

Table 1 National and State of Nebraska Resource Concerns and Quality Criteria					
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation

WATER

Water Quantity – Rangeland Hydrologic Cycle	The capacity to capture, store, and safely release water from rainfall, run-on, and snowmelt (where relevant).	Indicators of Rangeland Health Attribute rating for Hydrologic Cycle are Slight to Moderate or less departure from Ecological Reference Sheet (ESD).	Same as National	Departure from Ecological Reference Sheet (ESD) categories – amount of departure, by numeric value, from Ecological Reference Sheet for the field or planning area/unit. 1=None to Slight, 2=Slight to Moderate, 3=Moderate, 4=Moderate to Extreme, or 5=Extreme	<ul style="list-style-type: none"> • Rangeland Health Assessment • Ecological Site Descriptions
Water Quantity - Excessive Seepage	Subsurface water oozing to the surface restricts land use and management.	Subsurface water is managed to limit periods of saturation that are unfavorable to the present or intended land use. Management complies with wetland policies.	NA	Acres/Year – average annual acres of seep reduced for the field or planning area/unit	NA
Water Quantity - Excessive Runoff, Flooding, or Ponding	The land becomes inundated restricting land use and management.	Excess water amounts and/or rates of flow are controlled, consistent with desired present or intended land use goals and wetland policies.	Same as National	Non Measurable	NA

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Water Quantity - Excessive Subsurface Water	Water saturates upper soil layers restricting land use and management.	Subsurface water is managed to limit periods of saturation compatible with the present or intended land use and wetland policies.	Same as National	Non Measurable	NA
Water Quantity - Drifted Snow	Wind-blown snow deposits and accumulates around and over surface structures restricting ingress, egress, and conveyance of humans and animals.	Snowdrifts are reduced or prevented to allow ingress, egress, and conveyance of humans and animals.	Same as National	Non Measurable	<ul style="list-style-type: none"> • Depth and area measurements • Visual assessment
Water Quantity - Inadequate Outlets	Natural or constructed outlets too small to remove excess water in a timely manner.	Outlets are designed, installed, upgraded or maintained to adequately convey water for present or intended uses.	Same as National	Non Measurable	<ul style="list-style-type: none"> • National Engineering Handbook, part 650 (EFH – Chapters 2,3,7) • Hydrologic models, e.g., HECRAS, TR-20, TR-55

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Water Quantity - Inefficient Water Use on Irrigated Land	Limited water supplies are not optimally utilized.	Land and water management is planned and coordinated to provide optimal use of natural and applied moisture.	Irrigation water is applied according to an irrigation water management plan, which considers plant consumptive use requirements, soil water holding capacity, and minimizes leaching and runoff losses. A minimum on-farm seasonal irrigation efficiency of 50% for gravity / furrow, 60% for surge and 75% for sprinkler will be met.	Acre-inches/Acre/Year – average annual acre-inches of water per acre used more beneficially for the field or planning area/unit	<ul style="list-style-type: none"> • CPED – Center Pivot Evaluation Design • CP Nozzle (runoff potential tool (UNL & NRCS)) • Farm Irrigation Rating Index (FIRI) • Surface Irrigation Model (SRFR) to model infiltration based on length of runs • Irrigation Water Management Enhancement Index • Water Conserved Calculator
Water Quantity - Inefficient Water Use on Non-irrigated Land	Natural moisture is not optimally utilized.	Management provides optimum use of natural moisture for the present or intended land use.	Same as National	Acre-Inches/Acre/Year – average annual acre-inches of water per acre used more beneficially for the field or planning area/unit	<ul style="list-style-type: none"> • Engineering Field Handbook Chapter 2 (EFH-2 software)

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Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition	Sediment deposits in ditches, canals, culverts, and other water conveyances reduce the desired flow capacity.	Conveyance structures are upgraded or maintained to adequately convey water for present or intended uses.	Same as National	Cubic yards – volume of sediment in cubic yards removed to maintain water conveyances for the field or planning area/unit	<ul style="list-style-type: none"> • Volume Calculation • Hydraulics open channel tool (Ohio Engineering Program) • Hydrologic models, e.g., HECRAS, TR-20, TR-55
Water Quantity - Reduced Storage of Water Bodies by Sediment Accumulation	Sediment deposits in water bodies reduce the desired volume capacity.	Water bodies and contributing source areas are treated to allow sufficient water storage for present and intended uses.	Sediment deposition is not exceeding rate expected for design life.	Acre-Inches/Year – average annual reduction in acre-inches in sediment deposition within water bodies for the field or planning area/unit	<ul style="list-style-type: none"> • Watershed delivery ratio multiplied times the average sheet and rill erosion rate of the watershed • Volume calculation for gully erosion reduced.
Water Quantity - Aquifer Overdraft	Water withdrawals exceed recharge rates.	Land and water management are coordinated to conserve aquifer water levels.	Producer in compliance with Local NRD allocations and Irrigation Water Management requirements.	Acre-Inches/Year – average annual reduction in acre-inches of groundwater overdraft for the field or planning area/unit	<ul style="list-style-type: none"> • Local Natural Resources District approved flow measuring device
Water Quantity – Insufficient Flows in Watercourses	Water flows are not consistently available in sufficient quantities to support ecological processes and land use and management.	Authorized uses and management of water are coordinated to minimize the impacts on watercourse flows.	NA	Non Measurable	NA

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Water Quality - Harmful Levels of Pesticides in Groundwater	Residues resulting from the use of pest control chemicals degrade groundwater quality.	Pesticides are applied, stored, handled, disposed of, and managed so that groundwater uses are not adversely affected.	Risk assessment tool results in LOW leaching rating or appropriate mitigation practice(s) applied to reduce risk. Reference FOTG 595.	Non Measurable	<ul style="list-style-type: none"> WIN-PST or University of Nebraska Weedsoft Software NAPRA Vadose zone and groundwater chemical sampling and assay
Water Quality - Excessive Nutrients and Organics in Groundwater	Pollution from natural or human induced nutrients such as N, P, and organics (including animal and other wastes) degrades groundwater quality.	Nutrients and organics are stored, handled, disposed of, and applied such that groundwater uses are not adversely affected.	Risk assessment tool results in LOW rating or appropriate mitigation practice(s) applied to reduce risk. Reference FOTG 590.	Non Measurable	<ul style="list-style-type: none"> Nitrate Leaching Index (Refer to S-590 practice specifications Table 1) http://efotg.sc.egov.usda.gov/references/public/NE/NE590s.pdf Farm*A*Syst
Water Quality - Excessive Salinity in Groundwater	Pollution from salts such as Ca, Mg, Na, K, HCO ₃ , CO ₃ , Cl, and SO ₄ degrades groundwater quality.	Salts are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	NA	Electroconductivity (EC) – average reduction in EC for the field or planning area/unit	NA
Water Quality - Harmful Levels of Heavy Metals in Groundwater	Natural or human-induced metal pollutants present in toxic amounts degrade groundwater quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	NA	Non Measurable	NA

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Water Quality - Harmful Levels of Pathogens in Groundwater	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades groundwater quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	NA	Non Measurable	NA
Water Quality - Harmful Levels of Petroleum in Groundwater	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade groundwater quality.	Petroleum products are used, stored, handled, disposed of, and managed such that groundwater uses are not adversely affected.	NA	Non Measurable	NA
Water Quality - Harmful Levels of Pesticides in Surface Water	Pest control chemicals present in toxic amounts degrade surface water quality.	Pesticides are applied, stored, handled, disposed of, and managed such that surface water uses are not adversely affected	Risk assessment tool results in LOW runoff rating or appropriate mitigation practice(s) applied to reduce risk. Reference FOTG standard 595.	Non Measurable	<ul style="list-style-type: none"> • WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) • Pesticide application records
Water Quality - Excessive Nutrients and Organics in Surface Water	Pollution from natural or human induced nutrients such as N, P, and S (Including animal and other wastes) degrades surface water quality.	Nutrients and organics are stored, handled, disposed of, and managed such that surface water uses are not adversely affected.	P-Risk assessment tool results in LOW rating, or a MEDIUM rating with appropriate mitigation practice(s) applied to reduce risk. Reference FOTG standard 590.	Non Measurable	<ul style="list-style-type: none"> • P index (phosphorous) • Surface water chemical/particle sampling and assay

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<p>Water Quality – Excessive Suspended Sediment in Surface Water</p>	<p>Excessive concentrations of suspended sediment or organic particles degrade surface water quality.</p>	<p>The delivery or re-suspension and transport of fine sediment and organic particles are managed so that surface water uses are not adversely affected.</p>	<p>Sheet and rill erosion less than or equal to “T” and ephemeral gully erosion controlled. Permanent vegetation at least 20 feet wide is maintained directly adjacent to streams, lakes, ponds, and permanent wetlands to filter runoff water from adjacent cropland. Riparian areas and urban areas with livestock or human use will be managed to avoid uncontrolled use adjacent to streams and perennial surface water.</p>	<p>Tons/Acre/Year – average annual tons of sediment/materials per acre kept from entering surface water for the field or planning area/unit</p>	<ul style="list-style-type: none"> • Current sheet and rill erosion prediction tool in Section I of FOTG • Volume calculation (by hand or with NE-Gully Spreadsheet found in Section IV tools of eFOTG)
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Water Quality – Excessive Turbidity in Surface Water	Excessive concentrations of suspended sediment, organic particles, algae, or other sources of turbidity degrade surface water quality.	Excessive suspended sediment, organic particles is managed so that surface water uses are not adversely affected.	NA	Nephelometric Turbidity Units (NTU) measured with calibrated turbidimeter. The degree of transparency of lake water can be determined by the use of a secchi disk (depth in inches).	NA
Water Quality - Excessive Salinity in Surface Water	Pollution from salts such as Ca, Mg, Na, K, HCO ₃ , HCO ₃ , CO ₃ , Cl, and SO ₄ degrades surface water quality.	Salts are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	NA	Electroconductivity (EC) – average reduction in EC for the field or planning area/unit	NA
Water Quality - Harmful Levels of Heavy Metals in Surface Water	Natural or human-induced metal pollutants are present in toxic amounts that degrade surface water quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	NA	Non Measurable	NA
Water Quality - Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality.	Use and management of land and water are coordinated to minimize impacts on surface water temperatures.	NA	Non Measurable	NA
Water Quality - Harmful Levels of Pathogens in Surface Water	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades surface water quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	NA	Non Measurable	NA

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Water Quality - Harmful Levels of Petroleum in Surface Water	Fuel, oil, gasoline, and other hydrocarbons present in toxic amounts degrade surface water quality.	Petroleum products are used, stored, handled, and disposed of such that groundwater uses are not adversely affected.	NA	Non Measurable	NA
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