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EC98-796 Farm*A*Syst Nebraska's System for Assessing Water Contamination Worksheet 17: Stormwater Management at Residential Sites

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WORKSHEET 17

Nebraska's System for Assessing Water Contamination Risk

Stormwater Management at Residential Sites

Why should I be concerned?

Stormwater is water from irrigation, rain or melting snow that does not soak into the ground. It flows from rooftops, over paved areas and bare soil and across sloped lawns. As it flows, runoff can collect and transport soil, pet waste, livestock manure, salt, pesticides, fertilizer, oil and grease, leaves, litter and other potential pollutants. A heavy rainstorm isn't needed to send pollutants rushing toward streams, wetlands and lakes. A garden hose alone can supply enough water.

Even if your homesite is not on a waterfront, natural surface drainage and constructed storm drains and sewers convey runoff from your property to a nearby body of water or stream. **Contrary to popular belief, most storm sewers do not carry stormwater to wastewater treatment plants.**

Polluted stormwater degrades our lakes, rivers and wetlands. Soil clouds water and degrades habitat for fish and water plants. Nutrients such as phosphorus promote the growth of algae, which crowds out other aquatic life. Toxic chemicals such as antifreeze and oil from leaking cars, carelessly applied pesticides and zinc from galvanized metal gutters and downspouts threaten the health of fish and other aquatic life. Bacteria and parasites from pet waste can make nearby lakes and ponds unsafe for wading and swimming after storms.

Stormwater can also flow down a poorly sealed well or an unplugged abandoned well and contaminate drinking water. In areas with porous, sandy soils, pollutants in runoff may reach groundwater.

How will this worksheet help me protect my drinking water?

- It will take you step-by-step through your stormwater management practices.
- It will evaluate your activities according to how they might affect groundwater and surface water supplies.
- It will provide you with easy-to-understand "risk level scores" that will help you analyze the relative safety of your stormwater management practices.
- It will help you determine which of your practices are reasonably safe and effective, and which practices might require modification to better protect groundwater and surface water.

How do I complete the worksheet?

Follow the directions at the top of the chart on page 2. It should take you 15 to 30 minutes to complete this worksheet and determine your risk level.

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Elbert C. Dickey, Interim Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

Stormwater Management at Residential Sites: Assessing the Risk of Surface Water and Groundwater Contamination

1. Use a pencil. You may want to make changes.
2. For each category listed on the left that is appropriate to your property, read across to the right and circle the statement that best describes conditions on your property. There may not be a descriptive statement that exactly fits your situation; use your judgment to select the risk level that best applies. (Skip and leave blank any categories that don't apply to your property.)
3. Then look above the description you circled to find your "risk number" (1, 2, 3, or 4) and enter that number in the blank under "YOUR RISK".
4. Allow 15 -30 minutes to complete the worksheet and figure out your risk for stormwater management practices.

	HIGH RISK (risk 4)	HIGH-MODERATE RISK (risk 3)	MODERATE-LOW RISK (risk 2)	LOW RISK (risk 1)	YOUR RISK SCORE
POLLUTANTS IN RUNOFF					
Automotive wastes	Used oil, antifreeze and other wastes are dumped down a storm sewer or on a paved surface.	Used oil, antifreeze and other wastes are dumped in a ditch or on the ground.	Drips and spills are not cleaned up. Car parts and other vehicle wastes are left on unpaved areas outside.	Oil drips and fluid spills are cleaned up. Dirty car parts and other vehicle wastes are kept out of reach of stormwater runoff.	
Car washing	Cars, trucks or other items are washed on a driveway, street, or other paved area.	Cars, trucks or other items are washed on a gravel or rocked drive.	Cars, trucks or other items are washed on a lawn.	Cars and trucks are taken to a commercial car wash.	
Storage of pesticides, fertilizers, and other potentially harmful chemicals	Chemicals are stored in non-waterproof containers outdoors.	Chemicals are stored in waterproof containers outdoors, within reach of stormwater.	Chemicals are stored in waterproof containers outdoors, out of the reach of stormwater.	Chemicals are stored in waterproof containers in a garage, shed, or basement that is protected from stormwater.	
Handling and use of pesticides, feretilizers, and outdoor chemicals	Spills are not cleaned up. Products are used in higher amounts than what is recommended on the label.	_____	_____	Spills are cleaned up immediately, particularly on paved surfaces. Minimum amounts of chemicals are applied according to label instructions.	
Timing of pesticide, fertilizer and outdoor chemical use	Application is made when heavy rain is forecast within the next 24 hours AND on saturated soils or areas with slope where runoff is likely.	Application is made when heavy rain is forecast within the next 24 hours AND on unsaturated soils or areas with little slope.	Application is made when light rain is forecast within the next 24 hours AND on saturated soils or areas with slope where runoff is likely.	Application is made when light rain or no rain is forecast within the next 24 hours AND on unsaturated soils or areas with little slope.	

	HIGH RISK (risk 4)	HIGH-MODERATE RISK (risk 3)	MODERATE-LOW RISK (risk 2)	LOW RISK (risk 1)	YOUR RISK SCORE
POLLUTANTS IN RUNOFF (continued)					
Pet and animal wastes	Animal and pet wastes are left on paved surfaces OR dumped down a storm drain.	Animal and pet wastes are left to decompose on grass or soil. Wastes are concentrated in a small area such as a pen.	Animal and pet wastes are left to decompose on grass or soil. Wastes are scattered over a wide area.	Animal and pet wastes are flushed down the toilet; buried away from gardens, wells, ditches, or areas where children play; or wrapped and placed in the garbage for disposal.*	
Grass clippings, leaves and other yard waste	Grass clippings, leaves and other yard wastes are dumped down a storm drain or near a surface water body.	Grass clippings, leaves, and other yard wastes are left on driveways, streets and other paved areas to be carried off by stormwater.	_____	Grass clippings, leaves, and other yard wastes are swept off paved surfaces and onto lawns away from water flow routes. Leaves and other yard wastes are composted.	
LANDSCAPING AND SITE MANAGEMENT					
Bare soil in lawns and gardens	Large areas of yard or garden are left without mulch or vegetation for long periods.	Small areas of yard or garden are left without mulch or vegetation for long periods.	Grass or other ground cover is used, but is spotty, particularly on slopes.	Bare spots in the lawn are promptly seeded and topped with a layer of straw or mulch. Bare soil in gardens is covered with mulch.	
Bare soil during construction	Soil is left bare until construction is completed and no sediment barriers are used.	Soil is left bare until construction is completed. Sediment barriers are installed, but are poorly maintained allowing some muddy runoff to leave the site.	Soil is left bare until construction is completed. Sediment barriers are installed and maintained to detain muddy runoff until grass covers soil.	Bare soil is seeded and mulched as soon as possible (before construction is completed). Sediment barriers are used until grass covers soil.	

* Be sure to check local regulations regarding burying or landfilling pet and animal wastes.

	HIGH RISK (risk 4)	HIGH-MODERATE RISK (risk 3)	MODERATE-LOW RISK (risk 2)	LOW RISK (risk 1)	YOUR RISK SCORE
LANDSCAPING AND SITE MANAGEMENT (continued)					
Paved surfaces	Large areas are paved for walkways, patios and other areas.	Some small areas are paved for walkways, patios and other areas.	Alternatives such as gravel, rock, paving blocks, brick, or flagstone are used for walkways, patios, and other areas.	Alternatives such as wood chips or mulch are used for walkways, patios, and other areas.	
Roof drainage	Most or all drip lines or downspouts are connected directly to storm drains.	Most or all drip lines or downspouts discharge onto paved surfaces where water runs off.	Most or all drip lines or downspouts discharge water onto grassy areas where some water runs off.	Most or all drip lines or downspouts discharge water onto a grassy area or garden where water soaks into the ground.	
Landscaping	There is no landscaping to slow the flow of stormwater. Yard is hilly allowing runoff to occur.	No areas are landscaped to encourage water to soak in, but yard is relatively flat reducing the amount of runoff that occurs.	Yard is landscaped to slow the flow of storm water and provide areas where water soaks into the ground. Yard is hilly allowing some runoff to occur.	Yard is landscaped to slow the flow of stormwater and provide areas where water soaks into the ground. Yard is relatively flat and little runoff occurs.	
Buffer strips	Bare soil, sand, or gravel exists next to a stream bank or lakeshore. Stream banks or lakeshores are eroding.	Spotty mowed vegetation exists next to a stream bank or lakeshore.	Mowed grass exists next to a stream bank or lakeshore.	Unmowed buffer strips of thick vegetation are left along a stream bank or lakeshore.	

Your groundwater vulnerability score from *Worksheet 2* was _____
Note: If the surface texture, subsurface texture, or depth to groundwater used to calculate this score are not characteristic of the site conditions present for the activities/practices discussed in this worksheet, calculate a new vulnerability score for this site.

If your groundwater vulnerability score is:

1 to 1.4: your site has a LOW VULNERABILITY to pollution reaching groundwater.
1.5 to 2.4: your site has a MODERATE-LOW VULNERABILITY to pollution reaching groundwater.
2.5 to 3.4: your site has a HIGH-MODERATE VULNERABILITY to pollution reaching groundwater.
3.5 to 4.0: your site has a HIGH VULNERABILITY to pollution reaching groundwater.

Your surface water vulnerability score from *Worksheet 2* was _____
Note: If the surface texture, slope toward surface water, or distance from surface water used to calculate this score are not characteristic of the site conditions present for the activities/practices discussed in this worksheet, calculate a new vulnerability score for this site.

If your surface water vulnerability score is:

1 to 1.4: your site has a LOW VULNERABILITY to pollution reaching surface water.
1.5 to 2.4: your site has a MODERATE-LOW VULNERABILITY to pollution reaching surface water.
2.5 to 3.4: your site has a HIGH-MODERATE VULNERABILITY to pollution reaching surface water.
3.5 to 4.0: your site has a HIGH VULNERABILITY to pollution reaching surface water.

Look over your worksheet scores for individual activities:

- **Low risk** practices (1's): are ideal and should be your goal regardless of your site's vulnerability to pollution reaching ground or surface water. Cost and other factors may make it difficult to achieve a low risk rating for all activities.

- **Moderate-low risk** practices (2's): provide reasonable water quality protection unless your site's vulnerability to pollution reaching ground or surface water is moderate-high or high.

- **High-moderate risk** practices (3's): do not provide adequate protection in many circumstances, especially if your site's vulnerability to pollution reaching ground or surface water is high or high-moderate. They may provide reasonable water quality protection if your site's vulnerability to pollution reaching ground or surface water is low to moderate-low.

- **High risk** practices (4's): pose a serious danger of polluting water, especially if your site's vulnerability to pollution reaching ground or surface water is high, high-moderate, or moderate-low. Some high risk activities may not immediately threaten water quality if your site's vulnerability to pollution reaching ground or surface water is low, but still pose a threat over time if not corrected.

Read ***Fact Sheet 17 Improving Stormwater Management at Residential Sites*** and consider how you might modify your practices to better protect your drinking water supply and other ground and surface water supplies. Some concerns you can take care of right away; others could be major or costly projects requiring planning and prioritizing before you take action.

Summary Evaluation for Stormwater Management at Residential Sites

Summarize your potential high risk activities in the following table and consider the response options you can take to reduce the potential for water quality contamination.

High Risk Activities and Activities Impacted by Site Vulnerability	Response Options (Check One)		Taking Action For "immediate action possible" items, note practices and when each will occur. For issues "requiring further planning," note estimates, consultations, or other activities necessary and when each will occur. Establish a target date for making necessary changes.
	Immediate Action Possible	Further Planning Required	

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