

Identifying Closed Depressions - Examples and Methods

1. Local Knowledge of field topography and drainage. Some fields have low areas with no surface outlet where water regularly collects/ponds, sometimes causing poor/reduced crop growth (figures 1 and 2). Low areas are often located next to roadways or field berm(s). The low area of a field with no outlet that accumulates or receives runoff is part of a closed depression. In times of spring meltdown or heavy rainfall, runoff channels may form and deliver runoff water to closed depressions (figure 3).

Figure 1



Figure 2



Figure 3



2. **Topographic Maps** – Used in combination with field verification/local knowledge, topographic maps can be used to ID closed depressions. See figures 4-7 for examples.

Reading a topographic map- Depression Contours

- Depression contours show areas of lower elevation.
- Drawn like contour lines with marks on the inside.
- Hachure marks- tick marks on inside of closed circle.

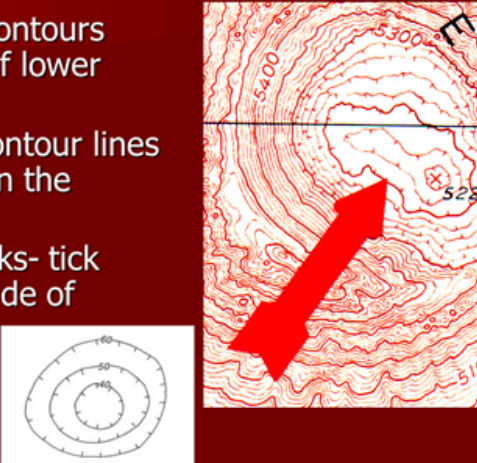
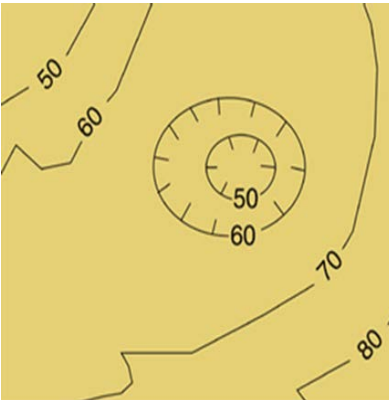
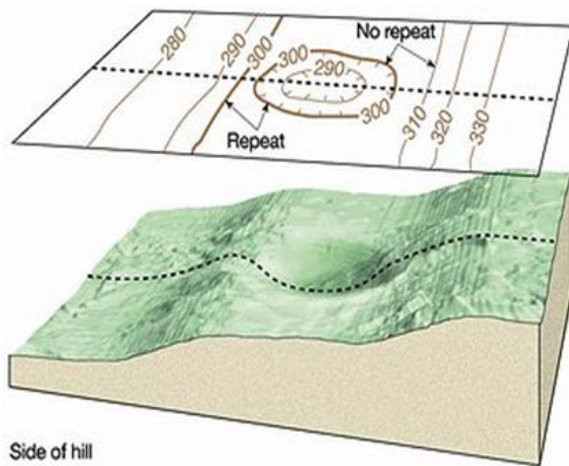



Figure 4

Figure 5



Side of hill
Figure 6

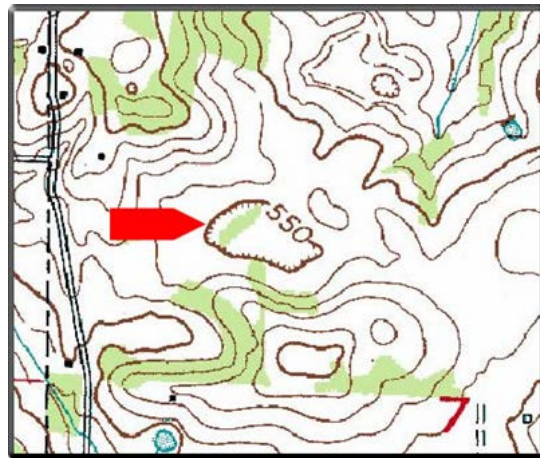


Figure 7

3. EVAAL or other LIDAR (light detection and radar) based tools

DNR's EVAAL tool can identify internally drained areas within a watershed (Figures 8+9). Field verification of internally drained areas can identify closed depressions on fields. LIDAR is available in most, but not all Wisconsin Counties (figure 10). Brown County has used LIDAR to identify closed depressions within fields.

EVAAL fact sheet - <http://dnr.wi.gov/topic/Nonpoint/documents/EVAAL/EVAAL Fact Sheet v1 0.pdf>

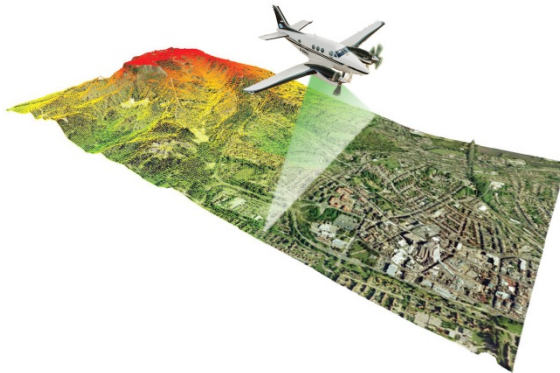


Figure 8

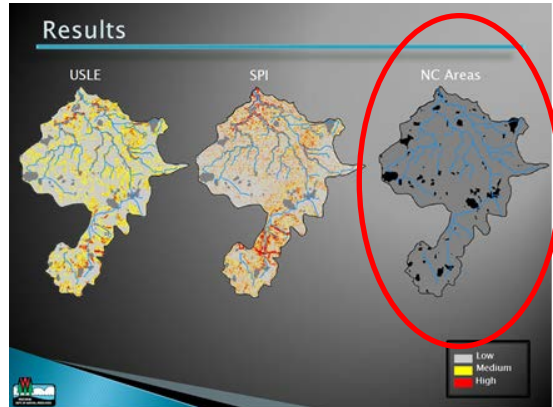


Figure 9 – EVAAL

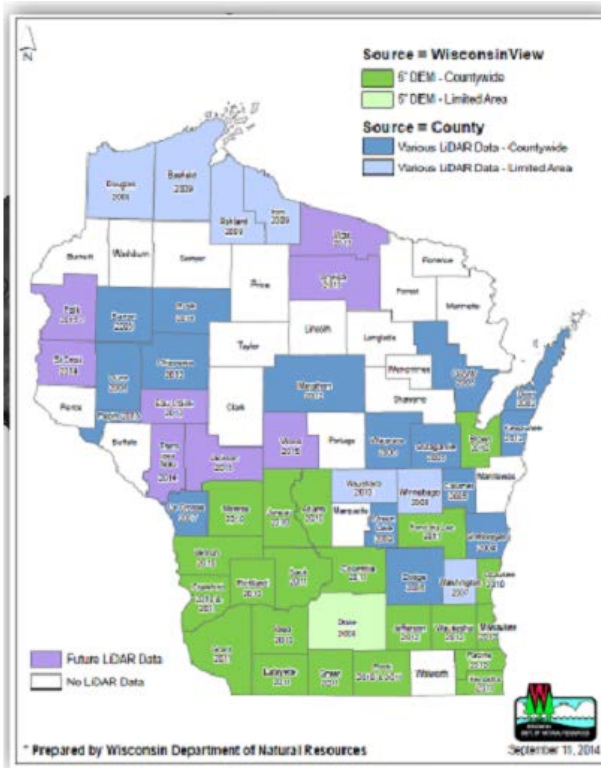


Figure 10

4. Brown County Closed Depression map – generated with 2 foot contour generated from LIDAR points (figure 11). Closed depressions shown *do not overlap* with bedrock soil units. Soils map can be overlaid onto this map using GIS.

http://www.co.brown.wi.us/i/f/land_water_conservation/closed%20depression.pdf

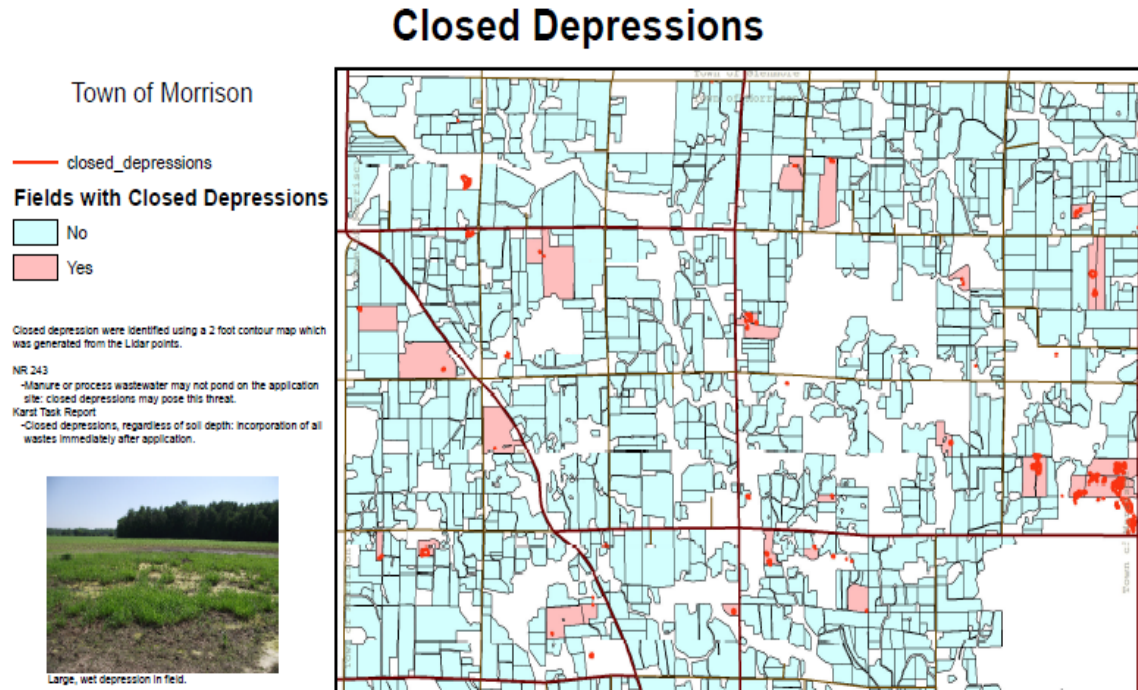


Figure 11

Sensitive Areas and Practices Workgroup Recommendations and Closed Depressions

Fall Manure Application

Standard Practice 2.c. – Bedrock 2-20 feet

Application of manure and other wastes prohibited within closed depressions **in fall** after crop harvest unless:

- (1) manure is injected (following tillage practice #9 below) or immediately incorporated AND
- (2) successful establishment of fall seeded forage crop within application area(s)

Successful establishment means a fall seeded crop germinates and grows to provide substantial vegetative cover of entire field; bare soil area(s) are avoided or minimized to isolated/small areas.

Standard Practice 9 – Bedrock 2-20 feet

Complete tillage prior to application of liquid manure to a minimum of two inches below depth of manure injection/incorporation

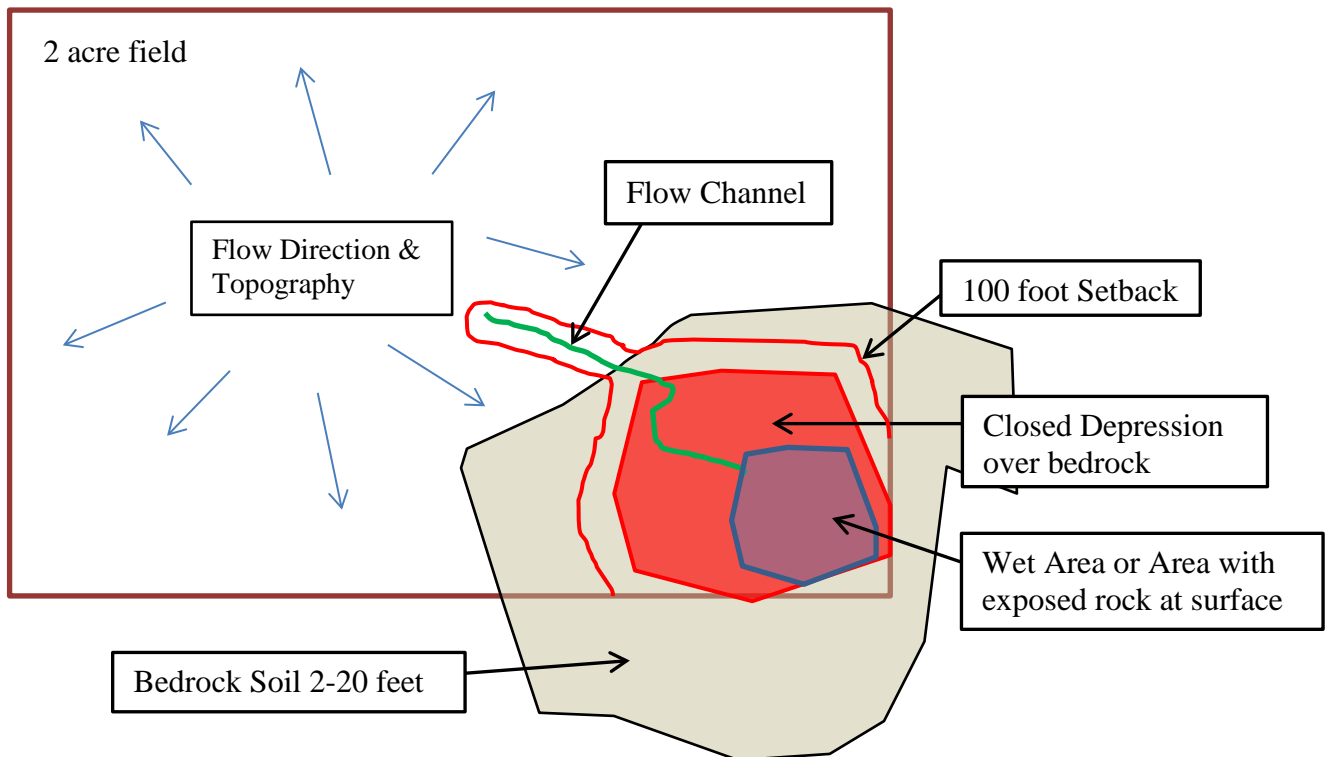
* = does not apply to fields following no-tillage practices OR fields with perennial forage and Other established crops

Setback Practice 3.c + 3d.

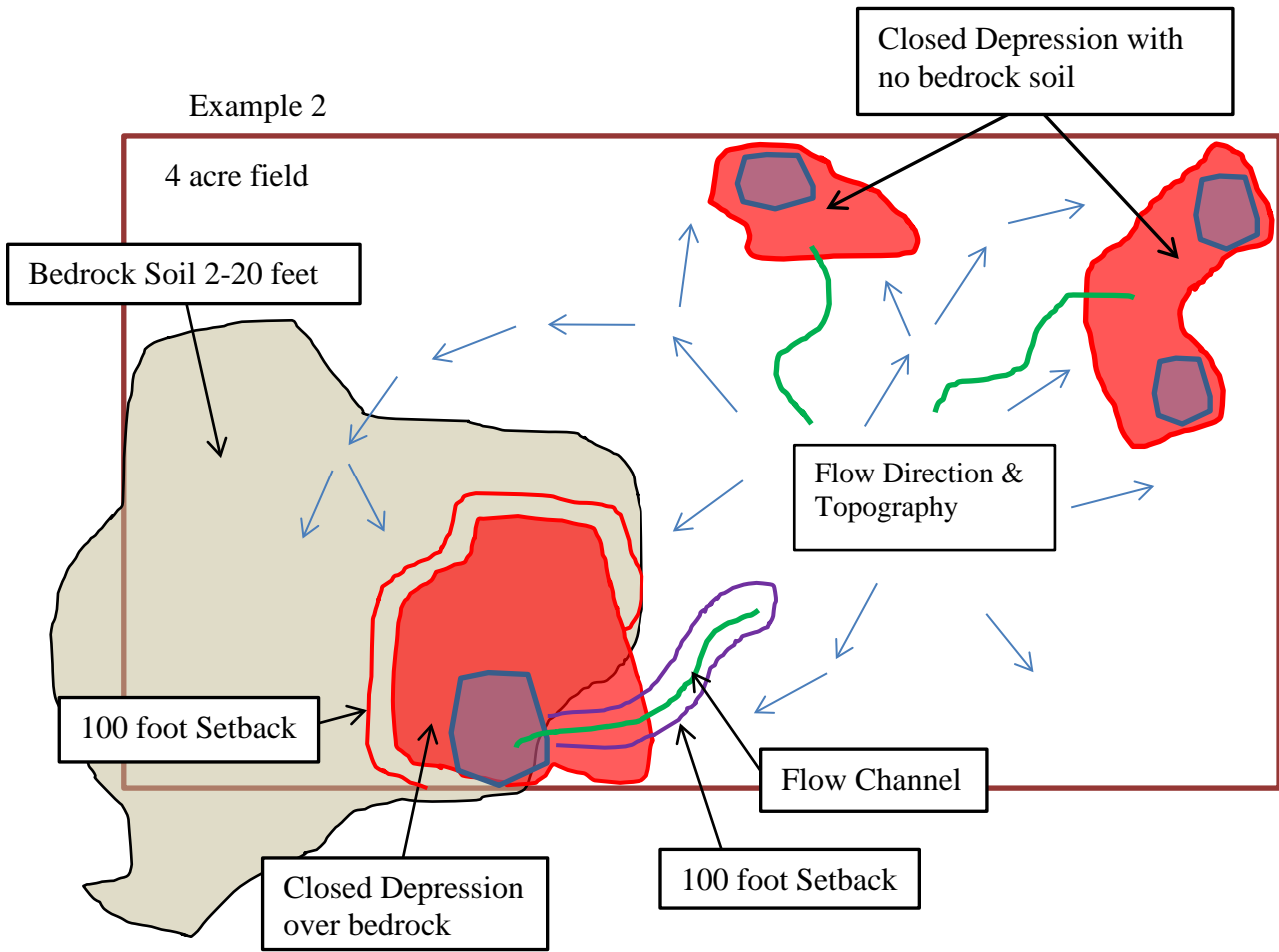
No manure application within 100 feet of direct conduits to groundwater or defined channels and concentrated flow path(s) that lead to direct conduits to groundwater

“Direct Conduit to Groundwater” means wells, sinkholes, swallets, fractured bedrock at the surface, mine shafts, non-metallic mines, tile inlets discharging to groundwater, quarries, or depressional groundwater recharge areas over shallow fractured bedrock. *Chapters NR 151.002 (11m) and NR 243.03 (20), Wis. Adm. Code*

Example 1



Example 2



Spring or Summer Manure Application

Standard Practice 2e. – Bedrock 2-20 feet

Application of manure and other wastes prohibited **in spring or summer** within one mile radius of any area that drains into low areas within closed depressions (up to seasonal high water mark), unless manure is injected or incorporated* within 24 hours or prior to any rainfall event, whichever occurs first.

* = does not apply to no fields following no-tillage practices OR fields with perennial forage and other established crops.

Standard Practice 9 – Bedrock 2-20 feet

Complete tillage prior to application of liquid manure to a minimum of two inches below depth of manure injection/incorporation

* = does not apply to fields following no-tillage practices OR fields with perennial forage and Other established crops

Setback Practice 3.c + 3d.

No manure application within 100 feet of direct conduits to groundwater or defined channels and concentrated flow path(s) that lead to direct conduits to groundwater

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Example 3

