



Technical Note – Conservation Planning North Carolina



North Carolina Technical Note – CP-07-01

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North Carolina Instructions for Completing Inventory of Planning Area form

The NC Inventory of Planning Area form is used to document a complete inventory of the client's natural resource, economic, and social information about the planning area and related areas (ex. the watershed). In particular, the inventory is designed to document existing and potential problems, opportunities and clarify concerns. Additionally, it is used to obtain information necessary to comply with National Environmental Policy Act (NEPA) and other environmental laws, regulations, and policies during the inventory that could impact client's current or proposed activities, in order to give the client a base of knowledge upon which conservation decisions can be made. The information gleaned from the document is then used to formulate alternatives.

Use the following information as a guide to assist in completing the form.

- ❖ Client: Record the client's name.
- ❖ Farm/Tract(s): Enter the Farm or Tract Number
- ❖ Date: Enter the date of the site visit.
- ❖ Planner: Enter the planner's initials who inventoried the site
- ❖ Land Use: Circle the land use(s) of the site inventoried
- ❖ SOILS
 - **Loss, Classic Gully Erosion** – *(Visual Assessment required)* Channels that may grow or enlarge from year-to-year by head cutting, lateral widening and deepening. They are too deep to be crossed by normal farming operations. Formula to calculate estimated soil loss is located in eFOTG Section I/Erosion Prediction.
 - **Loss, Ephemeral Gully Erosion** – *(Visual Assessment required)* Small channels caused by surface water runoff degrades soil quality and tends to increase in size. They can be obscured by heavy tillage or annual weeds. They can become classic gullies. Formula to calculate estimated soil loss is located in eFOTG Section I/ Erosion Prediction.
 - **Loss, Sheet & Rill** – *(Visual Assessment and/Client Interview required)* Detachment and transport of soil particles caused by rainfall splash and runoff degrade soil quality. Must calculate RUSLE2. Quality criteria states that erosion should not exceed Soil Loss Tolerance (T).
 - **Loss, Streambank Erosion** – *(Visual Assessment required)* Sloughing of banks caused by any or all combinations of stream flow, over bank flow, unstable soils, obstructions, unstable channel bottom, and/or livestock. Formula to calculate estimated soil loss is located in eFOTG Section I/ Erosion Prediction.
 - **Loss, Wind Erosion** – *(Visual Assessment and/Client Interview required)* Soil erosion caused by wind energy. Use the wind erosion equation to determine if soil is eroding above T. Formula to calculate estimated soil loss from wind erosion is located in FOTG Section I (hardcopy only).

- **Metal Buildup Excessive** – *(Visual Assessment and/Client Interview required)*
 - When sewage sludge (biosolids) is applied, the accumulation of potential pollutants (including arsenic, cadmium, copper, lead, mercury, selenium, and zinc) in the soil shall be monitored in accordance with the US Code, Reference 40 CFR, Parts 403 and 503, and other laws. For more information go to <http://www.epa.gov/ebtpages/watwastewbiosolids.html> .
 - For all animal manure of organic by-product application sites, zinc and copper concentrations must be monitored. Must review NC Mehlich 3 Soil Test and follow eFOTG Section IV, Nutrient Management Standard 590. Note: If pH is 6.0 then the following will occur, If Zinc Index (Zn-I) = 300, peanuts could possibly die if pH<6; if Zn-I=500, toxic level for peanuts; if Zn-I=2000, seek alt. sites for all crops; if Zn-I=3000, toxic level for all crops. If Copper Index (Cu-I) =2000, seek alt. sites for all crops; if Cu-I=3000, toxic level on all crops. Look for visual signs of micronutrient toxicity.
 - Heavy Metals – Ground/surface water pollution problems from human-induced common metals or metal compounds, such as iron, lead, zinc, copper, and cobalt. Look for old equipment. Heavy metals will be in the soil of stream bank; lab testing required.

- **Organic Matter Inadequate** – *(Visual Assessment and/Client Interview required)* Soil organic matter has or will diminish to a level that degrades soil quality. Must calculate RUSLE2 to determine Soil Conditioning Index (SCI). If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system. See eFOTG Section III/Resource Quality Criteria for RMS/Soils/Soil Conditioning Index User Guide for more information or cautions of using SCI that may produce misleading results.

- **Pesticide/ Chemical Residue Buildup** – *(Client Interview required)* Residual pesticides in the soil have an adverse effect on non-targeted plants and animals. Is the landowner applying according to pesticide label instructions? Is the landowner scouting? Does the landowner have a pest management plan? Are the soil residues having a negative impact on non-target plants, animals, and/or humans? For more information see eFOTG Section IV, Pest Management Standard 595. A “Problem Site Analysis” soil test will be needed, if this resource concern is suspected.

- **pH Outside Range for Desired Use** – *(Client Interview required)* pH is not adequate for crop to be grown. pH controls the availability of nutrients for plant utilization. Must review NC current (within 3 years) Mehlich 3 Soil Test for site. Follow soil test lime recommendations for crop to be grown. In general, the target pH is 6.0 for the mineral soil class (w/exception of cotton, alfalfa, Bermuda grass hay, and most vegetable). For more information, see NC Nutrient Management Planning Training Manual.

- **Phosphorus Buildup** – *(Client Interview required)* Phosphorus levels are high in the soil. All commercial fertilizers should be applied according to the soil test recommendations. When manure or other organic by-products are used, the planned rates of phosphorus application shall be based on the Phosphorus Loss Assessment Tool (PLAT) Rating. Must have NC Mehlich 3 Soil Test. Look at soil test P index. Must calculate PLAT.

- **Restrictive Layer/Plow Pan/Compaction** – *(Visual Assessment and/Client Interview required)* Compressed soil particles and aggregates caused by mechanical compaction adversely affect plant-soil-moisture-air relationships. Look for compacted soil due to machinery, livestock traffic, and/or operating on wet soil. A wire flag inserted into the soil until it becomes difficult to push in may be used as an indicator of the compacted soil layer depth. If the flag goes in without difficulty then compaction may not be an issue. Digging a hole and checking it from side to side may also show the compacted soil layer. Also, a dial penetrometer may be used if available; carefully read instructions for proper use and evaluation method.
- **Salinity** – Ground/surface water pollution from common salts, such as sodium, calcium, potassium, boron, and selenium. Look for contamination from irrigation water, tide water, or applied chemicals. Look for signs of salt damage stress in plants or white salt crust on plants or soil.

❖ WATER

- **Drainage Inadequate** – *(Visual Assessment required)* Look for plant stress. Look for seepage, saturated soil, and subsurface water oozing to the surface restricting land use and management. Look for excess runoff, flooding, ponding, or where the land is inundated restricting land use and management. Look for inadequate outlets, natural or constructed outlets that are too small to remove excess water in a timely manner.
- **Supply of Useable Water Inadequate** – *(Client Interview required)* Not enough water available to meet the client's needs (i.e. crop damage, drought, etc.), and or not enough water adequately located to meet the client's needs.
- **Use Inefficient** – *(Visual Assessment and/Client Interview required)* Natural moisture or limited water supplies is not optimally utilized. Look for lack of residue, or crops grown on sandy/gravelly soils with low soil moisture. Look for low plant yields. Look for irrigation water source. Look for over application of irrigation water. Is rill erosion or surface runoff a problem? Consider evaporative losses and calibration of equipment.
- **Contaminant pollution** – *(Visual Assessment and/Client Interview required)*
 - Fuels, oil, and pesticides present in toxic amounts degrade ground or surface water quality. Look for old equipment. Where and how is equipment, fuels, etc. being stored? Look for signs of spillage like stained oil spots and places where vegetation will not grow.
- **Loss, Pesticide Leaching** – *(Visual Assessment and/Client Interview required)* Pesticides leaching into groundwater. Look for the possibility of pesticides being over applied. Does the landowner irrigate? Get pesticide information from landowner. Calculate WinPST to look at the risk of pesticides applied leaving the site. Review water well test data.
- **Loss, Pesticide Runoff** – *(Visual Assessment and/Client Interview required)* Look for pesticide runoff. Look for nearby wells, tile blow holes, streams, ditches, storage of pesticides, etc. Evaluate soil erosion/surface runoff that could contribute to pesticide loss.
- **Nutrient Load** – *(Visual Assessment and/Client Interview required)* Whenever nutrients are mentioned consider the proximity to heavily fertilized cropland and/or animal waste

application fields. Use Water Quality Indicators Guide: Surface Waters 1989 USDA-SCS Chapter 5 for additional help in identifying concern. Look for algae blooms (filamentous algae/pea green water color, mats, or nafts)

- Surface Water – Pollution that results from use of applied plant nutrients with emphasis on phosphorus and total nitrogen including animal and other wastes. Look at Soil Test. Utilize NCANAT for N and P loss evaluations.
- Ground Water – Pollution that results from natural or human induced nutrients such as N, P, K, Ca, Na, Mg, including animal and other wastes applied incorrectly. Look at Soil Test. Utilize NCANAT for N and P loss evaluations.
- **Pathogen pollution** – *(Visual Assessment and/Client Interview required)* Kinds and numbers of viruses, protozoa, and bacteria, transferred in fluid or particulate forms, are present at a level that degrades groundwater/surface water quality. Identify organisms such as fecal streptococcus. Look at soil field conditions for organic matter, texture, moisture content, temperature, and other chemical or physical factors that influence transport and decomposition of microorganisms. Look at pathways that fecal matter could enter water supply. See North American Plant Disease Forecast Center <http://www.ces.ncsu.edu/depts/pp/cucurbit/>
- **Turbidity or Sediment Load** – *(Visual Assessment required)* Observe presence/absence of turbidity or abnormally high sediment transport in surface water Turbidity is reduced clarity of fluids caused by the presence of suspended matter. Complete Stream Visual Assessment Protocol (SVAP) which can be found at the following link: <http://www.nrcs.usda.gov/technical/ECS/aquatic/svapfnl.pdf> May also use Water Quality Indicators Guide: Surface Waters 1989 USDA-SCS p14-15 for additional help in identifying concern.
- **Water Temperature/ Dissolved Oxygen Beyond Limits** – *(Visual Assessment and/Client Interview required)*
 - Temperature – Water temperature is undesirable. Look for change in vegetative canopy or low flow augmentation along streams. Measure temperature with a thermometer. Look for mats of dead algae.
 - Dissolved Oxygen Beyond Limits – Dissolved oxygen and Biological Oxygen Demand (BOD) is found in open water. Look for organic waste, i.e. silage leachate, algae blooms, and sediment in water. Look for fish kills or fish gasping at the surface.

❖ AIR

- **Airborne Contaminants** – *(Visual Assessment and/Client Interview required)*
 - Ammonia (NH₃) – Animal waste and inorganic commercial fertilizers emit ammonia that contributes to odor and contributes to acid rain. Does the landowner incorporate his fertilizer?
 - Chemical drift – Materials applied to control pests drift downward and contaminate/injure non-targeted fields, crops, soils, water, animals and humans. Observe damage to non-target plants.
 - Particles from Dust or Smoke – Particulate matter less than 10 micrometers in diameter (principally soil particles and smoke) are suspended in the air

causing potential health hazards to humans and animals. Does he burn; what, when, where?

- **Odors** – *(Visual Assessment and/Client Interview required)* Land use and management operations produce offensive smells. Have the neighbors' been complaining? Is there an extreme amount of flies?
- **Temperature** – *(Visual Assessment and/Client Interview required)* Temperature (too cold or too hot) reduce animal or plant productivity, impact human comfort and increase energy consumption. Observe signs of heat stress in livestock and plants.

❖ PLANTS

- **Native Plant Diversity Decline** – *(Visual Assessment and/Client Interview required)* The diversity of this habitat, (i.e., woodlot, pasture, etc.) is declining. Is this habitat a monoculture?
- **Suitability Inappropriate to Site or Intended Use** – *(Visual Assessment and/Client Interview required)* Plants are not adapted and/or suited to site conditions or clients objectives. See eFOTG Section III Quality Criteria. Examples: Does this plant control erosion or attract the wildlife the client desires? Does this tree achieve the client's goal of timber production?
- **Reduced Yield, Grazing Pressure Excessive** – *(Visual Assessment and/Client Interview required)* Yields do not meet expected goals due to excess grazing. Must complete Pasture Conditioning Score and use NC Pasture Stick. May want to see landowners' records or grazing plan.
- **Reduced Yield, Nutrient(s) Inadequate** – *(Visual Assessment and/Client Interview required)* Yields are reduced due to lack of sufficient nutrients available to the crop. Identification guide for nutrient deficiency symptoms in crops can be found at <http://www.soil.ncsu.edu/nmp/deficiency/>
- **Damage, Biological Pests(s)** – *(Visual Assessment and/Client Interview required)* Plants are infested with pests. Look for rodents, insects, fungus, disease, etc. Look for pest damage to roots, leaves, stems, etc. To identify pests, use US EPA Agricultural Pest Control Plant Guide
- **Damage, Traffic Excessive** – *(Visual Assessment and/Client Interview required)* Plant growth suppressed due to animal/human traffic. Look for areas that may need to be excluded. Look for wildlife trails or travel ways.
- **Damage, Invasive or Exotic Species** – *(Visual Assessment and/Client Interview required)* Noxious and invasive plants are present. Look for reduced yields among crops due to competition of light, water, and nutrients from invasive species. To help identify and for more information on invasive/exotic species, go to eFOTG Section I/NC Technical References/Biology folder.
- **Tree Density** – *(Visual Assessment and/Client Interview required)* Is forest stand density appropriate for client's objectives? Measure basal area and compare to site index. Use NC-CPA-7a and woodland information stick.

❖ DOMESTIC ANIMALS

- **Forage and Nutrition Inadequate** – *(Visual Assessment and/Client Interview required)* Total feed and forage are insufficient to meet the nutritional and production needs of the kinds and classes of livestock.
 - **Water Supply Poor or Inadequate** – *(Visual Assessment and/Client Interview required)* The quantity, quality, and distribution of drinking water are insufficient to meet the production goals for the kinds and classes of livestock.
 - **Health or Safety Threats** – *(Visual Assessment and/Client Interview required)* Animals exhibit stress, illness, death from lack of shade, disease, parasites, insects, poisonous plants, or other factors. Livestock are not protected sufficiently to meet the production goals for the kinds and classes of livestock.
- ❖ **WILDLIFE or FISH HABITAT** *(Client Interview required to determine the client's species of interest)* Use NC Wildlife Habitat Suitability Index, see eFOTG Section III/Resource Quality Criteria for RMS/Animals.
- **Cover/Food for Desired Species Inadequate** – *(Visual Assessment and/Client Interview required)* Quantity and quality of food is inadequate to meet the life history requirements of the species or group of species of concern.
 - **Barriers to Natural Movement of Desired Species** – *(Visual Assessment)* Habitat has insufficient structure, extent, and connectivity to provide ecological functions and/or achieve management objectives.
 - **Timing & Amount of Water Inadequate for Desired Species** – *(Visual Assessment)* The timing and amount of water do not meet the needs of species the client wants to manage. Use SVAP for aquatic habitat link: <http://www.nrcs.usda.gov/technical/ECS/aquatic/svapfnl.pdf> For wetland and riparian species request assistance from biologist.
 - **Useable Space for Desired Species Inadequate** – *(Visual Assessment)* Habitat not large enough to meet life history requirements of the species or group of concern.
- ❖ **HUMANS**
- **Compatibility with Existing/Planned Land Uses** – *(Visual Assessment and/Client Interview required)* - Are landowner's goals reasonable and feasible for the location? Are there other concerns the client has mentioned that need to be addressed?
 - **Public Health & Safety** – *(Visual Assessment and/Client Interview required)* A potential risk to public health and safety. i.e., warning signs, fencing, blowholes, etc.
 - **Socio-Economic Circumstances** – *(Client Interview required)* – Consider information client gives to you voluntarily i.e., future goals, retirement, heirs, dog's name, spouses name, renter concerns, easements, neighbors, limited income, etc. Do not document, in case file, extremely sensitive information, i.e. types of illnesses, dollar figures to income, etc.
- ❖ **Special Environmental Concerns Potentially Affected:** Please circle To Be Determined (TBD), Absent, or Present for each of the listed concerns accordingly. For definitions on each of the Special Environmental Concerns, refer to the information provided on the NC CPA 52 under Special Environmental Concerns for each subject matter.