### Directions:

Evaluate the trainee using the rating scale below and check the appropriate number to indicate the degree of competency achieved. The numerical ratings of 3, 2, 1, and 0 are not intended to represent the traditional school grading system of A, B, C, D, and F. The descriptions associated with each of the numbers focus on level of student performance for each of the tasks listed below.

#### Rating Scale:

- **0 - No Exposure** - no information nor practice provided during training program, complete training required.
- **1 - Exposure Only** - general information provided with no practice time, close supervision needed and additional training required.
- **2 - Moderately Skilled** - has performed independently during training program, limited additional training may be required.
- **3 - Skilled** - can perform independently with no additional training.

### 01.0 Our Natural Resources Then and Now

The student will be able to:

<table>
<thead>
<tr>
<th>Task</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define terms associated with natural resources</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Define and discuss the concept of natural resources</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>List and describe the major categories of natural resources in America</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain what makes something a natural resource</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain why nature's resources once seemed limitless and why this is no longer true</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Describe how the usefulness of a natural resource change over time, and what factors most effect their usefulness</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Indicate the land area of the United States, how much is suitable for farming, and how much is suitable for crop production</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain why there is a water shortage problem in this country</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Indicate how many species of wild animals, birds, and fish have become extinct in this country since colonial times</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Indicated what the forested area of this country was 300 years ago, what it is today, and explain how it can be that our smaller forest area produces more wood today</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain what the direct or indirect source of most of our energy resources is</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>List our key mineral resources and what their known reserves are</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

### 02.0 A History of Conservation in the United States

The student will be able to:

<table>
<thead>
<tr>
<th>Task</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine terms associated with conservation history</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Compare exploitation, conservation, and preservation as they related to natural resources management</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Outline the history of conservation in the United States</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Describe the role of the federal government in conservation</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain why Americans have had such wasteful practices in using our natural resources in the past</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain what would have happened to our fish and game animal populations if sport hunters and fisherman had not fought market hunters</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Indicate who pays for wildlife conservation in this country</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain the Weeks Law of 1911, and why it was important</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain the concept of a soil and water conservation district, and how it works</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain how the federal government helped local farmers and other landowners work to solve their soil and water conservation problems</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Explain why soil and water conservation is a federal concern</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>List the three needs that early water management efforts in America centered around</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>
03.0 Principles of Ecology-Ecosystem Structure
The student will be able to:

0 1 2 3
03.01 Define ecology and explain its subdivision structure
03.02 List the characteristics of all living organisms, and describe the term irritability. Give examples of irritability
03.03 Describe the process of evolution including the concepts of natural selection and adaption
03.04 Explain how genetic change could result in the major changes that occur in evolution and what role the environment plays in evolution
03.05 Determine the term biosphere and explain why the biosphere is considered a closed system naming some closed systems
03.06 Determine the term biome and explain what determines the type of vegetation in a biome
03.07 Define the term ecosystem and explain some common features of all ecosystems
03.08 Describe the abiotic components of the ecosystem and how these factors affect plant and animal life
03.09 Discuss the concept 'range of tolerance'
03.10 Explain a limiting factor and tell what the limiting factor is in most terrestrial ecosystems
03.11 Discuss the terms niche and habitat
03.12 Discuss the statement: no two organisms can occupy the same niche in the same habitat
03.13 Explain an ecological equivalent and give an example

04.0 Principles of Ecology-Ecosystem Function
The student will be able to:

0 1 2 3
04.01 Explain a food chain, discussing the two major types of food chain how they are different and how they are similar
04.02 Sketch several simple food chains and indicate all producers and consumers
04.03 Explain microconsumers and why they are important
04.04 Explain biomass and how it is measured
04.05 Discuss why biomass decreases as we ascend the food chain
04.06 Define the following terms: consumer, producer, trophic level and food web
04.07 Explain cellular respiration and why carbon dioxide is released during respiration in producers and consumers
04.08 Explain the implications of decreasing biomass in the food chain and how this affects the number of higher-level consumers
04.09 Define the terms gross primary productivity and not primary productivity, explaining the most productive regions of the earth and why or why not these can be tapped for food
04.10 Draw the carbon cycle, and describe what happens during the various parts of the cycle
04.11 Draw the nitrogen cycle and list organisms that fix atmospheric nitrogen and why this is critical to the operation of the nitrogen cycle
04.12 Draw and describe the phosphorus cycle
04.13 Define the following terms: predation, commensalism, mutualism, neutralism and competition, comparing them for similarities and differences

05.0 Principles of Ecology-Ecosystem Balance and Imbalance
The student will be able to:

0 1 2 3
05.01 Describe ecosystem stability and give examples of stable ecosystems
05.02 If you were to examine a mature ecosystem over the course of 30 years at the same time each year, discuss why you would expect the number of species in the ecosystem and the population size of each of these species to be the same from year to year or not
05.03 Determine inertia and resilience
05.04 Explain environmental resistance and the role it plays in population balance and ecosystem balance
05.05 Determine the term species diversity. Give evidence that species diversity affects ecosystem stability and any evidence contradicting this idea
05.06 Discuss a mature ecosystem and its major features
05.07 Describe temporary imbalances caused in ecosystems you are familiar with and how the ecosystem returns to normal
05.08 Explain succession and why one biotic community eventually is replaced by another during succession
05.09 Discuss a pioneer community
05.10 Discuss why environmental resistance changes during succession as one community is gradually replaced by another and in what ways human populations change environmental resistance and how that affects our population
05.11 Describe how introducing and removing competitors into an ecosystem can affect ecosystem stability and give examples.

05.12 Discuss why it is necessary for humans to simplify their ecosystem and how it may be avoided—give some examples.

06.0 Concepts of Natural Resources Management
The student will be able to:

06.01 Match the terms and concepts of natural resource management with their definitions.

06.02 Explain the differences between nonexhaustible, renewable, and exhaustible natural resources.

06.03 Discuss the concept of balance in natural ecosystems.

06.04 Discuss the role of food chains in maintaining balanced ecosystems.

06.05 Discuss the role of ecology in human efforts at natural resources management.

06.06 Define an ecosystem.

06.07 Define man's ecosystem.

06.08 Discuss some ways that nature is balanced.

06.09 Trace the human population level over the past 8000 years.

06.10 Discuss differences between conservation and preservation.

06.0 Soil Erosion
The student will be able to:

06.01 Define terms associated with soil erosion.

06.02 Differentiate natural soil erosion from sod erosion caused by humans.

06.03 List the main causes of accelerated soil erosion.

06.04 List and define the major types of soil erosion.

06.05 Explain geological erosion.

06.06 Explain accelerated erosion.

06.07 Discuss how humans cause accelerated erosion.

06.08 List and discuss three types of water-caused erosion.

06.0 Soil Characteristics
The student will be able to:

06.01 Define terms associated with soil characteristics.

06.02 Outline the processes involved in soil formation.

06.03 Describe a mature soil profile.

06.04 Discuss the eight be capability classes.

06.05 Describe soil series and explain how those differ from land capability classes.

06.06 List the major weathering forces.

06.07 Discuss how parent materials differ from rocks and minerals.

06.08 Give the main categories of parent material and define each.

06.09 Differentiate between original tissue and humus, telling which gives topsoil its color.

06.10 Tell how organic-matter content affects the sod.

06.11 List and define six important physical properties of the soil.

06.0 Soil Erosion
The student will be able to:

06.01 Define terms associated with soil erosion.

06.02 Differentiate natural soil erosion from sod erosion caused by humans.

06.03 List the main causes of accelerated soil erosion.

06.04 List and define the major types of soil erosion.

06.05 Explain geological erosion.

06.06 Explain accelerated erosion.

06.07 Discuss how humans cause accelerated erosion.

06.08 List and discuss three types of water-caused erosion.

09.0 Controlling Erosion
The student will be able to:

09.01 Define terms associated with controlling erosion.

09.02 Explain how land capability classes relate to wise soil use.

09.03 Explain why soil erosion control should be important to everyone.

09.04 List the most important thing we can do to control soil erosion.

09.05 Describe the major sources of nonfarm soil erosion.

09.06 Explain why nonfarm landowners should accept responsibility for soil erosion control on their land.

09.07 Explain the relationship between mining or construction and erosion.

09.08 Discuss the importance of conversion of land from farm to nonfarm use in this country and what this implies about the erosion problem.

09.09 Explain why highway construction presents a special erosion problem.

09.10 Discuss the need for erosion control and reclamation in strip mining operations.

09.11 Discuss the need for erosion control and reclamation in strip mining operations.

10.0 Land-Use Planning
The student will be able to:

10.01 Define terms associated with land use planning.

10.02 Explain why land-use planning is important to our ecosystems and to our economy.
10.03 Differentiate between on-farmland-use planning and political land-use planning

10.04 Compare farming for immediate income and farming for long-term income as they relate to soil conservation

10.05 Explain why economic development for short-term profit can be damaging to the economy as a whole in terms of long-run soil erosion

10.06 Explain the most important part of the farm's conservation effort

10.07 Explain how fast farmland is being converted to nonfarm use in America

10.08 Explain how zoning regulations affect land use

11.0 Water Supply and Water Users
The student will be able to:

11.01 Define terms associated with water supply and water users

11.02 Explain the components of the hydrologic cycle

11.03 Explain the main water users

11.04 Identify and discuss the common types of irrigation systems

11.05 Give the three zones of groundwater supply

11.06 Describe how hydroelectric plants affect our environment

11.07 List common ways water is used in recreation

11.08 List five domestic uses of water

12.0 Water Pollution
The student will be able to:

12.01 Define terms associated with water pollution

12.02 Identify the three major water pollution groups

12.03 Explain the four major categories of industrial pollution

12.04 Explain the function of a cooling tower and cooling lagoon

12.05 List and explain the major agricultural pollutants

12.06 Explain the common water pollution control measures

12.07 Explain the "BOD" test, and what it measures

12.08 Explain why water control measures are difficult to implement

13.0 Waste Management
The student will be able to:

13.01 Define terms associated with waste management

13.02 Identify the three major groups of wastes

13.03 Explain how a septic system functions

13.04 Explain primary, secondary, and tertiary sewage disposal systems

13.05 Identify the main solid waste products

13.06 Explain the problem created by asbestos, mercury, and lead

13.07 Explain the main disposal methods commonly used

13.08 Describe the by-product of the waste disposal system and how it is used

13.09 List the automotive by-products creating the largest problem with waste disposal

14.0 Water-Use Planning
The student will be able to:

14.01 Determine terms associated with water-use planning

14.02 Explain the principle water management techniques

14.03 Explain how to remove salt from water

14.04 Identify ways to reuse water

14.05 Explain how water runoff can be controlled in urban areas

15.0 Our Forests and Their Products
The student will be able to:

15.01 Define terms associated with forests and forest products

15.02 Explain the differences between commercial and noncommercial forests - between growing and mature forests

15.03 List and describe the major forest regions of the United States

15.04 Identify the parts of a tree and describe the functions of each part

15.05 Differentiate between pure and mixed forests - between even-aged and all-aged forests

15.06 Determine forest canopy and explain the importance of shade tolerance in the canopy

15.07 Define a forest and tell why a clump of trees in a park is not a forest

15.08 Indicate how much forestland there is in the United States today and how much is commercial forest

15.09 Explain how a tree grows in length and in diameter
15.10 Explain annual rings and how scientists can 'read' them

15.11 Define the following terms
   a. shade tolerant
   b. shade intolerant
   c. dominant
   d. co-dominant
   e. intermediate
   f. suppressed
   g. pure forest
   h. mixed forest
   i. even-aged forest
   j. all-aged forest

16.0 Woodland Management
The student will be able to:

16.01 Define terms associated woodland management
16.02 Define the most common ways to measure wood
16.03 Describe the different methods of harvesting a stand of trees and explain the advantages and disadvantages of each
16.04 Explain why good woodland management is important to (1) the forest owner, (2) the neighbors of the forest owner, (3) the economy as a whole, and (4) you and me
16.05 Explain how a forest can grow faster if the trees are harvested
16.06 Describe the main methods used in forest regeneration
16.07 Tell how we can be getting more forest products from less forest and no more cut trees than we did in 1900
16.08 Explain the following: board foot, cubic foot, cord
16.09 Define diameter at breast height (dbh) and tell how it is measured
16.10 Explain why the height of a tree for sawtimber is measured in logs instead of feet
16.11 List five types of harvest cuttings
16.12 List and describe four methods of forest reproduction and give advantages and disadvantages of each
16.13 List and discuss the four steps in developing a forest management program

17.0 Forest Enemies and Their Control
The student will be able to:

17.01 Define terms associated with forest enemies
17.02 Describe the major insect pests of our forests
17.03 Describe the most important disease problems of our forests
17.04 Outline other enemies of the forest
17.05 Outline woodland management techniques for controlling forest insect problems, disease problems, and problems caused by other forest enemies
17.06 List and describe the types of damage insects cause to trees
17.07 List and describe the four categories of forest insect control measures
17.08 Explain management steps that a forest owner can take to help prevent forest disease problems
17.09 Explain how wildlife damage the forest
17.10 Identify when grazing is a problem in the forest
17.11 Explain how we can help to cut down on environmental damage to forestland

18.0 Fire!
The student will be able to:

18.01 Define terms associated with fire
18.02 List and describe some of the most destructive forest fires in United States history
18.03 Draw and explain the fire triangle
18.04 Explain how fire can be used as a positive tool in woodland management
18.05 Describe the anatomy of a typical forest wildfire
18.06 Explain how fire fighters find and attack a forest wildfire
18.07 Identify the main causes of forest fires in the United States
18.08 List and describe the three types of forest fires
18.09 List some techniques being used in the prevention of forest fires

19.0 Fish and Wildlife in America
The student will be able to:

19.01 Define terms associated with fish and wildlife
19.02 Explain the difference between extinct and endangered species of wildlife
19.03 Discuss endangered mammals, birds, and fish species
19.04 Explain how various species of animals became extinct
19.05 Define wildlife
19.06 Using fur trapping as an example, explain how humans have caused the extinction of wildlife
19.07 Explain how each of the following became endangered
   a. passenger pigeon
   b. Carolina parakeet
   c. heath hen
   d. labrador duck
   e. bighorn sheep
   f. polar bear
   g. key deer
   h. wolf
   i. mountain lion
   j. whooping crane
   k. bald eagle
   l. ivory-billed woodpecker
   m. prairie chicken

20.0 Game Management
The student will be able to:
20.01 Define terms associated with game management
20.02 Identify the habitat requirements of wildlife
20.03 Discuss the difference between an euryphagous and stenophagous animal
20.04 Explain the most commonly accepted methods of game management
20.05 Explain how an individual landowner can employ game management techniques
20.06 Discuss major legislation affecting game management
20.07 Explain the difference between home range and territory
20.08 Explain how a woodland should be managed to increase game populations
20.09 Discuss how wildlife is coordinated with other natural resources
20.10 Discuss the advantages and disadvantages of hunting
20.11 Explain how controlling predators helps manage game
20.12 Differentiate between carrying capacity and population density

20.13 Discuss what the private landowner can do to increase game in an area
20.14 Discuss the agencies that the private landowner can contact to get technical assistance in game management procedures
20.15 Discuss the six major laws concerning game management and what these laws have accomplished

21.0 Marine Fisheries Management
The student will be able to:
21.01 Define terms associated with marine fisheries management
21.02 List and explain the ways the ocean is zoned
21.03 Describe the types of ocean water movements, including waves, tides, and currents
21.04 Know the characteristics of marine fish, marine shellfish, and marine mammals
21.05 Explain the characteristics of the estuarine ecosystem
21.06 Discuss how the ocean can be artificially cultivated
21.07 Explain how salinity is measured
21.08 Explain the role of plankton in the biological ocean
21.09 Explain the life cycle of the salmon
21.10 Explain what is meant by
   a. bait fishing
   b. long-lining
   c. purse seining
21.11 Explain the life cycle of the shrimp, oyster, and lobster
21.12 Explain the life cycle of the whale
21.13 Explain modern whaling techniques

22.0 Freshwater Fishery Management
The student will be able to:
22.01 Define terms associated with freshwater fishery management
22.02 Explain the zones of the lake and the habitat of each
22.03 Discuss the uses and management of a farm pond
22.04 List the characteristics of the common freshwater fish
22.05 Explain the main management procedures for freshwater fisheries
22.06 Describe the habitat requirements of largemouth bass, bluegill and channel catfish, rainbow and cutthroat trout
22.07 Explain the common rush sampling techniques
22.08 Explain why you would want to fertilize a lake
22.09 Describe how fishing regulations are determined
22.10 Indicate the best temperature for fish production
22.11 Indicate at what pH level fish grow best
22.12 Explain how it is determined if the water is too muddy to produce fish

23.0 Recreation on Public Lands
The student will be able to:

23.01 Define terms associated with recreation on public land
23.02 Discuss the recreational possibilities on public land
23.03 Explain the federal government’s main natural resource and recreation programs
23.04 Explain why our public lands are misused and abused
23.05 Explain why there has been an increase in recreational activities in recent years
23.06 Describe how the national parks are classified
23.07 List the national parks located in your state
23.08 Explain the system of island trusts
23.09 Explain which type of national trail does not allow motorized vehicles and which does
23.10 List the categories of wild and scenic rivers
23.11 Explain how state governments provide recreation areas

24.0 Outdoor Safety
The student will be able to:

24.01 Define terms associated with outdoor safety
24.02 List the ten commandments of gun safety
24.03 Explain the hunter’s code of ethics
24.04 List the correct safety procedures for using bows and arrows
24.05 List the ten rules for safe snowmobile operation
24.06 Explain basic survival and first-aid techniques
24.07 Explain safe boating procedures
24.08 Describe the common traffic rules for boats
24.09 List the water skiing signals
24.10 List the responsibilities of the hunter to wildlife, the environment, himself, and the habitat
24.11 List what a first-aid kit should contain

25.0 Fossil Fuel Management
The student will be able to:

25.01 Define terms associated with fossil fuel management
25.02 Explain the various ways coal is mined from the earth
25.03 Discuss oil exploration and drilling techniques
25.04 Explain how natural gas is obtained and distributed
25.05 Discuss oil shale, tar sands, and the petroleum potential
25.06 Differentiate between shaft mines, slope mines, and drift mines
25.07 Indicate who governs coal mine safety standards
25.08 Explain how oil is formed
25.09 List at least ten uses of oil
25.10 Identify the unit of measure used for natural gas

26.0 Alternative Energy Sources Management
The student will be able to:

26.01 Define terms associated with alternative energy sources management
26.02 Explain the use of solar energy as an alternative energy source
26.03 Discuss the operation of a nuclear power plant
26.04 Explain the value of geothermal energy, alcohol, methane, hydropower, tidal power, wind, and wood as alternative energy sources
26.05 Discuss the potential of solar energy
26.06 Explain the difference between an active and passive solar energy system
26.07 Define fission

27.0 Metals and Minerals
The student will be able to:

27.01 Define terms associated with metals and minerals
27.02 Explain the principle metal and mineral resources
27.03 List and explain the various metals and mineral including ferrous, nonferrous, scarce, and plant minerals
27.04 Discuss mining principles, resources available, and uses of minerals