importance of economic development.

Problems resolved include obtaining critical geologic data at minimum cost; compiling raw data into useful and meaningful maps and reports; keeping project goals on schedule; ensuring wells are constructed, tested, and plugged correctly; and providing technical evaluations and recommendations based on geologic information.

F. Decision-making Authority:

Decisions include what field and office activities are necessary for geologic mapping and the form and content of the end product; methods for acquiring and analyzing data; form and content of responses to requests for technical information; location of drilling sites, and depth and number of test holes; work assignments to field personnel; purchases of materials and equipment within budgeted constraints; interpretation of geologic conditions; content of reports;

when to send notification of violation to mineral development operators; approval of reclamation activities performed by mineral development operators; when to modify plugging and MIT procedures for field conditions; and form, content, and maintenance of databases.

Decisions referred include priority of projects; securing and allocating funding, personnel, and other resources required to complete projects; determining types of hydrogeologic data required; final approval of geologic interpretations; enforcement actions; approval of surface reclamation and plugging bond releases; approval of spill site releases; whether MIT meets conditions set by the Environmental Protection Agency (EPA); purchases of new hardware and software; and final approval of permits.

G. Contact with Others:

Daily contact with other staff to confer on projects and drilling schedules; with federal agencies to confer on joint projects; with utility companies to determine location of buried cables and pipelines; with the public to answer questions; and with regulated industry to monitor operations; weekly contact with United States Geological Survey (USGS) on cooperative projects; monthly contact with public officials to provide information and progress reports; and with other state agencies to confer on joint projects; and annual contact with city and county officials to sign contracts and show work progress.

H. Working Conditions:

Works in a typical office environment and outdoors in all types of weather around drilling rigs, around oil and gas wells, and at spill or disposal sites; may be exposed to dangers relating to utilities, both above and below ground; hazardous materials and infectious bacteria; and physical exertion.

I. Knowledge, Skills, and Abilities:

Knowledge of:

- the sources of technical geologic information;
- department policies, procedures, and standards as they apply to geologic development and classification;
- laws and regulations governing mineral development and protection of public safety and natural resources;
- classification, recognition, origin, and significance of land forms, and land form analyses;
- earth materials;
- field geology and report writing;
- principles of geochemistry;
- geologic spatial methods;
- occurrence, movement, and properties of subsurface water;
- petrology;
- basic principles and terminology of data processing;
- basic principles of research design and development and statistical modeling;
- the principles of effective human relations and external communications.

Ability to:

- use geologic field instruments, interpret field data, and prepare reports;
- prepare, interpret, and use maps, plans, charts, and related graphic material associated with geologic studies and investigations;
- analyze and present technical data effectively;
- assign priorities to work activities based on organizational goals and situational pressures;

- favorably present and promote department priorities, services, and actions internally and externally;
- communicate information clearly and concisely;
- establish and maintain effective working relationships with associates, consultants, and the public.