

## Appendix J

### Nonpoint Source Water Pollution Issues to Look for in the Field

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#### Landuses arranged by the four major Tennessee Geomorphic provinces

##### West Tennessee (Gulf Coast/ Embayment/Mississippi R. to Tennessee R.)

- Agriculture/rowcropping
- Agriculture/livestock
- Highway/Road construction
- Roadside maintenance
- Building construction
- Removal of riparian zones/streambank denudation
- Improper utility stream crossings
- Repositioning of stream bedloads by heavy equipment
- Destruction of natural wetlands
- Urban runoff from roads, parking lots, golf courses, etc.
- Silviculture
- Failing septic tank systems
- Illegal dump sites
- Abandoned/unreclaimed terrace gravel or clay pits
- Wellhead protection
- Pesticide application
- Pesticide mixing and storage

##### Middle Tennessee (Tennessee River – Eastern Highland Rim/Cumberland Plateau border)

- Agriculture/rowcropping
- Agriculture/livestock
- Highway/Road construction
- Roadside maintenance
- Building construction
- Removal of riparian zones/streambank denudation
- Improper utility stream crossings
- Repositioning of stream bedloads by heavy equipment
- Destruction of natural wetlands
- Urban runoff from roads, parking lots, golf courses, etc.
- Silviculture
- Failing septic tank systems
- Illegal dump sites
- Abandoned/unreclaimed terrace gravel, phosphate and limestone quarries
- Abandoned oil/gas wells without earthen containment walls
- Poorly maintained oil/gas wells
- Poorly maintained oil tank and distribution areas {tank batteries}

Wellhead protection  
Pesticide application  
Pesticide mixing and storage

East Tennessee (Cumberland Plateau/Mountains)

Agriculture/rowcropping  
Agriculture/livestock  
Highway/Road construction  
Roadside maintenance  
Building construction  
Removal of riparian zones/streambank denudation  
Improper utility stream crossings  
Repositioning of stream bedloads by heavy equipment  
Destruction of natural wetlands  
Urban runoff from roads, parking lots, golf courses, etc.  
Silviculture  
Failing septic tank systems  
Illegal dump sites  
Abandoned/unreclaimed acid drainage producing coal mines (surface or deep)  
Abandoned oil/gas wells without earthen containment walls  
Poorly maintained oil/gas wells  
Poorly maintained oil tank and distribution areas {tank batteries}  
Wellhead protection  
Pesticide application  
Pesticide mixing and storage

East Tennessee (Valley and Ridge as well as Blue Ridge Mts.)

Agriculture/rowcropping  
Agriculture/livestock  
Highway/Road construction  
Roadside maintenance  
Building construction  
Removal of riparian zones/streambank denudation  
Improper utility stream crossings  
Repositioning of stream bedloads by heavy equipment  
Destruction of natural wetlands  
Urban runoff from roads, parking lots, golf courses, etc.  
Silviculture  
Failing septic tank systems  
Illegal dump sites  
Abandoned/unreclaimed terrace gravel, phosphate, barite and limestone quarries  
Wellhead protection  
Pesticide application  
Pesticide mixing and storage



Landuses arranged by degree of impact (based on a statewide analysis)

Agriculture

Rowcropping

- use of no till cultivation near streams and rivers
- grassy buffer strips along streams and rivers
- grassed waterways in fields themselves
- adequate riparian zones along streams and rivers
- stabilized (non-sloughing) streambanks
- stabilized highlands with grasses or forests
- contour farming on steeper slopes
- terracing of large rowcropped fields
- installation of diversions to deflect runoff waters
- 'drop' structures in low ends of rowcropped fields
- retention ponds at base of rowcropped fields
- winter stubble left in place
- winter covercrop on highly erodible fields

Livestock

- fenced streams
- alternative water supplies
- riparian zones left along streams
- properly constructed stream crossings
- properly constructed heavy use areas
- fenced off water wells
- proper disposal of animal waste as fertilizer
- animal waste lagoons
- proper disposal of dead animals (beef, dairy, hog, chicken, horse, emu, etc.)

Highway/Road Construction

Proper erosion control

- immediate sowing down of slopes
- proper gradients of slopes left for vegetative growth/no slumping
- proper placement of terraces in steep road banks
- proper detouring of surface waters from steep slopes
- protection of streambanks/no denudation of riparian zone

Proper sediment retention

- proper installation of silt fences and hay bales where needed
- proper installation of sediment retention ponds where needed

Roadside Maintenance

Ditches

- proper and timely drainage ditch clean-out procedures
- proper seeding or sodding of drainage ditch floors and walls

Road bank maintenance

- reseeding of steep, bare slopes
- cleaning of slopes without disturbance to soils

Building construction

Proper erosion control

- immediate sowing down of slopes
- proper gradients of slopes left for vegetative growth/no slumping
- proper placement of terraces in cut banks
- proper detouring of surface waters from steep slopes
- protection of streambanks/no denudation of riparian zones

Proper sediment retention

- proper installation of silt fences and hay bales where needed
- proper installation of sediment retention ponds where needed

Removal of riparian zones/streambank denudation

- Clearing of stream banks for any reason
- Clearing of lake banks for any reason
- Clearing of river banks for any reason
- Unfenced stretches of stream, lake, riverbank to significant numbers of livestock
- Cleared vegetation left in stream to cause impounding and diversion

Improper utility stream crossings

- Destruction of stream banks
- Revegetation of stream banks after limited disturbance
- Destruction of stream floors

Repositioning of stream bedloads by heavy equipment

- Non-permitted removal of stream bedloads
- Placement of stream bedload against stream banks
- Channelization of streams

Destruction of natural wetlands

- Any removal of wetlands without the approval of USACE
- Directing of NPS pollutants into natural wetlands
- Placing natural wetlands into peril of any kind

Urban runoff from roads, parking lots, golf courses, etc.

- Untreated runoff from large impermeable surfaces
- Uncontrolled flow of storm event runoff from these surfaces into streams and sinkholes
- Application of pesticides/fertilizers to lawns, golf courses before rain events

Application of pesticides/fertilizers to lawns, golf courses in too large of amounts

#### Silviculture

- Improperly constructed stream crossings
- Using the stream floor as a haul road
- Improper placement/maintenance of haul roads
- Improper construction of loading pad
- Improper maintenance of loading pad
- Not leaving sufficient riparian zone along water bodies
- Improper use of pesticides near waterbodies
- Improper use of pesticides before heavy rain events
- Improper construction of access roads
- Improper maintenance of access roads

#### Failing septic tank systems

- Seepage of septage to the surface
- Pooling of septage to the surface
- Field lines too close to waterbodies/sinkholes
- Straight pipes leading from buildings to waterbodies/sinkholes

#### Illegal dump sites

- Usage of any lands as a dumping ground
- Dumping of toxic materials in or near waterbodies/sinkholes
- Discarding of any object into a waterbody or sinkhole

#### Abandoned/unreclaimed mineral extraction operations

- Sediment movement into neighboring waterbodies
- Contaminated surface waters reach neighboring waterbodies
- Seepage of ground water from spoil piles into neighboring waterbodies

#### Wellhead protection

- Placement of septic fields too close to wellheads (well casings)
- Placement of pesticide/fertilizer mixing/ storage too close to wellheads {well casings}
- Placement of livestock too close to wellheads {well casings}
- Placement of animal waste lagoons too close to wellheads {well casings}

#### Pesticide application

- Application of pesticides/fertilizer in too great of amounts
- Application too close to waterbodies/sinkholes
- Application too soon before heavy rain events
- Applications of pesticides/fertilizers during extremely cold weather

#### Pesticide mixing and storage

- Mixing of pesticides/fertilizers on bare ground (w/ no impermeable floor)
- Mixing of pesticides/fertilizers too close to waterbodies/sinkholes
- Mixing of pesticides/fertilizers during rain events
- Storage of pesticides/fertilizers too close to waterbodies/sinkholes
- Storage of pesticides/fertilizers with exposure to the elements

Storage of pesticides/fertilizer on bare ground (w/ no impermeable floor)  
Illegal dumping of pesticides/fertilizers