



Department of  
**Environment &  
Conservation**

# Mitigation Outreach Event

Fleming Training Center June 1, 2016

Division of Water Resources

Jimmy R. Smith – Natural Resources Section

# Overview

- TDEC DWR Regulatory Authority
- Aquatic Resource Alteration Permits
- Jurisdictional Determinations
- Mitigation and Antidegradation



# *The Tennessee Water Quality Control Act of 1977*

- Recognizes that the waters of Tennessee are the property of the state and are held in public trust
- States that people have a right to unpolluted water
- Defines waters of the state
- Defines pollution
- Establishes the need for permits for the alteration of the physical, chemical, radiological, biological, or bacteriological properties of waters of the state
- Defines wet weather conveyance

The purpose of the TWQCA “is to abate existing pollution of the waters of Tennessee, to reclaim polluted waters, to prevent the future pollution of the waters, and to plan for the future use of the waters so that the water resources of Tennessee might be used and enjoyed to the fullest extent ”

# *Designated Uses & Water Quality Criteria*

Streams and Wetlands must be managed to support designated uses and meet the water quality criteria applicable to those uses.

- Fish and aquatic life
- Recreation
- Livestock watering and wildlife
- Irrigation
- Domestic water supply
- Industrial water supply
- Navigation



# ***POLLUTION***

“Pollution” means such alteration of...properties of the waters that will...result in harm to public health, safety, or welfare...or will result in harm, potential harm or detriment to the health of animals, birds, fish or aquatic life...

Tenn. Code Ann. § 69-3-103 (2016)

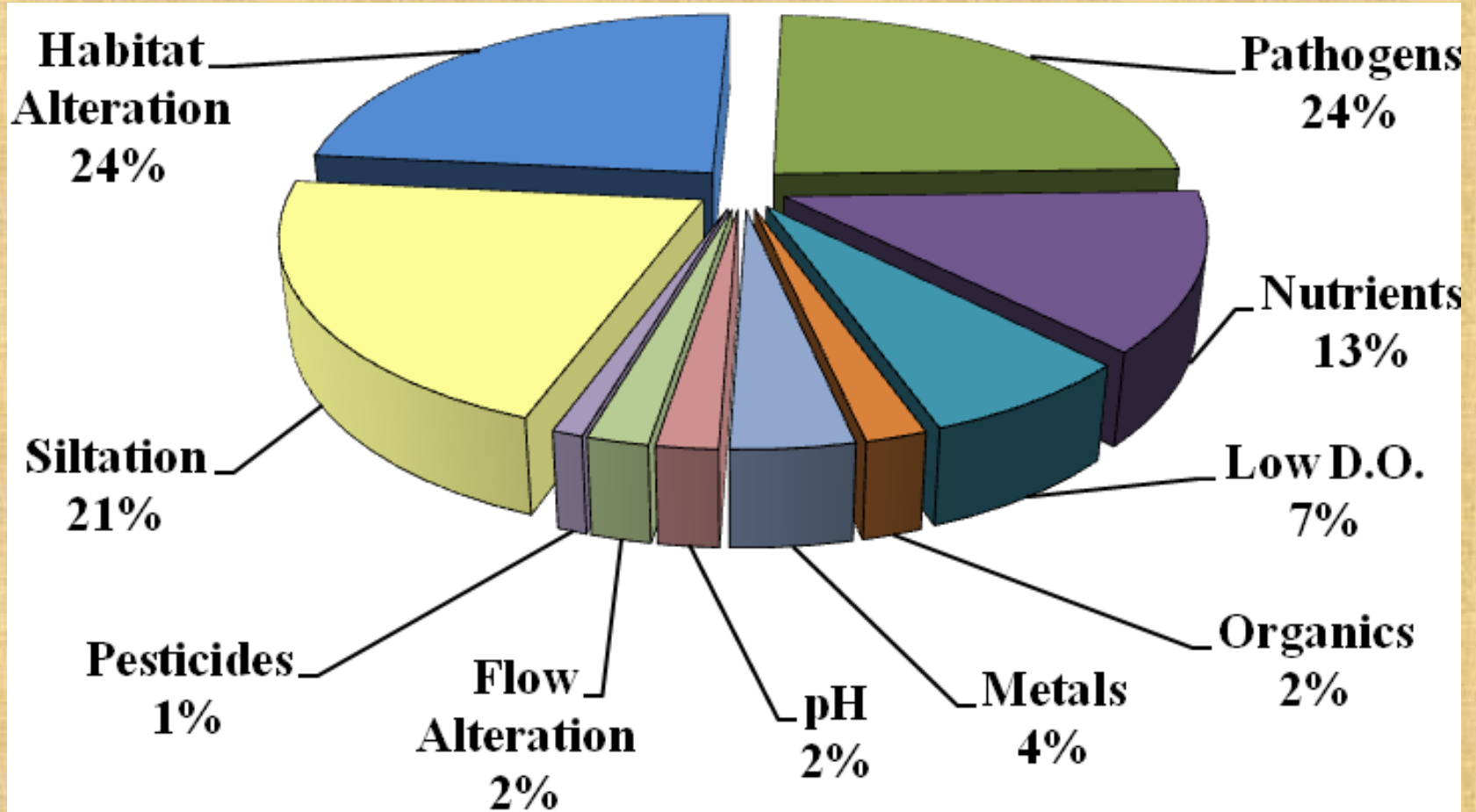


# *THE PURPOSE OF PERMITS IS TO PREVENT POLLUTION*



- Regulate point source discharges of chemical pollutants
- Keep dirt and other pollutants out of streams and wetlands
- Maintain habitat and physical integrity of streams and wetlands

**Habitat Alteration** is the largest cause of water quality **impairment** (pollution) in Tennessee



# *Stream or Wetland Alterations*

- ❑ Require permits, either individual or general
- ❑ Must comply with water quality standards and protect for classified uses
- ❑ Cannot result in a condition of pollution
- ❑ Cannot result in a loss of water resource value (= compensatory mitigation requirements)
- ❑ Often must comply with various buffer requirements, including local MS4 ordinances





# Aquatic Resource Alteration Permits

- ARAPs are used to authorize the alteration of surface waters (e.g. streams, ponds, lakes, and wetlands)
- Require avoidance and impact minimization
- May also serve as §401 Water Quality Certifications



# Aquatic Resource Alteration Permits

## Common Types of Activities Requiring ARAP Permits :

- Stream encapsulations by pipe, culvert, or bridge
- Stream relocations
- Wetland alterations, including filling or draining
- Dredge or fill in streams and reservoirs
- Stream channel modifications, including channelization or widening
- Streambank modifications, including hard armoring
- Impoundments
- Water withdrawals



# ARAP Permit Types

## General Permits and Individual Permits

- One application form – review of project proposal informs which permit may be applicable.
- Scale, complexity, cumulative effects, resource-specific considerations, need for additional conditions including mitigation, and nature of proposed alteration may require project-specific (individual) permit.

# ARAP General Permits

- Used to authorize alterations for specific categories of activities that are substantially similar in nature.
- Activities covered represent *de minimis* impact
- GP's are issued for a five year term, applicants obtain Notices of Coverage under them.
- Project-specific conditions cannot be added to GP's.
- Currently there are 16 GP's, all of which expire on April 6, 2020.

# ARAP General Permits

- Are not subject to project-specific public notice process.
- Covered activities do not (and cannot) represent significant resource loss that would require compensatory mitigation.
- Cannot be used incrementally on a project to result in cumulative resource loss.
- Most GP coverages are issued by the TDEC Field Offices.

# Individual ARAP Permits

- Used to authorize alterations of a larger scale or complexity, in a special category of water, or for which a general permit does not exist.
- Activities authorized often represent a greater than *de minimis* impact, individually or cumulatively.
- Permits may be issued for up to a five year term.
- Project-specific conditions can be added to IP's.
- Are subject to project-specific public notice process

# Individual ARAP Permits

- Review of applications for individual permits must involve :
  - Cumulative impacts on common plan of development
  - Alternatives analysis – avoidance & minimization
  - Socio-economic justification & necessity
- Authorized activities often represent significant resource loss that requires compensatory mitigation.
- All individual permits are issued by the TDEC Central Office, Natural Resources Unit.

# TDEC Jurisdictional Determinations





# Jurisdictional Terms & Definitions

“Waters of the State” = *All water, public or private, on or beneath the surface of the ground, except those bodies of water retained within single ownership which do not join with natural surface or underground waters.*

From : Water Quality Control Act (T.C.A. 69-3-103)

- “Waters of the State” is NOT the same thing as a “Stream”
- Waters of the State exist in WWC while they are flowing, and exist underground as groundwater, etc.

“Blue-Line Stream” = Commonly-used term for a watercourse denoted as a solid blue line on a USGS 7.5-min. topo map. Their depictions have neither a hydrologic nor regulatory basis.

# Jurisdictional Terms & Definitions

- “Wetlands” = Areas inundated or saturated by surface or ground water at a sufficient frequency and duration to support ... a prevalence of vegetation typically adapted for life in saturated soil conditions.
- Wetlands generally include swamps, marshes, bogs, and similar areas.

From : Rules of TDEC DWR Chpt. 0400-4-7 Aquatic Resource Alteration  
and : 33 CFR Part 328 Definition of Waters of the United States



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# Jurisdictional Terms & Definitions

( ) "Wet weather conveyance" means, notwithstanding any other law or rule to the contrary, man-made or natural watercourses, including natural watercourses that have been modified by channelization:

(1) That flow only in direct response to precipitation runoff in their immediate locality;

(2) Whose channels are at all times above the groundwater table;

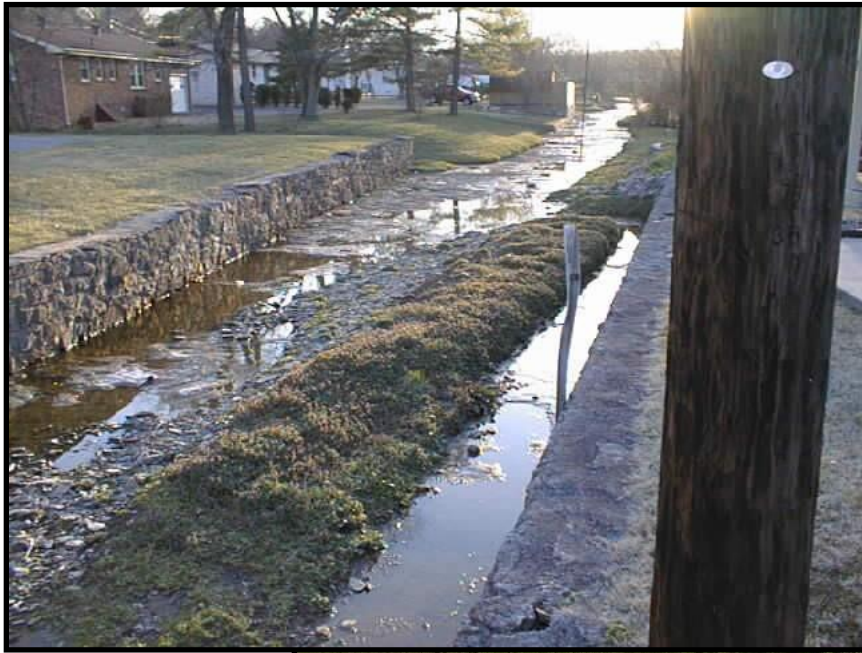
(3) That are not suitable for drinking water supplies; and

(4) In which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months;

( ) "Stream" means a surface water that is not a wet weather conveyance;

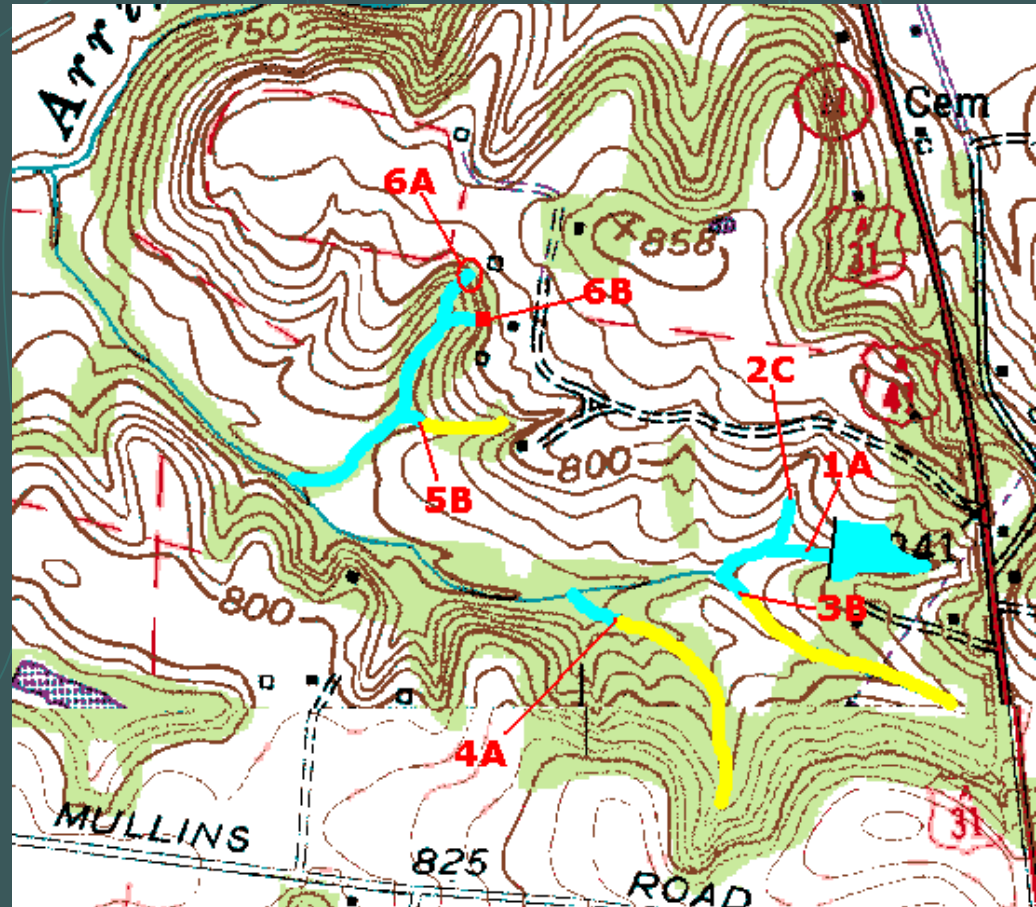
# Rivers, Streams, Watercourses, Ditches, Wet Weather Conveyances

*How do you determine jurisdictional status ?*



05-27-2004

Unfortunately, you can't simply look at a map .....



# The Basic Stream HD Question : “Does a given watercourse meet the WWC definition or not ?”

Must consider all 4 parts of the definition, but the most robust, and commonly evaluated distinction is :

***“Does the channel carry flow for extended periods of time, or only in direct response to rainfall ?”***

Duration of flow is one of the most useful characteristics in making HDs because it generates far more abundant and accurate physical and ecological indicators that will be available during field evaluations, including the type of biological support described within the WWC definition.

# The Basic Stream HD Field Investigation Principle :

Much of the field HD investigative process relies on the underlying scientific principle that, in general, watercourses that in a normal year carry surface flow for extended periods of time are more likely to develop certain physical, hydrological, or ecological characteristics than are WWCs that flow only in direct response to precipitation.

Although a WWC may exhibit some degree of these indicators, in general, indicators will be stronger and more prevalent the more persistent the in-channel flow.



TDEC HD SOP utilizes “primary indicators” (individually definitive) and “secondary indicators” (evaluated & scored in aggregate). These are reflected in the layout of the *Field Data Sheet*.

**Hydrologic Determination Field Data Sheet**  
Tennessee Division of Water Pollution Control, Version 1.2

|   |                                 |             |         |        |         |         |
|---|---------------------------------|-------------|---------|--------|---------|---------|
| County:   | Named Waterbody:                | Date/Time:  |         |        |         |         |
| Assessors/Affiliation:  |                                 | Project ID: |         |        |         |         |
| Site Name/Description:  |                                 |             |         |        |         |         |
| Site Location:  |                                 |             |         |        |         |         |
| USGS quad:  | HUC (12 digit):                 | Lat/Long:   |         |        |         |         |
| Previous Rainfall (7-days):   |                                 |             |         |        |         |         |
| Precipitation this Season vs. Normal:   | very wet                        | wet         | average | dry    | drought | unknown |
| Source of recent & seasonal precip data:  |                                 |             |         |        |         |         |
| Watershed Size:   | Photos: Y or N (circle) Number: |             |         |        |         |         |
| Soil Type(s) / Geology:   |                                 | Source:     |         |        |         |         |
| Surrounding Land Use:   |                                 |             |         |        |         |         |
| Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes): | Severe                          | Moderate    | Slight  | Absent |         |         |

**Primary Field Indicators Observed**

| Primary Indicators   | NO | YES    |
|--|----|--------|
| 1. Hydrologic feature exists solely due to a process discharge   |    | WWC    |
| 2. Defined bed and bank absent, dominated by upland vegetation / grass   |    | WWC    |
| 3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions |    | WWC    |
| 4. Daily flow and precipitation records showing feature only flows in direct response to rainfall                  |    | WWC    |
| 5. Presence of multiple populations of obligate lotic organisms with ≥ 2 months aquatic phase                      |    | Stream |
| 6. Presence of fish (except <i>Gambusia</i> )  |    | Stream |
| 7. Presence of naturally occurring ground water table connection   |    | Stream |
| 8. Flowing water in channel and 7 days since last precipitation in local watershed                                 |    | Stream |
| 9. Evidence watercourse has been used as a supply of drinking water  |    | Stream |

NOTE: If any Primary Indicators 1-9 = “Yes”, then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.2

Overall Hydrologic Determination =

Secondary Indicator Score (if applicable) =

Justification / Notes:

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**Secondary Field Indicator Evaluation**

| A. Geomorphology (Subtotal = )                                 | Absent | Weak | Moderate | Strong |
|--|--------|------|----------|--------|
| 1. Continuous bed and bank                                     | 0      | 1    | 2        | 3      |
| 2. Sinuous channel   | 0      | 1    | 2        | 3      |
| 3. In-channel structure; riffle-pool sequences                 | 0      | 1    | 2        | 3      |
| 4. Sorting of soil textures or other substrate                 | 0      | 1    | 2        | 3      |
| 5. Active/relic floodplain                                     | 0      | 1    | 2        | 3      |
| 6. Depositional bars or benches                                | 0      | 1    | 2        | 3      |
| 7. Braided channel   | 0      | 1    | 2        | 3      |
| 8. Recent alluvial deposits                                    | 0      | 0.5  | 1        | 1.5    |
| 9. Natural levees  | 0      | 1    | 2        | 3      |
| 10. Headcuts   | 0      | 1    | 2        | 3      |
| 11. Grade controls   | 0      | 0.5  | 1        | 1.5    |
| 12. Natural valley or drainageway                              | 0      | 0.5  | 1        | 1.5    |
| 13. At least second order channel on existing USGS or NRCS map | No = 0 |      | Yes = 3  |        |

| B. Hydrology (Subtotal = )                         | Absent | Weak | Moderate  | Strong |
|--|--------|------|-----------|--------|
| 14. Subsurface flow/discharge into channel         | 0      | 1    | 2         | 3      |
| 15. Water in channel and >48 hours since rain      | 0      | 1    | 2         | 3      |
| 16. Leaf litter in channel (January – September)   | 1.5    | 1    | 0.5       | 0      |
| 17. Sediment on plants or on debris                | 0      | 0.5  | 1         | 1.5    |
| 18. Organic debris lines or piles (wrack lines)    | 0      | 0.5  | 1         | 1.5    |
| 19. Hydric soils in stream bed or sides of channel | No = 0 |      | Yes = 1.5 |        |

| C. Biology (Subtotal = )                         | Absent | Weak | Moderate | Strong |
|--|--------|------|----------|--------|
| 20. Fibrous roots in channel <sup>1</sup>        | 3      | 2    | 1        | 0      |
| 21. Rooted plants in channel <sup>1</sup>        | 3      | 2    | 1        | 0      |
| 22. Crayfish in stream (exclude in floodplain)   | 0      | 0.5  | 1        | 1.5    |
| 23. Bivalves/mussels                             | 0      | 1    | 2        | 3      |
| 24. Amphibians                                   | 0      | 0.5  | 1        | 1.5    |
| 25. Macroinvertebrates (record type & abundance) | 0      | 1    | 2        | 3      |
| 26. Filamentous algae; periphyton                | 0      | 1    | 2        | 3      |
| 27. Iron oxidizing bacteria/fungus               | 0      | 0.5  | 1        | 1.5    |
| 28. Wetland plants in channel <sup>2</sup>       | 0      | 0.5  | 1        | 2      |

<sup>1</sup> Focus is on the presence of upland plants. <sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = \_\_\_\_\_  
Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes:

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**Primary Indicators** : Individual or combinations of field characteristics that under normal circumstances, and in the absence of any directly contradictory evidence, are considered to be individually definitive for jurisdictional determination purposes.

### Primary Field Indicators Observed

| Primary Indicators   | NO | YES    |
|--|----|--------|
| 1. Hydrologic feature exists solely due to a process discharge   |    | WWC    |
| 2. Defined bed and bank absent, dominated by upland vegetation / grass   |    | WWC    |
| 3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions |    | WWC    |
| 4. Daily flow and precipitation records showing feature only flows in direct response to rainfall                  |    | WWC    |
| 5. Presence of multiple populations of obligate lotic organisms with $\geq 2$ months aquatic phase                 |    | Stream |
| 6. Presence of fish (except <i>Gambusia</i> )  |    | Stream |
| 7. Presence of naturally occurring ground water table connection   |    | Stream |
| 8. Flowing water in channel and 7 days since last precipitation in local watershed                                 |    | Stream |
| 9. Evidence watercourse has been used as a supply of drinking water  |    | Stream |

**NOTE** : If any Primary Indicators 1-9 = "Yes", then **STOP**; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

## Secondary Indicators

In the absence of any of the Primary Indicators, the overall strength of evidence provided by a suite of additional field characteristics is evaluated.

Attributes resulting from the interactions among hydrologic, geomorphic, and ecological processes are evaluated and the strength of each indicator is recorded.

The overall evaluation and ranking of 28 secondary indicators is used to produce a numeric score. Scores of 19 or greater indicate jurisdictional stream.



## Secondary Field Indicator Evaluation

| A. Geomorphology (Subtotal = )                                 | Absent | Weak | Moderate | Strong |
|--|--------|------|----------|--------|
| 1. Continuous bed and bank                                     | 0      | 1    | 2        | 3      |
| 2. Sinuous channel   | 0      | 1    | 2        | 3      |
| 3. In-channel structure: riffle-pool sequences                 | 0      | 1    | 2        | 3      |
| 4. Sorting of soil textures or other substrate                 | 0      | 1    | 2        | 3      |
| 5. Active/relic floodplain                                     | 0      | 1    | 2        | 3      |
| 6. Depositional bars or benches                                | 0      | 1    | 2        | 3      |
| 7. Braided channel   | 0      | 1    | 2        | 3      |
| 8. Recent alluvial deposits                                    | 0      | 0.5  | 1        | 1.5    |
| 9. Natural levees  | 0      | 1    | 2        | 3      |
| 10. Headcuts   | 0      | 1    | 2        | 3      |
| 11. Grade controls   | 0      | 0.5  | 1        | 1.5    |
| 12. Natural valley or drainageway                              | 0      | 0.5  | 1        | 1.5    |
| 13. At least second order channel on existing USGS or NRCS map | No = 0 |      | Yes = 3  |        |

| B. Hydrology (Subtotal = )                         | Absent | Weak | Moderate  | Strong |
|--|--------|------|-----------|--------|
| 14. Subsurface flow/discharge into channel         | 0      | 1    | 2         | 3      |
| 15. Water in channel and >48 hours since rain      | 0      | 1    | 2         | 3      |
| 16. Leaf litter in channel (January – September)   | 1.5    | 1    | 0.5       | 0      |
| 17. Sediment on plants or on debris                | 0      | 0.5  | 1         | 1.5    |
| 18. Organic debris lines or piles (wrack lines)    | 0      | 0.5  | 1         | 1.5    |
| 19. Hydric soils in stream bed or sides of channel | No = 0 |      | Yes = 1.5 |        |

| C. Biology (Subtotal = )                         | Absent | Weak | Moderate | Strong |
|--|--------|------|----------|--------|
| 20. Fibrous roots in channel <sup>1</sup>        | 3      | 2    | 1        | 0      |
| 21. Rooted plants in channel <sup>1</sup>        | 3      | 2    | 1        | 0      |
| 22. Crayfish in stream (exclude in floodplain)   | 0      | 0.5  | 1        | 1.5    |
| 23. Bivalves/mussels                             | 0      | 1    | 2        | 3      |
| 24. Amphibians                                   | 0      | 0.5  | 1        | 1.5    |
| 25. Macroinvertebrates (record type & abundance) | 0      | 1    | 2        | 3      |
| 26. Filamentous algae; periphyton                | 0      | 1    | 2        | 3      |
| 27. Iron oxidizing bacteria/fungus               | 0      | 0.5  | 1        | 1.5    |
| 28. Wetland plants in channel <sup>2</sup>       | 0      | 0.5  | 1        | 2      |

<sup>1</sup> Focus is on the presence of upland plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = \_\_\_\_\_  
*Watercourse is a Wet Weather Conveyance  
 if Secondary Indicator Score < 19 points*

Most of the secondary indicators will have individual descriptions of each scoring category

### 1. *Continuous Bed and Bank*



*Strong* – There is a continuous bed and bank present throughout the length of the stream channel.

*Moderate* – The majority of the stream has a continuous bed and bank. However, there are obvious interruptions.

*Weak* – The majority of the stream has obvious interruptions in the continuity of bed and bank. However, there is still some representation of the bed and bank sequence.

*Absent* – There is little or no ability to distinguish between the bed and bank.

A photograph of a forest stream. In the background, a large, dark rock overhang is covered in green moss. Water is dripping from the underside of the overhang, creating a small waterfall. The stream flows through a rocky bed with patches of green grass and moss. The surrounding forest is dense with tall trees, some with bare branches and others with green leaves. The lighting is bright, suggesting a sunny day.

# Qualified Hydrologic Professional Certification Program

03.25.2008 15:03

# QUALIFIED HYDROLOGIC PROFESSIONAL

Persons seeking to be certified by TDEC as a QHP must :

- 1) Hold, at a minimum, a bachelor's degree in biology, geology, ecology, engineering, or related sciences.
- 2) Have a minimum of five years relevant experience.
- 3) Successfully complete the Tennessee Hydrologic Determination Training Course



# QUALIFIED HYDROLOGIC PROFESSIONAL

- QHP certification only extends to Wet Weather Conveyance determinations – not wetlands, nor WOTUS.
- QHP submittals receive a “presumption of correctness”
- Certification process outlined in Rule 0400-40-17
- Submittals must include all information required by Rule
- Certification must be renewed every three years through successful completion of HD Refresher Course
- Decertification for false information, or significant failures to exercise the skills of a certified QHP

For all ARAP and CGP permit applicants except private landowners, TDEC requires HDs be conducted and submitted by QHPs, or QHPs-In Training (successfully passed the HDT Course)

# Mitigation and Antidegradation





# *Mitigation and Antidegradation*

- The TWQCA and ARAP Rules require that no activity be authorized unless any lost resource value associated with the proposed impact is offset by mitigation sufficient to result in no overall net loss of resource value.
- **“Resource Values”** are the benefits provided by the water resource, and include providing habitat for fish, aquatic life, and waterfowl.
- **Degradation** is the lowering of water quality through alteration of the properties of water (including water withdrawal or removal of habitat), except those alterations of a short duration.

# *Mitigation and Antidegradation*

- TDEC's Antidegradation Rule (0400-04-03) outlines levels of degradation (including "de minimis"), and the process by which proposed activities that degrade waters may be authorized.
- Water quality will be maintained and protected unless the state determines that lowering water quality is necessary to accommodate important economic or social development in the water's location.
- Four levels of degradation : measurable, de minimis, greater than de minimis, and pollution (violation of WQS)

# *De Minimis Degradation*

- **De Minimis** degradation is “degradation of a small magnitude” – for habitat alterations this may be achieved by impact minimization, and/or “in-system” mitigation (normally meaning within the same HUC12).
- If the proposed activity will cause degradation above de minimis, the applicant must demonstrate that reasonable **alternatives** are not feasible, degradation is **necessary** for important socioeconomic development, and will not violate Water Quality Criteria.
- Degradation above de minimis must be offset by mitigation sufficient to compensate for resource loss.

# *De Minimis Degradation*

- De Minimis thresholds for habitat alterations are closely related to, but not synonymous with General Permit limits. All GP's are considered individually de minimis, but some de minimis activities may require IP's due to other factors.
- The overall degradation of activities associated with a **Common Plan of Development** (CPD) may exceed de minimis cumulatively, even if specific impacts would be individually de minimis. This includes all impacts associated with the CPD, past, present, and future, within a specific waterbody.

# Mitigation and Antidegradation

- Per the Antidegradation Rule, certain types of water resources have differing mitigation requirements :
- For Waters with “**unavailable conditions**” for additional habitat alterations (i.e. already failing to support a designated use due habitat impairment), no additional habitat degradation greater than de minimis may be authorized. Therefore, compensatory mitigation must occur in-system to render the net degradation de minimis.
- Greater than de minimis degradation of **Exceptional Tennessee Waters** (ETW) is subject to review by the Water Quality Board, and for this and other ecological reasons, in-system mitigation is often the preferred alternative.

# On-Line Resources

ARAP / 401 certifications, application, General Permits, fees, links to statute and Mitigation Guidance document :

[Google : "TDEC ARAP"](#)

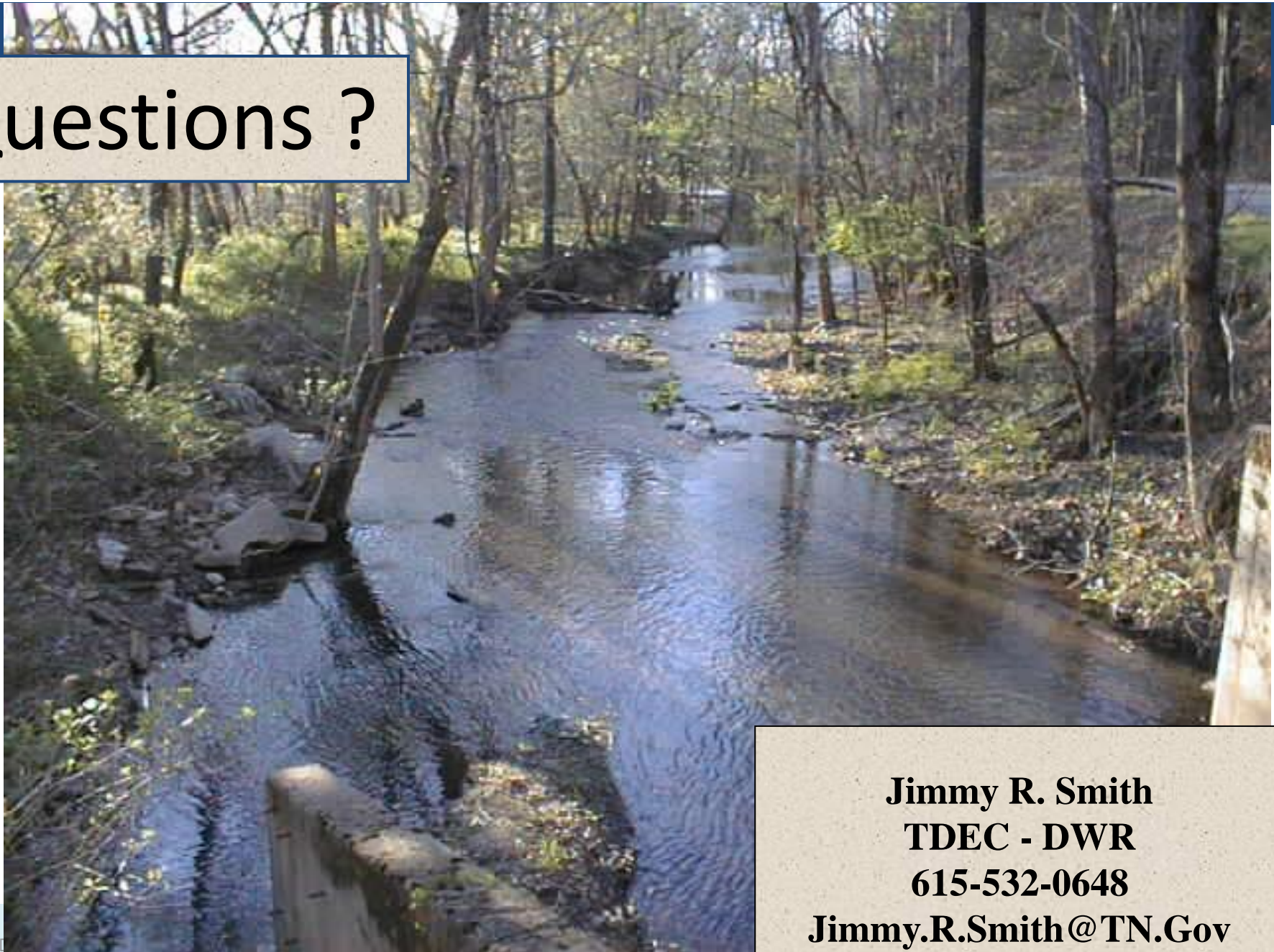
Hydrologic Determination Statute, TDEC Rules, and SOP Guidance :

[Google : "TDEC hydrologic determination"](#)

List of certified QHPs, application, Training Course schedule & registration :

[Google : "TNHDT.org"](#)

# Questions ?



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