Anti-Degradation Pre-Rulemaking
Meeting #3

Application of Anti-Degradation to State and Federal Permitting Programs

Vermont DEC

March 9, 2010 – Skylight Conference Room, Waterbury, VT

Agenda

- Introductions
- Antideg Concepts
- Stormwater Permitting
- Rivers Permitting
- Wetland Permitting
- Lakes & Ponds Permitting
- WWMD

To what discharges/activities does anti-deg apply?

- Typically, anti-deg implementation methods adopted by states or supported by EPA require anti-deg reviews for “new or expanded” **regulated** discharges

To what discharges/activities does anti-deg apply?

- VWQS Section 1-01 defines "**new discharge**" as "any discharge not authorized under the provisions of 10 V.S.A. Section 1263 as of January 7, 1985 or any increased pollutant loading or demand on the assimilative capacity of the receiving waters from an existing discharge that requires the issuance of a new or amended **permit**.

To what discharges/activities does anti-deg apply?

- "permit" is defined in WQS as "a certification, dam order, or other authorization in which during the application review process, **compliance with the Vermont Water Quality Standards is evaluated** pursuant to applicable state or federal law.

To what discharges/activities does anti-deg apply?

- DEC will therefore apply anti-deg to those permitting actions wherein **compliance with the Vermont Water Quality Standards is evaluated** pursuant to applicable state or federal law.
- Types of permitting actions:
  - NPDES permits – WWTF, stormwater, direct discharges
  - State stormwater discharge permits

To what discharges/activities does anti-deg apply?

- 401 water quality certifications associated with a federal permitting action
- Stream alterations, encroachments and wetlands activities which require a 401 water quality certification pursuant to a 404 permit

Vermont's Anti-Deg Policy: Tier 2

- Vermont's Anti-Deg Policy states:
- A **limited reduction** in the existing higher quality of waters may be allowed only when it is shown that:
- The adverse economic or social impacts on the people of the state specifically resulting from the maintenance of the higher quality of the waters would be substantial and widespread.

Vermont's Anti-Deg Policy: Tier 2

- These adverse impacts would exceed the environmental, economic, social and other benefits of maintaining the higher water quality; and
- There shall be achieved the highest statutory and regulatory requirements for all new or existing point sources, and all cost effective and reasonable accepted agricultural practices, as appropriate for nonpoint source control, consistent with state law.

Vermont's Anti-Deg Policy: Tier 2

- To the extent that any reduction in the quality of high quality waters is allowed, such reduction shall be limited to that which is necessary to comply with subsections C(2) above.

Assessing Degradation

- A lowering of water quality from existing conditions to a point falling below WQS for any existing use is not allowed (Tier 1)
- Activities that lower water quality in high quality waters can be allowed only under certain conditions (Tier 2)
- Activities that lower water quality in Tier 3 waters are banned unless the impacts are limited, short-term or temporary

Assessing Degradation

- Possible factors to consider when judging water quality impacts of proposed activities or discharges:
  - Percent change in ambient conditions predicted at the appropriate critical condition(s)
  - Percent change in loadings
  - Percent reduction in assimilative capacity
  - Ratio of stream flow to discharge flow (dilution ratio)

Assessing Degradation

- Nature, persistence and potential effects of the parameter
- Predicted impacts to aquatic biota
- Potential for cumulative effects
- Degree of confidence in any modeling techniques utilized
- The difference, if any, between permitted and existing effluent quality

Examples of Degradation Assessment

- Oregon – defined degradation as any lowering of water quality where there is any measurable change in water quality
- Ohio, New Mexico, Washington, Missouri and West Virginia – use of less than 10 percent of remaining assimilative capacity is considered to be non-significant or de-minimis and not requiring Tier 2 review

When is an anti-deg finding made?

- Individual permits

- General Permits – a single anti-deg finding may be made in the context of permitting numerous activities/discharges under a general permit

BMP Manuals/Rules – Anti-degradation

- Standards evaluated for SEJ at time of adoption

Stormwater Permitting

Stormwater Permitting

- Stormwater Discharge Characteristics
- Permit Program Descriptions
- Options for Addressing Anti-Deg in Stormwater Permits
- Assessing Impacts
- Public Participation

How are stormwater discharges different from other NPDES discharges?

- Multiple sources and discharge points
- May be discrete or not
- Flow varies
  - with intensity of storm events = baseline flow and quality assessment is difficult
  - daily, monthly, seasonally = pollutant type and concentration varies at each discharge point
- Discharge monitoring is difficult
- Wet weather flows are regulated through BMP approach rather than numeric effluent limitations

Each stormwater permitting program is unique

- Operational
  - Sediment, Phosphorus and water quantity
  - Control measures: water quantity and quality
- Municipal Separate Storm Sewer System (MS4s)
  - Many sources, discharge points
  - Control measures: water quantity and quality
- Industrial
  - Dependent on type of industrial activity
- Construction
  - Sediment

Stormwater Permit Universe

- Non-construction: >3,000 existing regulated facilities
  - any given facility has multiple discharge points
  – 200- 300 new projects each year
  -all needing anti-deg analysis at renewal
- Construction: upwards of 500 new per year
- MS4 – incorporates multitude of sources

Addressing Anti-Degradation in a Stormwater Permit Framework

- Project by project versus categorical
- Antidegradation demonstration at time of General Permit issuance or BMP standards adoption
- If permittee demonstrates that they meet the terms of the General Permit/BMP standards, antidegradation requirements are satisfied

Addressing Anti-Degradation in a Stormwater Permit Framework

- Potential to develop different requirements for different receiving waters or activities
  - Very High Quality waters suite of BMPs
  - High Quality waters suite of BMPs

- If permittee cannot meet terms of GP or BMP standards, then individually demonstrate compliance with antidegradation

Is there a threshold below which an antidegradation review is not required?

- Activities that fall below a minimal threshold level are considered to be insignificant
  - Assumption of zero discharge or minimal impact

How should impacts of stormwater discharges be assessed?

- When are assessments made?
  - During GP/BMP standards development
  - Pre “alternative” permit issuance
  - After permit or coverage issuance
- How are assessments made?
  - Pre- Review of BMP and Bio Data
  - Post – Inspections and Monitoring

How should impacts of stormwater discharges be assessed?

- What is assessed?
  - Impacts to receiving water are directly assessed
    - Biomonitoring, geomorphic assessment
  - BMP effectiveness via inspection
  - Potential effluent monitoring

Stormwater Effluent Monitoring?

- Evaluating BMP effectiveness is complex and expensive
- Can add to performance data “International BMP Database”
- Can it discern use of ASCAP?

How should impacts of stormwater discharges be assessed?

- Who makes the assessments?
  - Agency – if and how water quality will be impacted and control measures used to avoid or minimize impacts – during GP/BMP standards development
  - Permittee – assessing effectiveness of control measures
  - Agency – cumulative impacts

How is the public participation requirement fulfilled?

- During GP/BMP standards development
  - Antidegradation requirements subject to Public Notice/Process
- NOIs for individual projects – Public Notice
- Public notice and hearing, if requested if permittee cannot meet GP/BMP standards

River Management Program

Regulatory oversight and environmental review of:

- stream alterations
- bridges, culverts, and dams
- hydropower developments
- water withdrawals

WQ Standards compliance reviews conducted as part of dam orders and 401 certification of federal actions

(CWA Sec. 404 and FERC licenses/exemptions)

Water Quality and Beneficial Uses

Potential impacts of stream alteration and flow modification primarily associated with:

- encroachment and changes in channel morphology including vertical and lateral habitat connectivity
- stream flow and water level regulation
- changes in sediment quantity, size, sorting & distribution
- changes in D.O. and Temp. from impoundment releases
- construction related erosion and fine sediment discharges
- exacerbate erosion and/or inundation hazard
- degradation of Outstanding Resource Water values

Habitat stressors considered at different scales

Flow, hydraulic, and sediment regime changes may degrade at a small or large scales, i.e., impacting an important or unique habitat feature; triggering a larger physical process that impacts habitat use;

Examples:

- Impounding free-flowing reach & hydropower bypass dewatering
- Sediment discontinuity & AOP blockage at undersized culvert
- Bed scour or accretion from slope-related disequilibrium
- Disequilibrium from sediment discontinuity at dams/diversions

Stream Alteration and Flow Modification

Examples of Step Function BMPs that are applied:

- avoidance and minimization

  (managing people's expectations)
- bankfull bridges and bottomless culverts
- damless diversions
- run-of-river hydro operations at existing dams
- aquatic base flows in bypass reaches

Stream Alteration and Flow Modification

Evaluations – Examples – Antideg Considerations

- De minimus (e.g., fix associated with outflanking of bridge)
- Insignificant/Very Limited Reduction in Quality
  - large scale habitat processes and equilibrium unchanged
  - BMPs – e.g., avoidance and minimization of instream and river corridor encroachment
- Limited Reduction in Quality– emergencies related to public safety
- Limited Reduction in Quality – may have substantial and widespread social and economic justification (SEJ)
  401 issued with antideg findings
- Significant Reduction in Quality – w/o public safety or high SEJ
  no permit or permit denial

ISSUES:

Social and economic justification test may conflict with public safety and general welfare requirements associated with some physical alterations that may degrade designated uses.

Example: Emergency actions to protect residence or public road

Words on the page do not fit all types of environmental analysis

Example: Assimilative Capacity may be an impractical concept when multiple, interconnected stressors at work over very large scales (i.e., flows, sediment, slope/depth)

Huge Opportunity Costs at Stake -- Fluvial Geomorphic Equilibrium and associated habitat benefits will not be achieved if we attempt to **quantitatively** evaluate the limited reductions associated with every individual project or conversely try to understand, in real time, how much assimilative capacity is available in the maintenance of equilibrium.

Wetland Permits

- Vermont General Permit – ACOE
  Sec. 401 WQ Certification

- Wetland Conditional Use Determination
  (Wetland Permit, 2010)

What impacts are addressed?

- Sq ft of impact to both 50 ft buffer zone and to wetland
- Impacts to functions and values

Designated Uses:

Fish and other Aquatic biota, recreation

Aquatic habitat

Existing Uses:

During permit review

ANR Determination (2010)

Water Quality Standards

- Wetlands are not addressed directly
- Separate Water Quality Standards for wetlands?
- Surface water in wetlands

  Narrative standards:

  As naturally occurs

  No toxics in toxic amounts

“Assimilative Capacity”

- When considering “impacts” = dredge/fill
- When is the impact on the functions and values undue and adverse?

Step-wise mitigation sequence:

Avoidance, minimization;

Denial or compensation for “unavoidable” impacts

Indirect and Cumulative Impact

- Cumulative from a linear project
- Cumulative from a large development over time
- GIS tools to review cumulative impacts around a particular wetland
- On-site review

Aquatic vs Wetland

- No significant degradation to the “aquatic ecosystem” from wetland fill

- WQ standards do not make sense / do not apply when there is not a water column or surface water

Shoreland Encroachment Permit

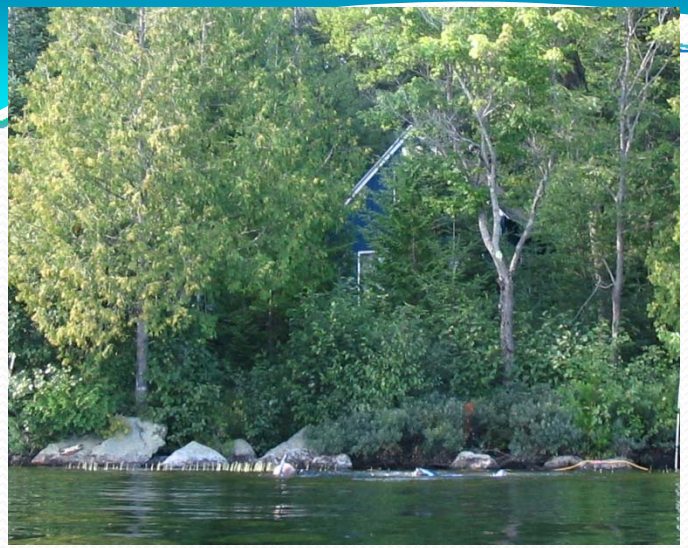
- Statute predates both the Clean Water Act and the VT Water Quality Standards.
- Jurisdiction over work beyond the mean water level of a lake covers activities including fill, retaining walls, abutments, dredging, docks, pipelines, cables in public water.
- Anti-deg would apply to those projects also requiring a 401 Cert.

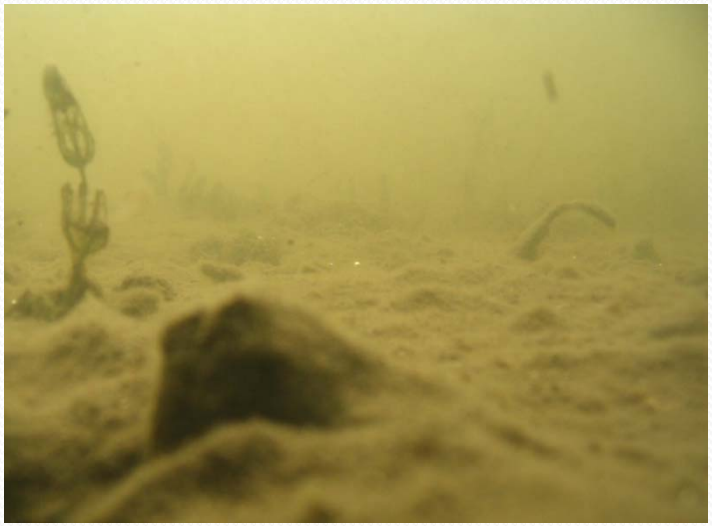
What degradation does the SEP address?

- Statute identifies “public good” values:
  - Fish and wildlife habitat
  - Aquatic and shoreline vegetation
  - Navigation
  - Recreation and public uses incl. fishing and swimming
  - Water quality
  - Consistency with the natural surroundings

How might SEP measure assimilative capacity?

- Aquatic habitat
  - Shoreland development (removal of natural vegetation) results in degraded aquatic habitat





How might SEP measure assimilative capacity?

- Navigation (boating)
  - Subjective, as expectations will vary from lake segment to lake segment (harbor area vs. undeveloped, usual boat traffic lanes etc.)
  - Might consider a % surface cover "influence area" for different types of lake segments

How does SEP address cumulative impact?

- Statute requires consideration of cumulative impact on uses of project plus existing encroachments
- Project cumulative impact on public good is weighed against public benefit, if public good is affected there must be a greater public benefit