

Draft EPA-USGS Technical Report: Protecting Aquatic Life from Effects of Hydrologic Alteration



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What Is the Draft Technical Report?

- EPA and USGS jointly developed this draft report to serve as a source of scientific and technical information for states, tribes and territories about:
 - The natural flow regime and the potential effects of flow alteration on aquatic life;
 - Examples of CWA programs (such as 304(a) criteria) that states have already used to support the natural flow regime and maintain healthy aquatic biota; and
 - A flexible, non-prescriptive framework that state water managers might consider if they are interested in developing narrative or numeric targets for flow regime components that are protective of aquatic life.

What the Draft Technical Report Is Not

The Report is Not:

- A law or regulation
- A set of binding legal requirements
- A substitute for applicable state statutes or regulations, which have primacy
- An expansion of federal authority over water rights
- A substitute for, or constraint on, state and Tribal discretion to act in accordance with existing state water rights
- A policy, guidance, or criteria document; it shows no advocacy; and it does not require States to do anything.

Why Did EPA and USGS Develop the Draft Technical Report?

- To serve as a technical and informational resource for state water-resource managers who face real challenges today.
- Expected changes to historic hydrologic conditions as a result of climate change further complicate water-resource management challenges.

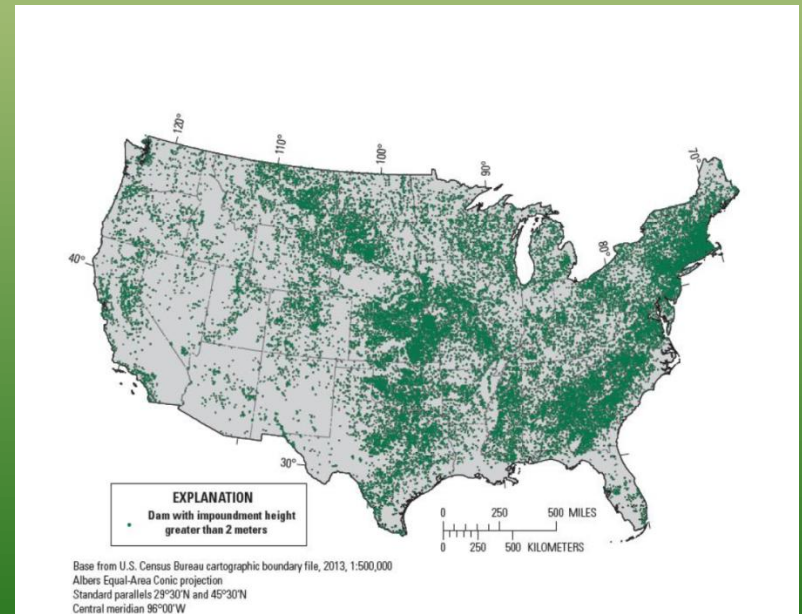
The Draft Technical Report Has Three Main Sections

1. Environmental Flow (or EWater) support in the literature.
2. Overview of applicable CWA programs (such as 304(a) criteria), with state and Tribe examples.
3. Technical Non-Prescriptive Framework for Quantifying Flow Targets to Protect Aquatic Life.

Natural Flow Regime

The first main section (pages 15-39) describes the scientific principles of the natural flow regime, presents a general conceptual model of the effects of flow alteration on aquatic life, and provides a literature review of the following sources of flow alteration:

- Dams & Impoundments
- Diversions
- Groundwater withdrawals
- Effluents and artificial inputs
- Land-cover alteration
- Climate change
- Physical, chemical, and geomorphological effects



CWA Program Descriptions

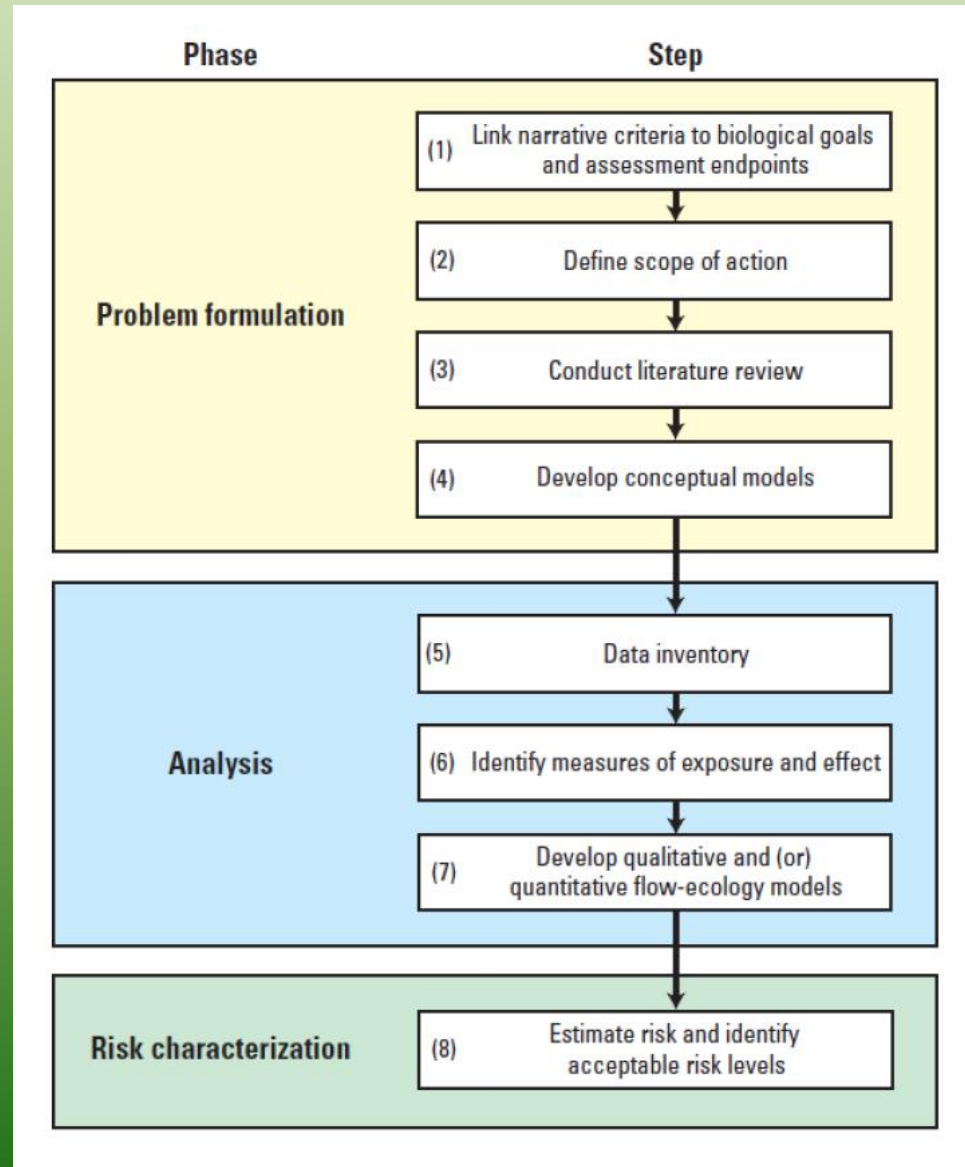
The second main section (pages 39-64) discusses CWA programs that states have already used (citing examples) to address the effect of flow regime change on aquatic life. They include:

- Water quality standards (WQS) (Section 5.1),
- Monitoring and assessment of water bodies (Section 5.2),
- Other components of the CWA that could be used to address flow (Sections 5.3 – 5.6)

Non-Prescriptive Framework

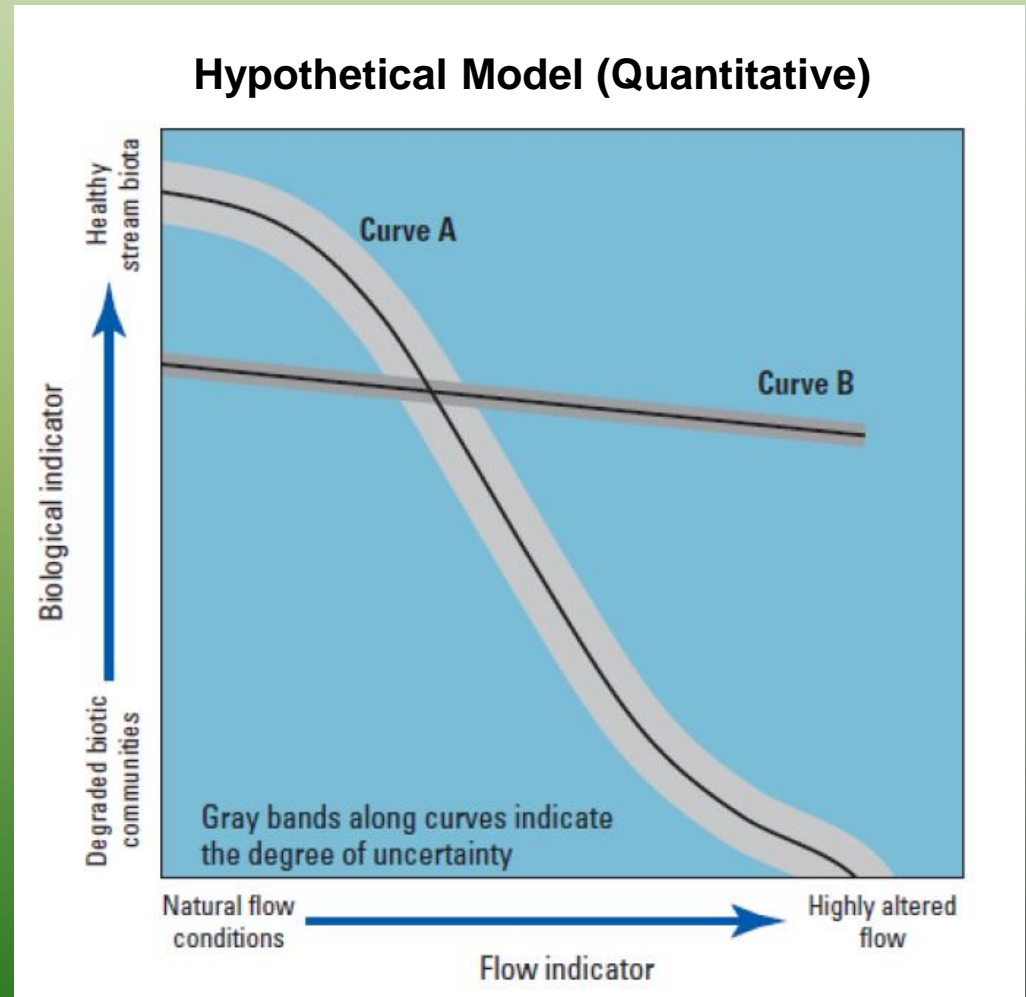
The third main section (pages 65-91) discusses a non-prescriptive framework for quantifying flow targets to protect aquatic life and includes three primary phases:

1. Problem Formulation Phase
2. Analysis Phase and
3. Risk Characterization Phase



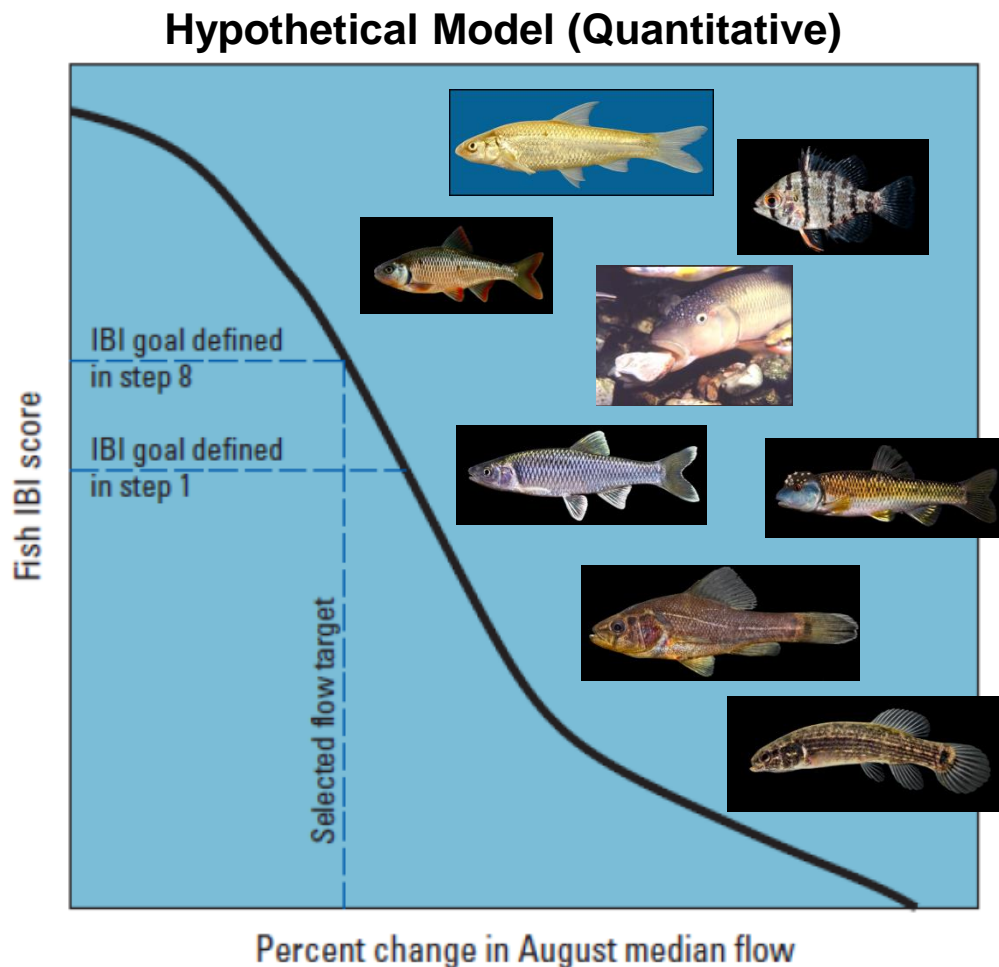
Step 7-Develop Qualitative or Quantitative Flow-Ecology Models

- A flow-ecology model is a specific type of stressor-response model.
- Describes the relation between a flow indicator and a biological indicator.
- Two hypothetical response curves are shown, linear and non-linear, developed using statistical methods.
- Used to predict the value of a biological indicator under a variety of flow conditions such as the percent change in fish diversity as a function of the percent change in annual peak flow magnitude.



Example: Flow-Target Framework Using a Quantitative Flow-Ecology Model

- Example – fish response curve generated through regression modeling.
- This response curve depicts the relation between altered August median flow and fish-community condition (IBI, Index of Biotic Integrity).
- Follows framework steps in which endpoints are selected, data is aggregated, and models are developed for differing stream classes.
- Appropriate targets are then defined by stakeholders.



Conclusions

- Flow regime plays a central role in supporting healthy aquatic ecosystems.
- Alterations to the natural flow regime can contribute to the degradation of biological communities.
- Flow alteration can prevent water bodies from supporting aquatic life designated uses as defined by state water quality standards and existing CWA statutes.
- This technical report serves as a source of technical information for states, tribes, and territories that may want to proactively protect aquatic life from the adverse effects of flow alteration.

WSWC Concerns

- 1) Wanted consultation with appropriate state agencies before the report went out.
- 2) Concerned the report supersedes state water law or expands federal authority.
- 3) Wanted report to recognize that some forms of flow alteration provide benefits.
- 4) Concerned that the report omits significant distinctions in the CWA Case Law appendix.



The End

QUESTIONS?

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