

# Framework of The Clean Water Act

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# This Presentation will cover...

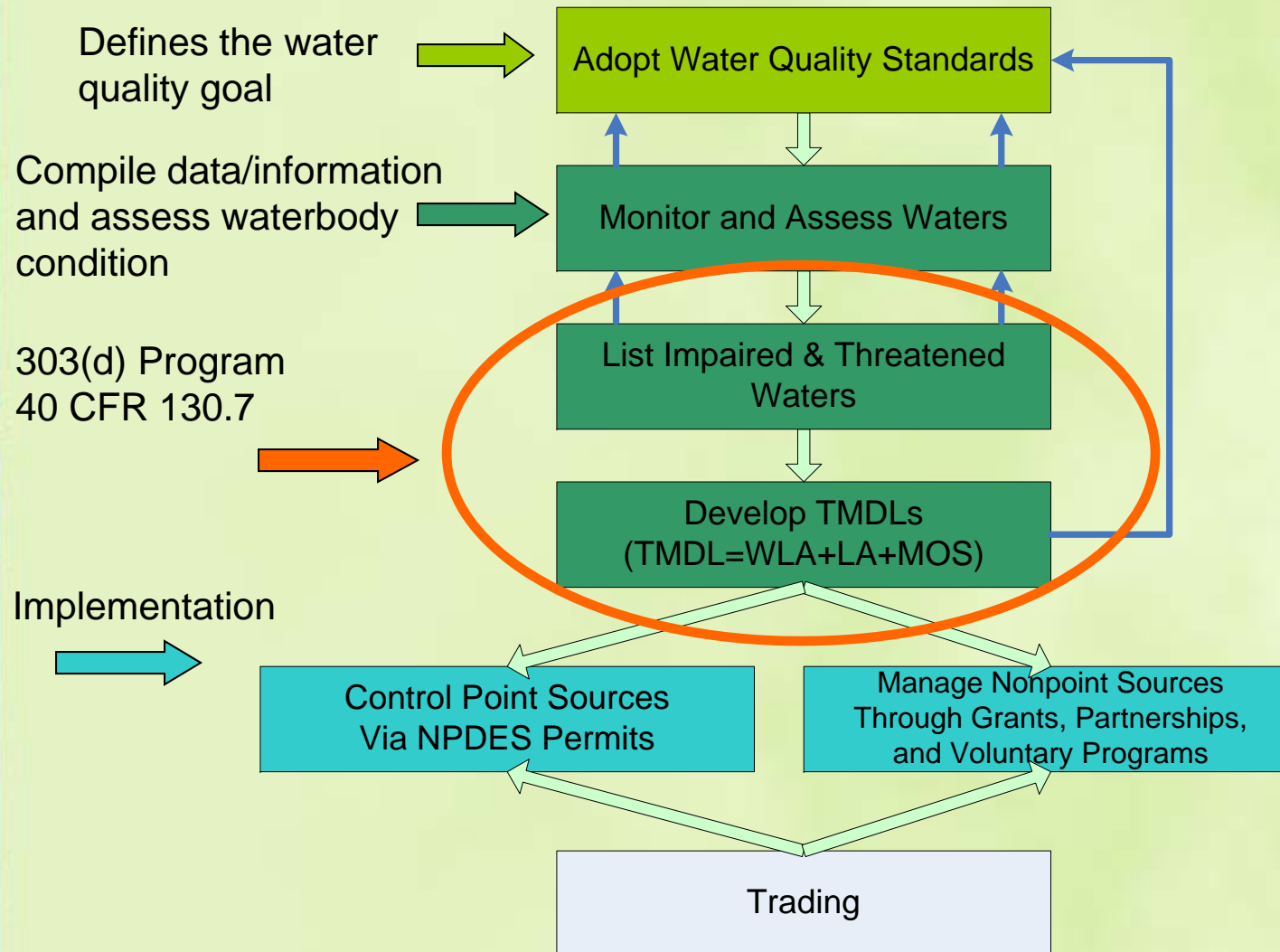
- Overview of Clean Water Act (CWA) restoration framework
  - *water quality standards*
  - *monitoring/assessment*
  - *reporting water quality status*
  - *TMDL development*
  - *TMDL implementation (point & nonpoint source control)*



# The Clean Water Act

- **Objective:** “restore and maintain the chemical, physical and biological integrity of the Nation’s waters”
- **Interim goal:** “water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water,” **whenever attainable (Sec 101(a)(2))**

# Clean Water Act Restoration Framework

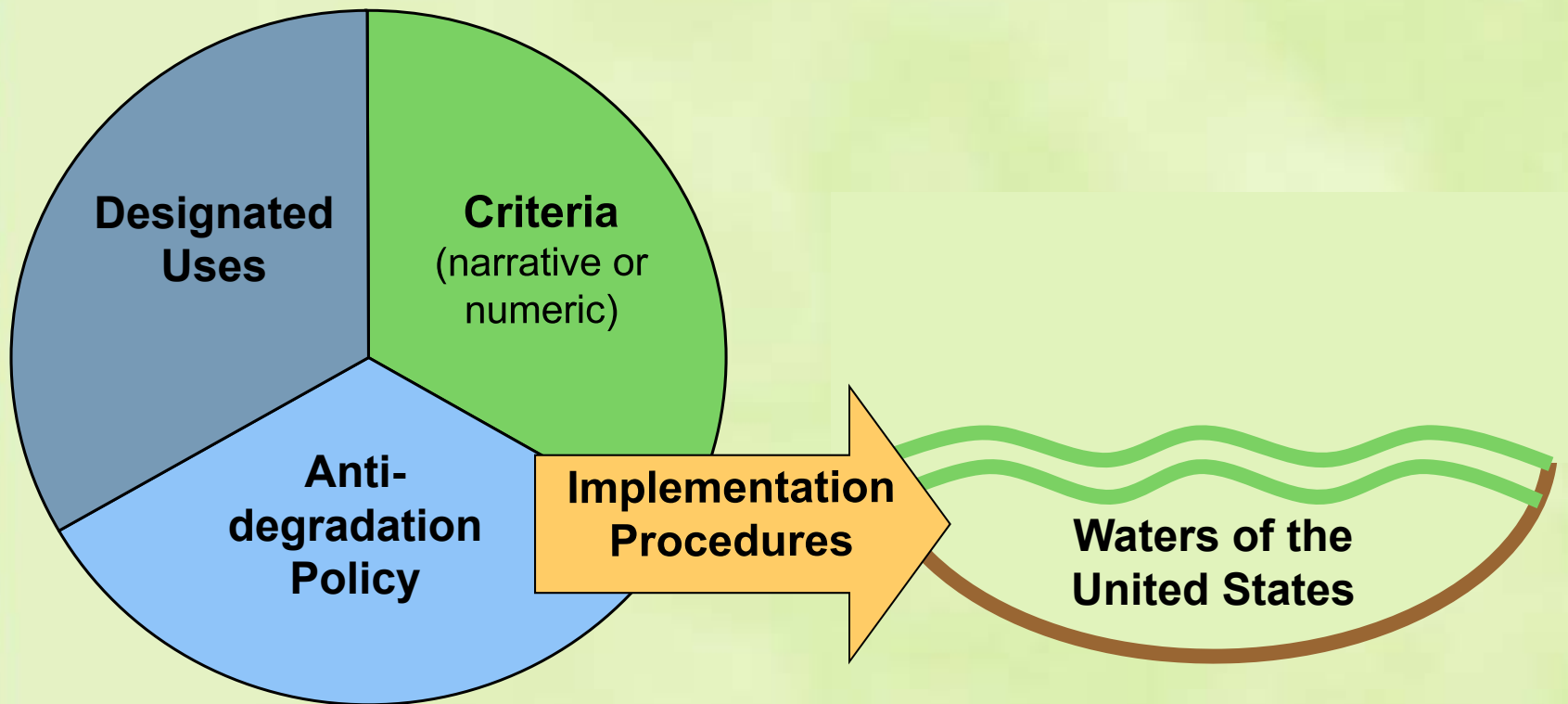




# Water Quality Standards (WQS)

- Establish water quality goals for a waterbody
- General process:
  - States/tribes adopt
  - EPA reviews/approves
  - If EPA disapproves & state/tribe does not adopt specific changes, EPA promulgates a replacement standard

# WQS Components





# Designated Uses

- A statement of the management objectives and expectations for each of the individual surface waters under state/tribal jurisdiction
- Examples:
  - Protection and propagation of fish, shellfish and wildlife
  - Recreation in and on the water
  - Public water supply
  - Agriculture
  - Industry
  - Navigation

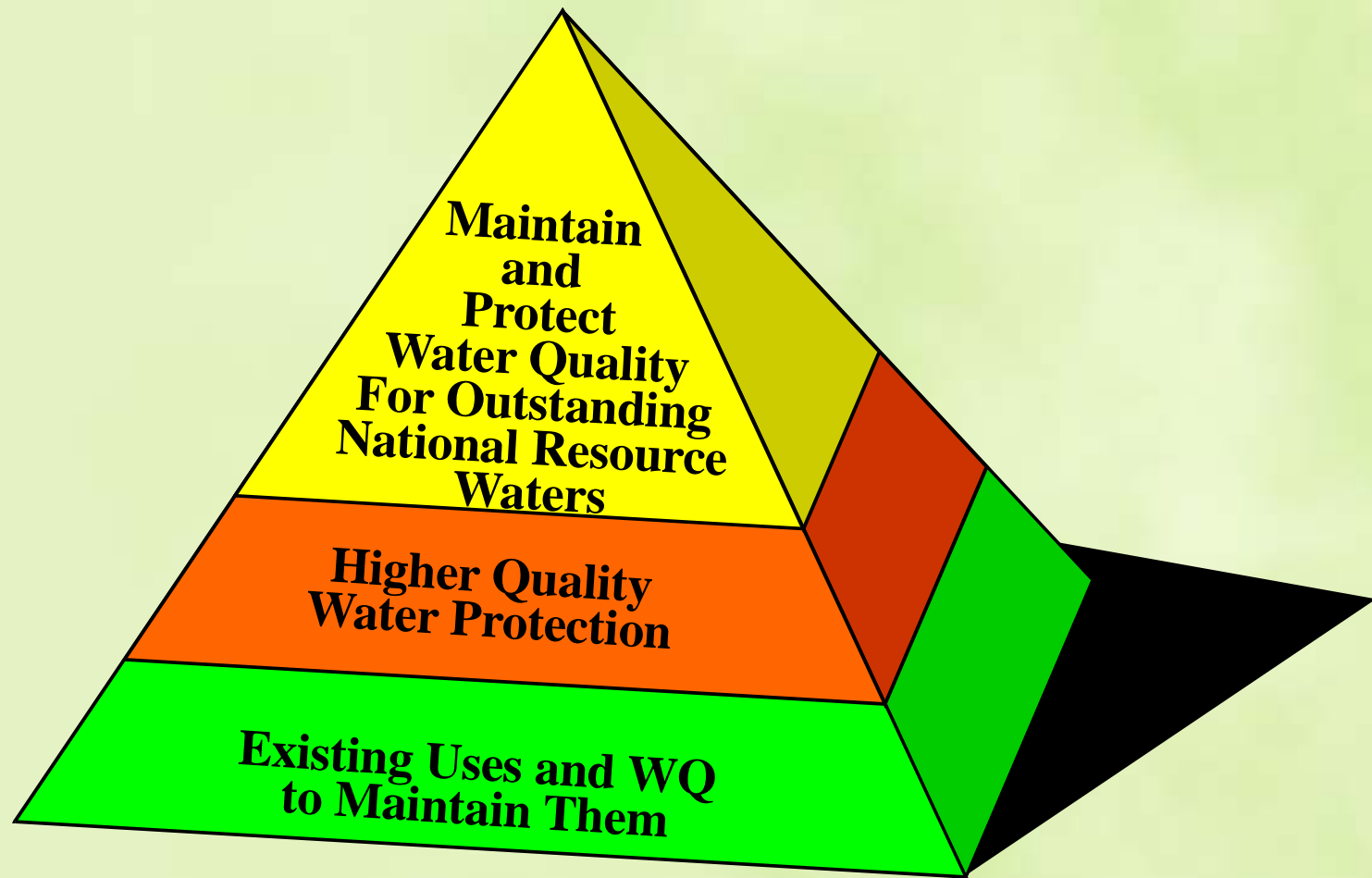



# Water Quality Criteria

- A **numeric** value (e.g., magnitude, duration, frequency) or **narrative** statement
- Examples:
  - Numeric: 10mg/L [mag.], 4-day avg [dur.], once in three years [freq.]
  - Narratives: no toxics in toxic amounts, no visible sheen
- Represents level of water quality that supports a particular designated use
- When criteria are met, water quality will protect the designated use



# Antidegradation Policies





# Use

## Attainability Analysis (UAA)

40 CFR 131.10(g)

- May be conducted to modify or remove a designated use
- Involves determining the feasibility of attaining the use in the future
- State/Tribe initiated adoption of any new or revised water quality standards




# Monitoring/Assessment

- State/tribe driven process; no general federal CWA monitoring requirements on what, where, or how
- EPA Support  
([www.epa.gov/owow/monitoring](http://www.epa.gov/owow/monitoring))
  - CWA Section 106 grant funds
  - Monitoring guidance
  - National probability surveys
- Objective – determine water quality attainment status (i.e., are designated uses being met?)




# Reporting Water Quality Status

- State's submit to EPA by April 1 every even numbered year:
  - CWA Section 305(b) report
    - water quality status of all waters in the state
    - EPA reviews, but does not approve report
    - EPA consolidates state reports into one national 305(b) report to Congress
  - CWA Section 303(d) list
    - waters “impaired” or “threatened” by a “pollutant” & needing a Total Maximum Daily Load [TMDL]
    - EPA reviews & approves list, or may add waters to the list



# Reporting Water Quality Status (cont.)

- Section 303(d) list also includes:
  - Description of assessment methodology
  - Description of data/info used to develop list
  - Description of rationale for not using data
  - “Pollutants” causing the impairment
  - Priority ranking for TMDL development (w/in 2 yrs)



# EPA's Integrated Reporting Guidance

- Introduced for 2002 reporting cycle
- Promoted integrating the reporting requirements of Section 303(d) list with Section 305(b) report
- Goal – uniform assessment and reporting of water quality status of all waters in a state via EPA's recommended five “Reporting Categories” →

# Five Reporting Categories

( >75% of States now using Integrated Report format )

Category	Description
1	All designated uses (DU) met
2	Some, but not all, DUs met
3	Can not determine if any DUs met
4	<b><u>Impaired/threatened</u> –TMDL not needed</b>
4a	<b>TMDL completed</b>
4b	<b>TMDL alternative</b>
4c	<b>Non-pollutant causes</b>
5	<b><u>Impaired/threatened</u> by pollutant –TMDL needed</b>

**Section 303(d) List**



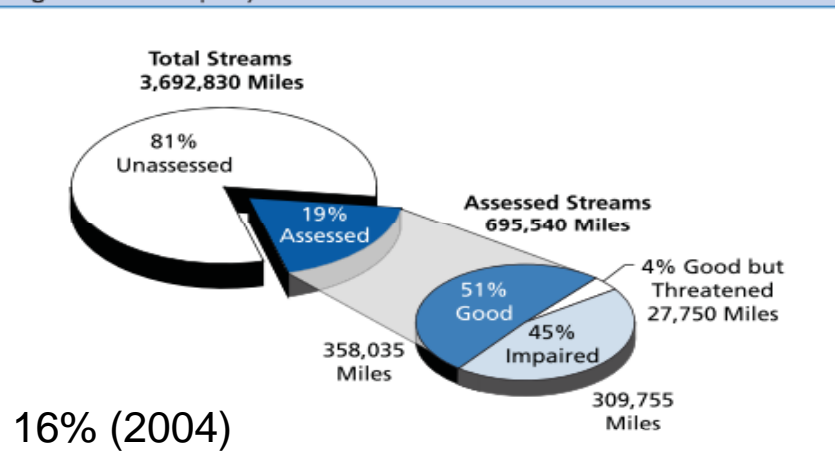
# Category 4b

- TMDL not needed when other controls will lead to meeting WQS in a reasonable period of time
- Examples
  - NPDES permit
  - CERCLA/RCRA remediation
  - Detailed local watershed management plans w/ adequate funding & assurances
- Less used portion of 303(d) program
  - 400 4b's vs. 47,000 TMDLs
- EPA working with states and other stakeholders (e.g., Forest Service) to identify Category 4b opportunities

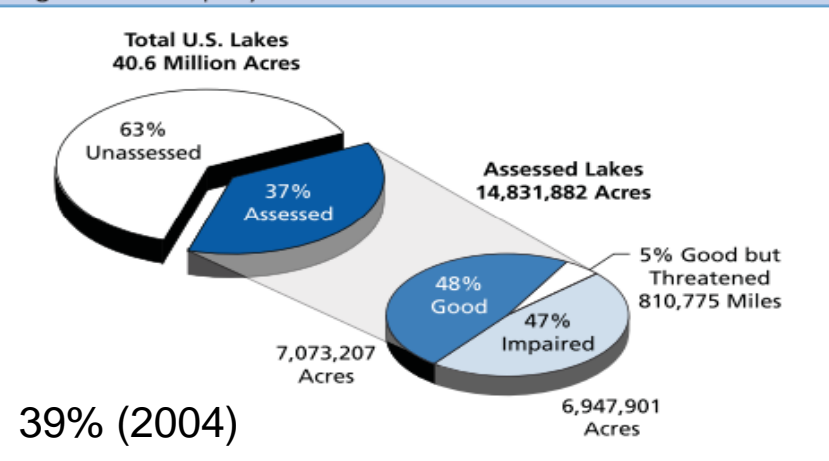


# National Picture of Water Quality Assessments (2002 305(b) Report)

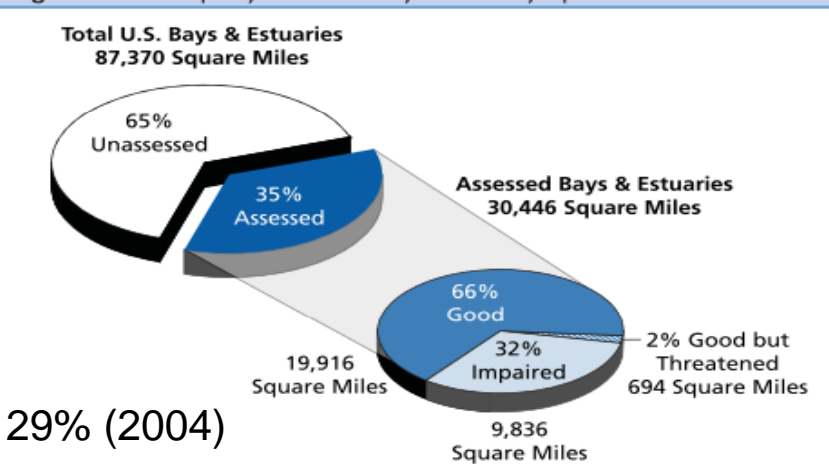
**Figure 1.** Water quality in assessed river and stream miles.



**Figure 2.** Water quality in assessed lake acres.



**Figure 3.** Water quality in assessed bay and estuary square miles.



**National Water Quality Inventory Report to Congress:**  
<http://www.epa.gov/305b/>

# Section 303(d) List Stats

- Over 40,000 listed segments, with one or more impairments
- Over 71,000 waterbody-pollutant combinations reported
- Sources of impairment:
  - 45-55% blended
  - 40-50% nonpoint
  - 5% point

## Top causes of impairment

- Pathogens: 15%
- Metals (other than Mercury): 10%
- Nutrients: 10%
- Low Dissolved Oxygen: 9%
- Sediment: 9%
- PCBs: 8%
- Mercury: 5%



# What is a Total Maximum Daily Load (TMDL)...?

A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

*\* The TMDL comes in the form of a technical document or plan.*

# TMDL Calculation

$$\text{TMDL} = \Sigma\text{WLA} + \Sigma\text{LA} + \text{MOS}$$

$\Sigma\text{WLA}$ : Sum of waste load allocations (point sources)

$\Sigma\text{LA}$ : Sum of load allocations (nonpoint sources)

MOS: Margin of Safety

*Completed for each waterbody/pollutant combination*

Point Sources



Pipe



Concentrated Animal Feeding Operation (CAFO)



Ditch/Conveyance

# Nonpoint Sources



Agricultural lands



Livestock



Forest land

**Nonpoint sources  
do not need  
NPDES permits**

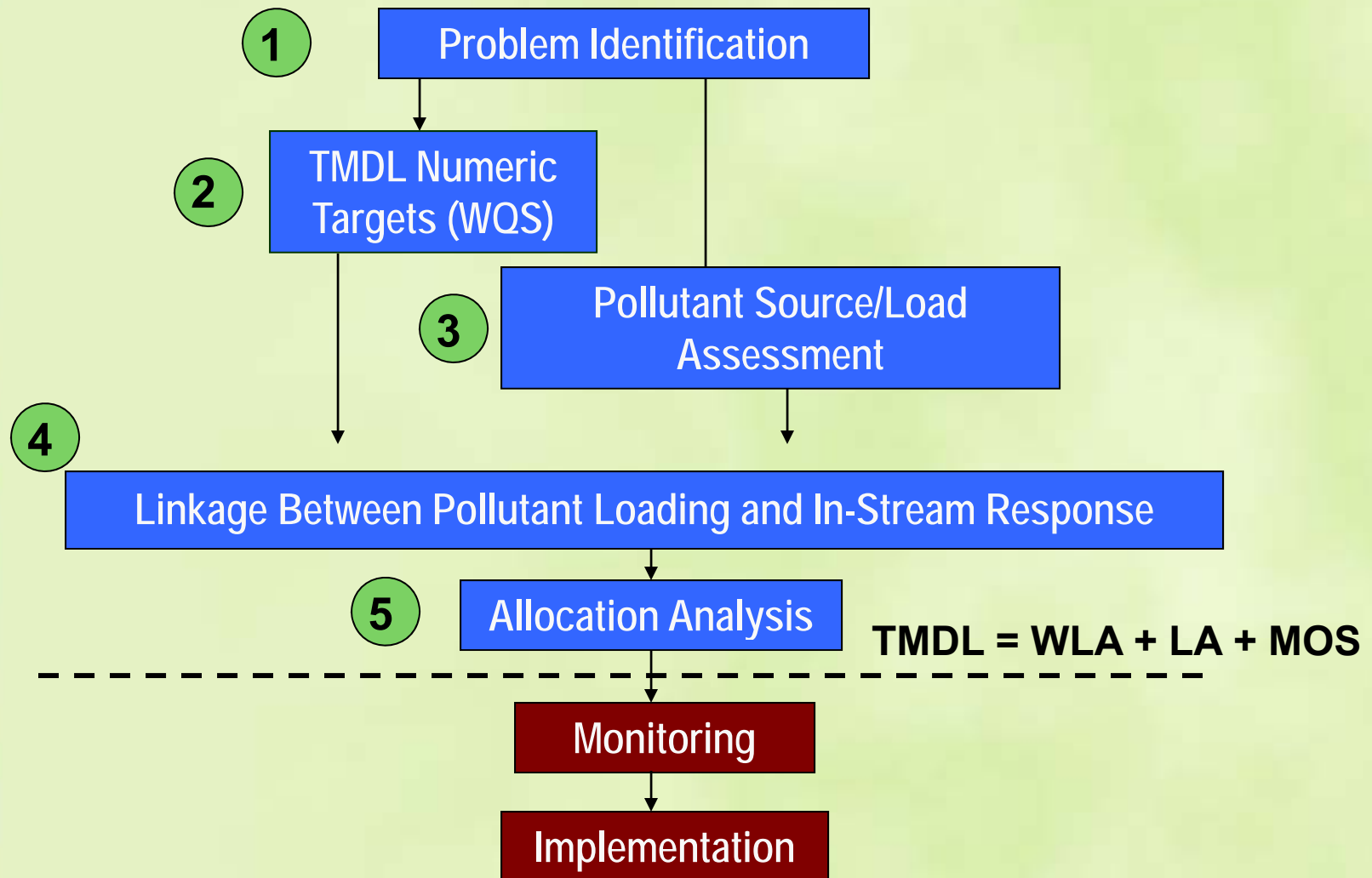
# Total Maximum Daily Loads (TMDLs)

## For waters identified on the 303(d) list:

- “TMDLs shall be established for all *pollutants* preventing or expected to prevent attainment of water quality standards...”
- “TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS...” *Regulations (40 CFR 130.7)*
- No statutory or regulatory timeframe for TMDL development
  - EPA guidance establishes 8-13 year time frame from time of initial listing

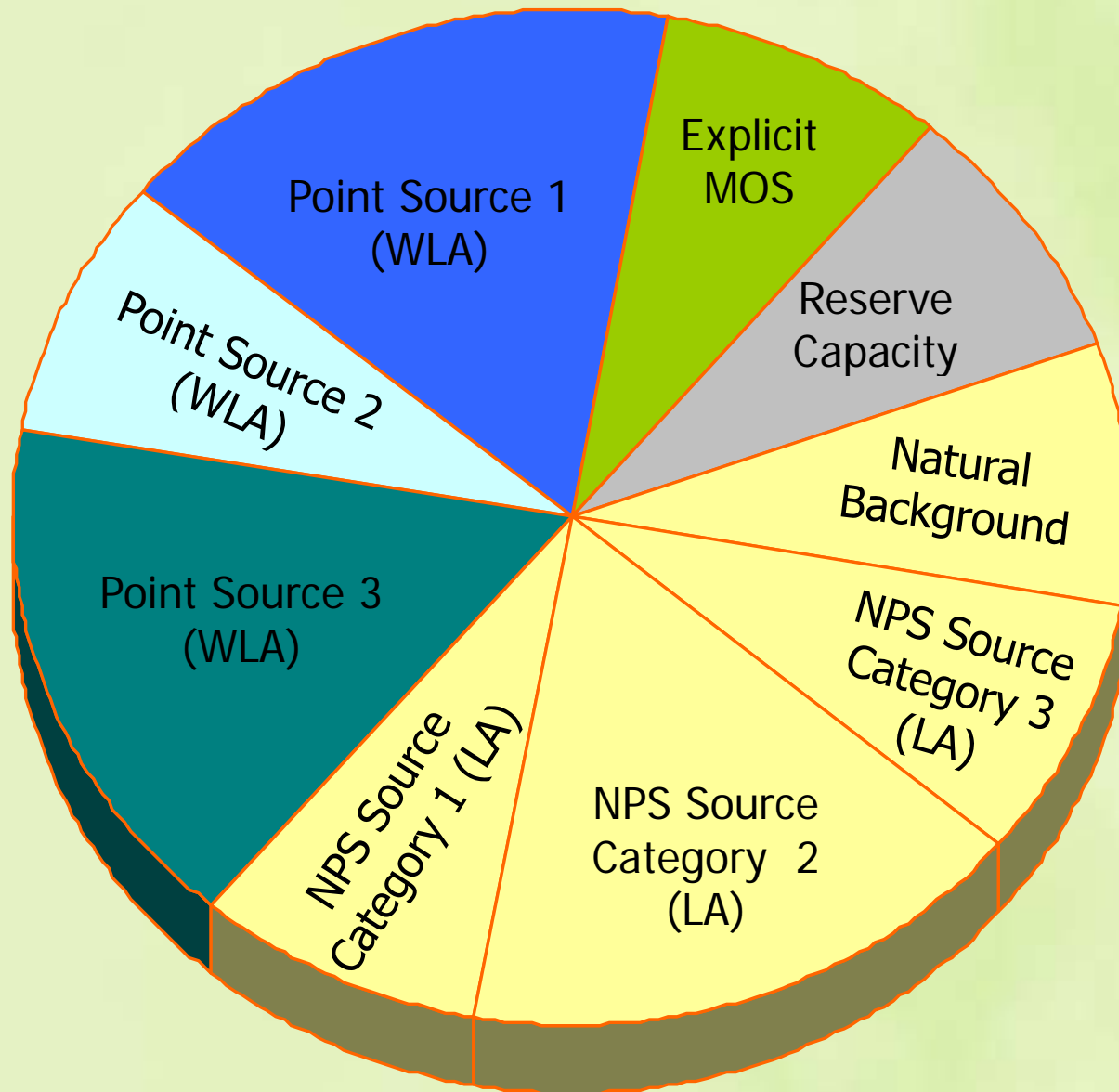


# TMDL Development Process






# TMDL Allocation





# TMDLs are expressed as...

- Mass (e.g., pounds per day)
- Toxicity (e.g., toxic units)
- Energy (e.g., heat in temperature TMDLs)



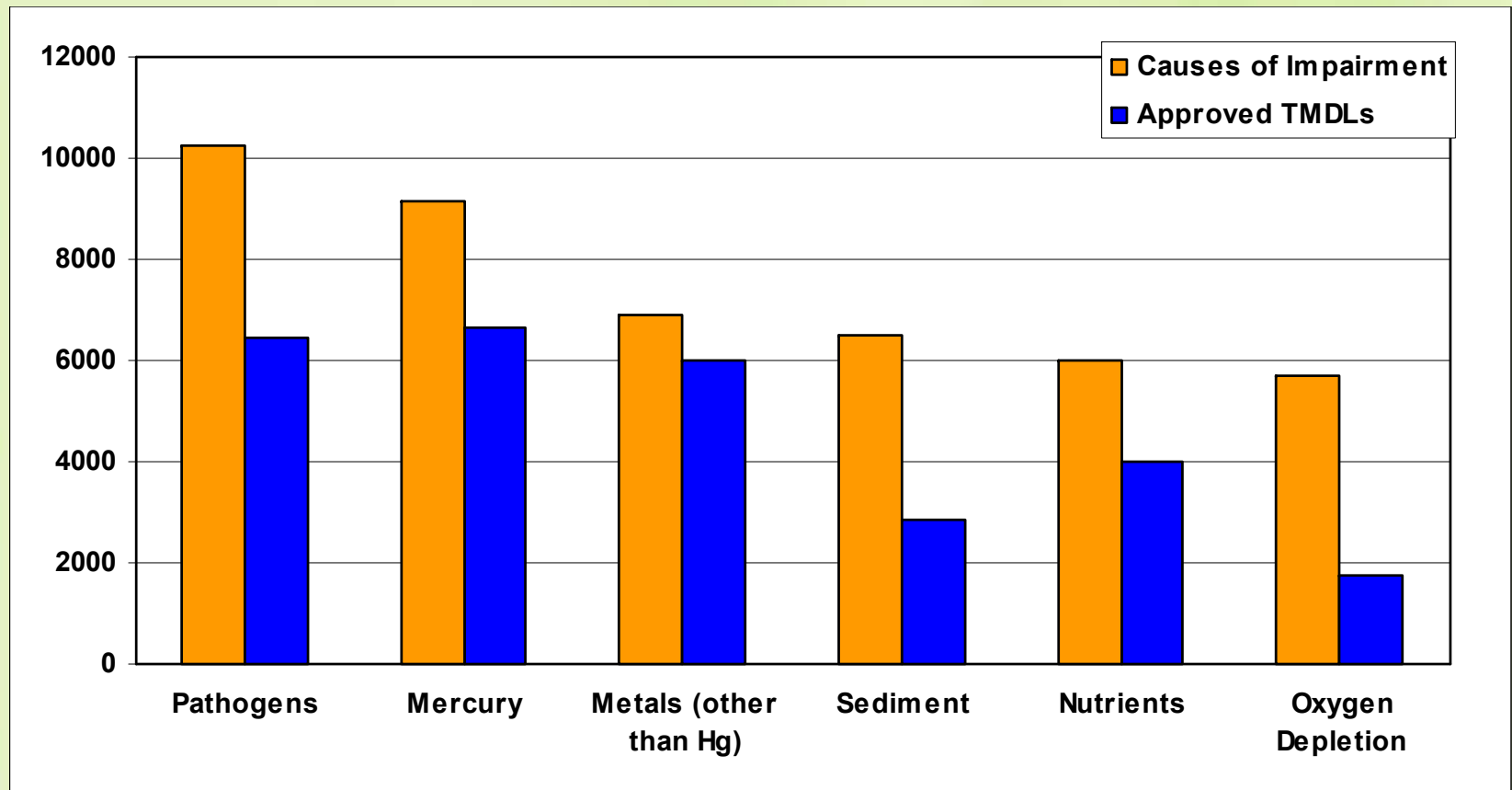
# Elements of a Typical TMDL Document

- Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking
- **Applicable WQS & Numeric Water Quality Target**
- **Loading Capacity**
- **Load Allocations and Waste Load Allocations**
- **Margin of Safety**
- **Consideration of Seasonal Variation**
- Reasonable Assurance for PS/NPS
- Monitoring Plan to Track TMDL Effectiveness
- Implementation Plan
- **Public Participation**

# TMDL Process

- States develop TMDLs, EPA reviews/approves
- In some cases, EPA establishes the TMDL
- Public/stakeholder role in TMDL Process:
  - Provide data and information to the states
  - Review and comment on draft TMDLs
  - Assist in the development of 3<sup>rd</sup> party TMDLs

# Majority of 47,000 TMDLs (by most common pollutant types)





# TMDL Implementation

- **TMDLs not self implementing** under 303(d)
- **Point Sources:**
  - Permit limits consistent with WLA are enforceable under CWA through National Pollutant Discharge Elimination System (NPDES)
  - Issued by EPA or States w/delegated authority
- **Nonpoint Sources:**
  - No federal regulatory permit/enforcement program
  - Primarily implemented through State/local NPS management programs (few w/regulatory enforcement) and federal land management agency BMP programs



# Useful CWA and TMDL Websites

- The Watershed Academy’s online module  
“Introduction to the Clean Water Act”

<http://cfpub.epa.gov/watertrain/>

- The EPA TMDL Website

<http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/>

- ATTAINS online impaired waters data  
system

<http://epa.gov/waters/ir/>