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## Exploring Aquifers Unit

### Texas Essential Knowledge and Skills (TEKS) Alignment

#### Science

##### §112.22. Science, Grade 6.

(6.1) Scientific processes. The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.

(6.2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations.

(6.3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions.

(6.4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.

(6.6) Science concepts. The student knows that there is a relationship between force and motion.

(6.14) Science concepts. The student knows the structures and functions of Earth systems.

##### §112.23. Science, Grade 7

(7.1) Scientific processes. The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.

(7.2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations.

(7.3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions.

(7.4) Scientific processes. The student knows how to use tools and methods to conduct science inquiry.

(7.5) Science concepts. The student knows that an equilibrium of a system may change.

(7.8) Science concepts. The student knows that complex interactions occur between matter and energy.

(7.12) Science concepts. The student knows that there is a relationship between organisms and the environment.

##### §112.24. Science, Grade 8

(8.1) Scientific processes. The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.

(8.2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations.

(8.3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions.

(8.4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.

(8.5) Scientific processes. The student knows that relationships exist between science and technology.

(8.12) Science concepts. The student knows that cycles exist in Earth systems.

(8.14) Science concepts. The student knows that natural events and human activities can alter Earth systems.

##### §112.46. Aquatic Science

(1) Scientific processes. The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.

- (2) Scientific processes. The student uses scientific methods during field and laboratory investigations.
- (3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions.
- (4) Science concepts. The student knows the components of aquatic ecosystems.
- (5) Science concepts. The student knows the relationships within and among the aquatic habitats and ecosystems in an aquatic environment.
- (6) Science concepts. The student knows the roles of cycles in an aquatic environment.
- (7) Science concepts. The student knows environmental adaptations of aquatic organisms.
- (8) Science concepts. The student knows that aquatic environments change.
- (9) Science concepts. The student knows that geological phenomena and fluid dynamics affect aquatic systems.
- (10) Science concepts. The student knows the origin and use of water in a watershed.  
(The student is expected to:

#### Geology, Meteorology, and Oceanography.

(1) topics that include: characteristics and conditions of the Earth; formation and history of the Earth; plate tectonics; origin and composition of minerals and rocks and the rock cycle; processes and products of weathering; natural energy resources; interactions in a watershed; characteristics of oceans; characteristics of the atmosphere; and the role of energy in weather and climate.

(10) Science concepts. The student knows the interactions that occur in a watershed. The student is expected to:

- (A) identify the characteristics of a local watershed such as average annual rainfall, run-off patterns, aquifers, locations of river basins, and surface water reservoirs;
- (B) analyze the impact of floods, droughts, irrigation, and industrialization on a watershed; and
- (C) describe the importance and sources of surface and subsurface water.

#### Biology.

(1) topics that include: living systems; homeostasis; ecosystems; and plants and the environment.

(12) Science concepts. The student knows that interdependence and interactions occur within an ecosystem. The student is expected to:

- (D) identify and illustrate that long-term survival of species is dependent on a resource base that may be limited

#### Environmental Systems.

(1) topics that include:

- biotic and abiotic factors in habitats;
- ecosystems and biomes;
- interrelationships among resources and an environmental system;
- sources and flow of energy through an environmental system;
- relationship between carrying capacity and changes in populations and, ecosystems; and
- changes in environments.

(4) Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:

- B) make observations and compile data about fluctuations in abiotic cycles and evaluate the effects of abiotic factors on local ecosystems and biomes;

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(C) evaluate the impact of human activity such as methods of pest control, hydroponics, organic gardening, or farming on ecosystems;

(5) Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:

- (A) summarize methods of land use and management;
- (B) identify source, use, quality, and conservation of water;
- (C) document the use and conservation of both renewable and non-renewable resources;
- (E) analyze and evaluate the economic significance and interdependence of components of the environmental system; and
- (F) evaluate the impact of human activity and technology on land fertility and aquatic viability.

(7) Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:

- (C) evaluate the depletion of non-renewable resources and propose alternatives; and
- (D) analyze and make predictions about the impact on populations of geographic locales, natural events, diseases, and birth and death rates.

(8) Science concepts. The student knows that environments change. The student is expected to:

- (A) analyze and describe the effects on environments of events such as fires, hurricanes, deforestation, mining, population growth, and municipal development;

#### Chemistry

(4) Science concepts. The student knows the characteristics of matter. The student is expected to:

- (B) analyze examples of solids, liquids, and gases to determine their compressibility, structure, motion of particles, shape, and volume

#### Mathematics

##### §111.22. Mathematics, Grade 6

(6.1) Number, operation, and quantitative reasoning. The student represents and uses rational numbers in a variety of equivalent forms.

(6.8) Measurement. The student solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

(6.10) Probability and statistics. The student uses statistical representations to analyze data.

(6.11) Underlying processes and mathematical tools. The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school.

(6.12) Underlying processes and mathematical tools. The student communicates about Grade 6 mathematics through informal and mathematical language, representations, and models.

(6.13) Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions.

##### §111.23. Mathematics, Grade 7

(7.3) Patterns, relationships, and algebraic thinking. The student solves problems involving proportional relationships.

(7.4) Patterns, relationships, and algebraic thinking. The student represents a relationship in numerical, geometric, verbal, and symbolic form.

(7.9) Measurement. The student solves application problems involving estimation and measurement. The student is expected to estimate measurements and solve application problems involving length (including perimeter and circumference), area, and volume.

(7.11) Probability and statistics. The student understands that the way a set of data is displayed influences its interpretation.

(7.13) Underlying processes and mathematical tools. The student applies Grade 7 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school.

(7.14) Underlying processes and mathematical tools. The student communicates about Grade 7 mathematics through informal and mathematical language, representations, and models.

(7.15) Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions.

#### §111.24. Mathematics, Grade 8

(8.4) Patterns, relationships, and algebraic thinking. The student makes connections among various representations of a numerical relationship. The student is expected to generate a different representation given one representation of data such as a table, graph, equation, or verbal description.

8.5) Patterns, relationships, and algebraic thinking. The student uses graphs, tables, and algebraic representations to make predictions and solve problems.

(8.12) Probability and statistics. The student uses statistical procedures to describe data.

(8.14) Underlying processes and mathematical tools. The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school.

(8.15) Underlying processes and mathematical tools. The student communicates about Grade 8 mathematics through informal and mathematical language, representations, and models.

#### §111.34. Geometry (One Credit)

(6) Underlying mathematical processes. Many processes underlie all content areas in mathematics. As they do mathematics, students continually use problem-solving, computation in problem-solving contexts, language and communication, connections within and outside mathematics, and reasoning, as well as multiple representations, applications and modeling, and justification and proof.

#### §111.35. Precalculus (One-Half to One Credit)

(2) As students do mathematics, they continually use problem-solving, language and communication, connections within and outside mathematics, and reasoning. Students also use multiple representations, applications and modeling, justification and proof, and computation in problem-solving contexts.

#### §111.36. Mathematical Models with Applications (One-Half to One Credit)

(2) As students do mathematics, they continually use problem-solving, language and communication, connections within and outside mathematics, and reasoning. Students also use multiple representations, applications and modeling, justification and proof, and computation in problem-solving contexts.

### Technology Applications

#### §126.12. Technology Applications (Computer Literacy), Grades 6-8

2) Through the study of technology applications foundations, including technology-related terms, concepts, and data input strategies, students learn to make informed decisions about technologies and their applications. The efficient acquisition of information includes the identification of task requirements; the plan for using search strategies; and the use of technology to access, analyzes, and evaluates the acquired information. By using technology as a tool that supports the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create a solution, and evaluate the results. Students communicate information in different formats and to diverse audiences. A variety of technologies will be used. Students will analyze and evaluate the results.

(4) Information acquisition. The student uses a variety of strategies to acquire information from electronic resources, with appropriate supervision.

(5) Information acquisition. The student acquires electronic information in a variety of formats, with appropriate supervision.

(6) Information acquisition. The student evaluates the acquired electronic information.

(7) Solving problems. The student uses appropriate computer-based productivity tools to create and modify solutions to problems.

(8) Solving problems. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge.

(9) Solving problems. The student uses technology applications to facilitate evaluation of work, both process and product.

## Social Studies

### §113.22. Social Studies, Grade 6

(6.4) Geography. The student understands the characteristics and relative locations of major historical and contemporary societies.

(6.5) Geography. The student understands how geographic factors influence the economic development, political relationships, and policies of societies.

(6.6) Geography. The student understands the impact of physical processes on patterns in the environment.

(6.7) Geography. The student understands the impact of interactions between people and the physical environment on the development of places and regions.

(6.9) Economics. The student understands the role factors of production play in a society's economy.

(6.14) Citizenship. The student understands the relationship among individual rights, responsibilities, and freedoms in democratic societies.

(6.20) Science, technology, and society. The student understands the relationships among science and technology and political, economic, and social issues and events.

(6.21) Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of sources including electronic technology.

(6.22) Social studies skills. The student communicates in written, oral, and visual forms.

(6.23) Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others, in a variety of settings.

### §113.23. Social Studies, Grade 7

(7.8) Geography. The student uses geographic tools to collect, analyze, and interpret data.

(7.9) Geography. The student understands the location and characteristics of places and regions of Texas.

(7.10) Geography. The student understands the effects of the interaction between humans and the environment in Texas during the 19th and 20th centuries.

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- (7.11) Geography. The student understands the characteristics, distribution, and migration of population in Texas in the 19th and 20th centuries.
- (7.20) Science, technology, and society. The student understands the impact of scientific discoveries and technological innovations on the political, economic, and social development of Texas.
- (7.21) Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of sources including electronic technology.
- (7.22) Social studies skills. The student communicates in written, oral, and visual forms.
- (7.23) Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others, in a variety of settings.

#### §113.24. Social Studies, Grade 8

- (8.10) Geography. The student uses geographic tools to collect, analyze, and interpret data.
- (8.12) Geography. The student understands the physical characteristics of the United States during the 18th and 19th centuries and how humans adapted to and modified the environment.
- (8.30) Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of sources including electronic technology.
- (H) use appropriate mathematical skills to interpret social studies information such as maps and graphs
- (8.31) Social studies skills. The student communicates in written, oral, and visual forms.
- (8.32) Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others, in a variety of settings.

#### English Language Arts and Reading

##### §110.22. English Language Arts and Reading, Grade 6

- (6.1) Listening/speaking/purposes. The student listens actively and purposefully in a variety of settings.
- (6.2) Listening/speaking/critical listening. The student listens critically to analyze and evaluate a speaker's message(s).
- (6.5) Listening/speaking/audiences. The student speaks clearly and appropriately to different audiences for different purposes and occasions.
- (6.7) Reading/fluency. The student reads with fluency and understanding in texts at appropriate difficulty levels.
- (6.8) Reading/variety of texts. The student reads widely for different purposes in varied sources.
- (6.10) Reading/comprehension. The student comprehends selections using a variety of strategies.
- (6.11) Reading/literary response. The student expresses and supports responses to various types of texts.
- (6.12) Reading/text structures/literary concepts. The student analyzes the characteristics of various types of texts (genres).
- (6.13) Reading/inquiry/research. The student inquires and conducts research using a variety of sources.
- (6.15) Writing/purposes. The student writes for a variety of audiences and purposes and in a variety of forms.
- (6.17) Writing/grammar/usage. The student applies standard grammar and usage to communicate clearly and effectively in writing.
- (6.18) Writing/writing process. The student selects and uses writing processes for self-initiated and assigned writing.
- (6.20) Writing/inquiry/research. The student uses writing as a tool for learning and research.
- (6.21) Writing/connections. The student interacts with writers inside and outside the classroom in ways that reflect the practical uses of writing.

(6.22) Viewing/representing/interpretation. The student understands and interprets visual images, messages, and meanings.

(6.24) Viewing/representing/production. The student produces visual images, messages, and meanings that communicate with others.

#### §110.23. English Language Arts and Reading, Grade 7

(7.1) Listening/speaking/purposes. The student listens actively and purposefully in a variety of settings.

(7.2) Listening/speaking/critical listening. The student listens critically to analyze and evaluate a speaker's message(s).

(7.5) Listening/speaking/audiences. The student speaks clearly and appropriately to different audiences for different purposes and occasions.

(7.7) Reading/fluency. The student reads with fluency and understanding in texts at appropriate difficulty levels.

(7.8) Reading/variety of texts. The student reads widely for different purposes in varied sources.

(7.10) Reading/comprehension. The student uses a variety of strategies to comprehend a wide range of texts of increasing levels of difficulty.

(7.11) Reading/literary response. The student expresses and supports responses to various types of texts.

(7.12) Reading/text structures/literary concepts. The student analyzes the characteristics of various types of texts (genres).

(7.13) Reading/inquiry/research. The student inquires and conducts research using a variety of sources.

(7.15) Writing/purposes. The student writes for a variety of audiences and purposes and in a variety of forms.

(7.17) Writing/grammar/usage. The student applies standard grammar and usage to communicate clearly and effectively in writing.

(7.18) Writing/writing process. The student selects and uses writing processes for self-initiated and assigned writing.

(7.20) Writing/inquiry/research. The student uses writing as a tool for learning and research.

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(8.1) Listening/speaking/purposes. The student listens actively and purposefully in a variety of settings.

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(8.5) Listening/speaking/audiences. The student speaks clearly and appropriately to different audiences for different purposes and occasions.

(8.7) Reading/fluency. The student reads with fluency and understanding in texts at appropriate difficulty levels.

(8.8) Reading/variety of texts. The student reads widely for different purposes in varied sources.

(8.10) Reading/comprehension. The student comprehends selections using a variety of strategies.

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- (8.11) Reading/literary response. The student expresses and supports responses to various types of texts.
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- (8.22) Viewing/representing/interpretation. The student understands and interprets visual images, messages, and meanings.
- (6.24) Viewing/representing/production. The student produces visual images, messages, and meanings that communicate with others.

#### §110.42. English I (One Credit)

- (1) Writing/purposes. The student writes in a variety of forms, including business, personal, literary, and persuasive texts, for various audiences and purposes.
- (2) Writing/writing processes. The student uses recursive writing processes when appropriate.
- (4) Writing/inquiry/research. The student uses writing as a tool for learning.
- (6) Reading/word identification/vocabulary development. The student uses a variety of strategies to read unfamiliar words and to build vocabulary.
- (7) Reading/comprehension. The student comprehends selections using a variety of strategies.
- (8) Reading/variety of texts. The student reads extensively and intensively for different purposes in varied sources, including world literature. The student is expected to: (B) read in such varied sources as diaries, journals, textbooks, maps, newspapers, letters, speeches, memoranda, electronic texts, and other media. (12) Reading/analysis/evaluation. The student reads critically to evaluate texts.
- (13) Reading/inquiry/research. The student reads in order to research self-selected and assigned topics.
- (15) Listening/speaking/evaluation. The student listens to analyze, appreciate, and evaluate oral performances and presentations.
- (16) Listening/speaking/purposes. The student speaks clearly and effectively for a variety of purposes and audiences.
- (21) Viewing/representing/production. The student produces visual representations that communicate with others.

#### §110.43. English II (One Credit)

- (1) Writing/purposes. The student writes in a variety of forms, including business, personal, literary, and persuasive texts, for various audiences and purposes.
- (2) Writing/writing processes. The student uses recursive writing processes when appropriate.
- (4) Writing/inquiry/research. The student uses writing as a tool for learning.
- (6) Reading/word identification/vocabulary development. The student acquires an extensive vocabulary through reading and systematic word study.
- (7) Reading/comprehension. The student comprehends selections using a variety of strategies.
- (8) Reading/variety of texts. The student reads extensively and intensively for different purposes in varied sources, including world literature.

(13) Reading/inquiry/research. The student reads in order to research self-selected and assigned topics.

(15) Listening/speaking/evaluation. The student listens to analyze, appreciate, and evaluate oral performances and presentations.

(16) Listening/speaking/purposes. The student speaks clearly and effectively for a variety of purposes and audiences.

(21) Viewing/representing/production. The student produces visual representations that communicate with others.