University of Richmond Law Review

Volume 18 | Issue 3 Article 3

1984

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The authors wish to thank David Pillsbury, a third year student at the T. C. Williams School of Law, for his assistance in preparing this article.

I. INTRODUCTION

Increasing and conflicting uses of water have been widely heralded as one of the major environmental crises facing society. Below average rainfall in recent years has caused municipal water shortages in Virginia, particularly in the rapidly growing areas of the southeastern part of the state, evidence that water quantity problems are no longer a phenomenon peculiar to the western states. Generally, those in Virginia who advocate reallocation of water to areas of the state experiencing such shortages feel that the state has enough water, just not all in the correct places.

These advocates of reallocation have proposed a "solution:" to transfer water out of areas (drainage basins) of the Commonwealth with excess water supplies to those areas (other drainage basins) with deficient supplies. Such practices, called "inter-basin transfers," have interesting legal ramifications under Virginia's riparian doctrine. Already one major project, the proposed Virginia Beach-Lake Gaston water pipeline, is the subject of heated political controversy and possible interstate litigation.[1] Other water uses—both consumptive and non-consumptive—will further burden Virginia's water resources. Added to naturally-increasing demands for agricultural and municipal water supplies are proposals for one or more coal slurry pipelines[2] and increasing interest in small hydropower projects.

Much of the dispute over water resources has focused on the political issues involved. The interbasin transfer controversy, for example, tends to be viewed solely as a quarrel between jurisdictions over the right to exploit an economic resource. The more important question—the requirements of the natural systems supplying

1. City of Virginia Beach proposed water withdrawal from Lake Gaston. Joint Federal-State Notice NAOOP-P 83-0747-06. *See Beach Applies for Pipeline Permit*, Richmond Times-Dispatch, July 20, 1983, at B1, col. 2.

2. *See* H.B. 479, 1984 Va. Gen. Assem., a bill considered by Virginia's 1984 legislative session which, if passed, would have allowed development of an intra-state coal slurry pipeline. 1984 HOUSE JOURNAL ____. *See also* Note, *Coal Slurry Pipeline*, 17 U. RICH. L. REV. 789 (1983).

the water—tends to be relegated to secondary status. After all, a free-flowing stream is primarily a life support system supplying many needs other than the economy. Such a stream can support human needs compatibly with others, but only if artificial interruptions are conducted with carefully-tailored controls based on a full understanding of the stream as a living system. As with any resource, exploitation beyond the stream's carrying capacity leads to degradation and destruction.

The definition of the term "excess" water quantity raises immediate environmental concerns. How much water can be diverted from a natural aquatic system and how much can its characteristics be changed without exceeding its carrying capacity, doing unacceptable harm to indigenous aquatic ecosystems and reducing the stream's capacity to support other uses? Research conducted by federal and state agencies indicates both that technical answers to this question are possible and that management procedures can be developed to ensure that low flows are adequate to support aquatic ecosystems.[3] Clear and consistent regulatory requirements are necessary to ensure that economic uses are compatible with instream demands. To achieve such a balancing, regulators must develop both a means of determining instream needs and a means of implementing and enforcing them.

Many states have taken steps to examine these needs and some have implemented programs to assure stream flow maintenance.[4] Virginia's constitutional and statutory foundations are fully adequate to support a stream flow regulatory program, but no such program is in place. This article will examine briefly the ecological basis for requiring minimum stream flows, discuss the water and land uses that most affect stream flow, and survey the common, constitutional, and statutory law that relates to the maintenance of ecologically-based minimum stream flows in Virginia streams. The current regulatory program for stream flow maintenance in Virginia will be examined, and suggestions will be made for its improvement.

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3. *See, e.g.*, Gregory, Preliminary Draft of an Environmental Flowby Policy for Virginia (Virginia State Water Control Board) (Nov. 24, 1982).

4. *See infra* notes 388-402 and accompanying text.

II. Flow Maintenance Issues and the Regulatory Process

A. *Activities Affecting Stream Flow Maintenance*

A number of existing and potential projects, both public and private, have the capability of significantly affecting stream flows, to the point where flow maintenance issues would need to be addressed by appropriate public and private sector decision-makers through various state and federal regulatory processes. Impoundments for such varied purposes as hydropower, public or industrial water supply, recreation, and flood control, as well as practices such as stream channelization, are the most notable examples of "non-consumptive" uses that interrupt the normal flow regimes[5] of streams. These uses can change the physical and chemical characteristics of stream water to the point of adversely affecting indigenous aquatic ecosystems. Large scale withdrawals for on-site "consumptive" uses, such as industrial process or cooling water, may also affect downstream flow conditions, particularly at the critical periods of late summer and spring spawning runs. Interbasin transfers resulting in the export of water for such consumptive purposes as municipal water supply, coal transportation, or major industrial use could also result in stream flow diminution to the point of adversely affecting the stream's capacity to support aquatic life and other "instream" uses, such as recreation and aesthetic enjoyment.

Fluctuations of the flow regime naturally occur in unaltered free-flowing streams. Flows tend to peak in the spring and winter, while reaching their lowest points in the late summer and early fall. Occasionally, these natural conditions by themselves will cause stream flow to be diminished below the point necessary to support instream demands. These patterns are relatively consistent over time and indigenous ecosystems have evolved an ability to tolerate the stresses of such fluctuations. Man-induced changes, like those discussed above, will increase fluctuations in both directions, but tend to produce low flows, particularly in the late summer and early fall, when many of these human uses are at their peak. Additionally, largely unregulated agricultural water uses, such as irrigation and stock watering, reach their highest point during the low flow season in late summer and early fall.

At certain times during normal flow regimes, stream flows can

5. A flow regime is the "[c]ondition of a stream with respect to its rate of flow, as measured by the volume of water passing different cross-sections at a given time." M. Landy, Environmental Impact Statement Glossary 251 (1979).

drop below instantaneous levels. Such drops in stream flows are occurring with increasing frequency in the absence of any regulatory policy on low flows induced by human uses. The stress levels resulting from these low flows can cause significant damage to indigenous biota of the stream.

The flow level above which this biologically defined damage does not occur, where indigenous aquatic life is sustained throughout the year, is called an "aquatic base flow."[6] Several methods for determining such an aquatic base flow have been developed, but none has gained universal acceptance.[7] Even where the average flow is maintained at the level of the aquatic baseflow, damage can occur without proper flow regulation. Large, intermittent releases from impoundments, for example, may alternate with interim periods of little or no release, causing bottom scouring,[8] bank erosion, temperature fluctuations, destruction of bottom-dwelling populations and impairment of spawning.

B. *Federal and State Permit Requirements*

There is no lack of regulatory "handles" on projects affecting aquatic baseflow. As this article will discuss, virtually any activity that can conceivably impair or alter stream flow is or can be subject to some regulatory requirements under existing statutes. None of these statutes, however, directly address stream flow considerations, and the regulatory process in Virginia deals with stream flow issues only peripherally in the context of permitting and licensing procedures. Furthermore, while there is substantial federal involvement in licensing of projects that affect stream flow, the state is typically left to establish the necessary requirements either separately or as conditions for a federal license.

Projects that affect stream flow to any significant degree will almost certainly require one or more of the following permits:

Rivers and Harbors Act Permits: Section 10 of the 1899 Rivers and Harbors Act[9] prohibits construction in or alteration of the

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6. Gregory, *supra* note 3.

7. *Id.* Table 1 of this document reviews the applicability of sixteen currently proposed methods for use by the Virginia State Water Control Board. *See also* Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211, 217-20 (discussing various methodologies reviewed by the U.S. Fish and Wildlife Service's cooperative Instream Flow Service Group).

8. "Bottom scouring" refers to the abrading or wearing away of stream beds. M. LANDY, *supra* note 5, at 170.

9. 33 U.S.C. § 403 (1982).

navigable waters of the United States[10] without a permit from the Army Corps of Engineers. Section 9[11] prohibits construction of any dam or dike across any navigable water of the United States without congressional consent and approval of the plans by the Corps of Engineers.[12]

Clean Water Act, Section 404 Permits: Section 404 of the Clean Water Act[13] prohibits the discharge of any dredged or fill material into the waters of the United States without a permit from the Corps of Engineers.[14] Numerous activities involving construction, stream alteration, etc., require 404 permits.[15]

Federal Energy Regulatory Commission Licenses: Part I of the Federal Power Act[16] empowers the Federal Energy Regulatory Commission (FERC) to issue licenses for dams, conduits, reservoirs, and other works necessary for the development, transmission and utilization of hydroelectric power.[17] Construction, operation, or maintenance of such a facility requires a FERC license.[18] The Commission's jurisdiction under the Act is coextensive with Congress's control over navigable waters under the Commerce Clause.[19]

Nuclear Regulatory Commission Licenses: A less commonly-en-

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10. Navigable waters of the United States are those waters which are presently used, have been used, or may be used with reasonable improvement, for interstate or foreign commerce. 33 C.F.R. § 329.4 (1983).

11. 33 U.S.C. § 401 (1982).

12. 33 C.F.R. § 320.2(a) (1983).

13. Federal Water Pollution Control Act of 1948, ch. 758, § 404, as amended by Pub. L. No. 92-500, § 2, 86 Stat. 884 (1972) (codified as amended at 33 U.S.C. § 1344 (1982)) [hereinafter cited as the Clean Water Act].

14. The term "navigable waters", used in the Clean Water Act is defined in section 502(7), 33 U.S.C. § 1362(7) (1982), as "waters of the United States including the territorial seas." This is a far broader jurisdictional scope than that of the Rivers and Harbors Act, *supra* note 10, and includes virtually all bodies of water and adjacent wetlands. 33 C.F.R. § 323.2 (1983). *See* Minnehana Creek Watershed Dist. v. Hoffman, 597 F.2d 617 (8th Cir. 1979) (comparing the jurisdiction of the two acts).

15. 33 C.F.R. §§ 323.2(l), 323.3 (1983).

16. 16 U.S.C. §§ 791-823(a) (1982).

17. *Id.* § 797(e).

18. *Id.* § 817.

19. *Id.* § 797(e). This jurisdiction is defined at *id.* § 796(8) to incorporate those parts of streams or other bodies of water over which Congress has jurisdiction under its authority to regulate interstate and foreign commerce and which, in their natural or improved condition, are suitable for transporting persons or property in interstate or foreign commerce. If the waters in question do not meet the traditional navigability test, but Congress nonetheless has jurisdiction under the Commerce Clause, FERC must determine whether the project would affect the interests of interstate commerce and, if so, a license is required. Any person proposing to construct a dam or other works for hydropower generation must apply to FERC for a determination of applicability. *Id.* § 817.

countered license for electric power operation is the federal license required by the Nuclear Regulatory Commission for nuclear power plants.[20] These power plants affect stream flow primarily by impoundment of water for cooling purposes.[21] Fossil fuel plants may also require cooling water impoundments, but because the federal government is not the primary project licensor for those facilities, the impoundments are licensed under the Corps of Engineers programs described above.

All of these federal agencies are required by their own statutes and regulations, as well as by overlying federal statutes such as the National Environmental Policy Act[22] and the Endangered Species Act,[23] to weigh the effects of proposed projects on water quality, fish and wildlife, aquatic habitat, and numerous other environmental factors when making licensing decisions. The regulations of these agencies provide for coordination and consultation with the U.S. Fish and Wildlife agencies to determine these environmental effects.[24]

Clean Water Act, Section 401 Certification: In addition, section 401 of the Clean Water Act[25] requires any applicant for a federal license or permit for any activity that may result in a discharge of a pollutant to the waters of the United States[26] to obtain certification from the state in which the discharge originates so that the project will comply with applicable water quality standards and limitations. The state may condition certification on the incorporation of specific requirements in the federal license (e.g., stream flow maintenance).[27] This is a powerful tool for aquatic baseflow regulation, but it places a heavy responsibility on the states to develop adequate provisions for determining and implementing flow

20. 42 U.S.C. § 2133 (1982).

21. Lake Anna in Virginia was constructed for this purpose by impounding the North Anna River.

22. *See infra* notes 42-59 and accompanying text.

23. *See infra* notes 92-113 and accompanying text.

24. *See, e.g.*, Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661-666c(1982) (requiring that agencies involved in water resource development projects consult with the Fish and Wildlife Service before undertaking the project; 50 C.F.R. pt. 402 (1983) (requiring federal agencies to consult with the Fish and Wildlife Service if any agency activity could affect an endangered species); 33 C.F.R. § 320.4(c) (1983) (requiring the Corps of Engineers to give "great weight" to state fish and wildlife recommendations in setting permit terms and conditions).

25. 33 U.S.C. § 1341 (1982).

26. "Waters of the United States" for the purposes of § 401 certification is given the broad construction of the Clean Water Act definition. *See supra* note 14.

27. 33 U.S.C. § 1341(a), (d).

requirements. Federal licensing agencies defer to state preferences in this area because of a desire not to impinge on state perogatives over water allocation. Thus, adequate baseflow programs must be developed at the state level.[28]

Virginia Permitting Requirements: In addition to, or in some cases instead of these federal licensing requirements, Virginia law imposes various permitting requirements on projects that affect state waters.[29] For example, the State Water Control Law prohibits any activity that affects the physical, chemical or biological properties of state waters without a permit.[30] This program has not been applied directly to regulation of stream flow, but such an application is possible.

Certain uses of state-owned subaqueous lands require a permit from the Virginia Marine Resources Commission.[31] Other state programs require permits for impoundment of surface and floodwaters,[32] construction of dams associated with generating facilities,[33] and construction in state-designated Scenic River areas.[34]

All of these state programs could be used as the authority for aquatic baseflow protection. Unfortunately, the Commonwealth of Virginia does not have an articulated aquatic base flow policy. In its 401 certification process and in other cases where it considers flow requirements, Virginia usually relies on the "7Q10" low flow[35] which relates, not to biologic community maintenance, but rather to maintenance of instream water quality standards. Aquatic base flow is dealt with more coherently in the federal processes, but

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28. That is not to say that the federal government has been inactive. The U.S. Fish and Wildlife Service, for example, has developed much technical and procedural information in this area, both for use in projects affecting federal lands and for transfer to state agencies. These requirements, however, are not regulatory.

29. VA. CODE ANN. § 62.1-44.3(4) (Repl. Vol. 1982) defines "state waters" as all waters above or below ground located in the state regardless of their navigability.

30. *Id.* §§ 62.1-44.5, -44.15(5).

31. *Id.* § 62.1-3.

32. *Id.* §§ 62.1-104 to -115.

33. *Id.* §§ 62.1-80 to -103 (requiring the State Corporation Commission license to dam a waterway for production of hydroelectric power); *id.* §§ 62.1-115.1 to -115.10 (requiring State Water Control Board inspection of all dams); *id.* §§ 62.1-116 to -127 (requiring leave of court to dam a watercourse).

34. *Id.* § 10-174 (Repl. Vol. 1978) (providing that no dam can be built on a river designated as a "Scenic River" under this chapter without express authorization of the General Assembly).

35. The "7Q10" low flow is the lowest flow which, statistically, would occur for a seven-day period once every ten years. State Water Control Board, Water Quality Standards § 1.03 (rev. ed. 1982).

still, even at the federal level in Virginia, substantive issues will be determined by state law. Thus, it is critical for Virginia to develop a clear, articulated low-flow policy.

III. Federal Law and Instream Flow

Section 101(g) of the Clean Water Act states that:

> It is the policy of Congress that the authority of each state to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this chapter. It is the further policy of Congress that nothing in this chapter shall be construed to supersede or abrogate rights to quantities of water which have been established by any State.[36]

Despite the considerable deference traditionally given to state authority, however, numerous federal laws are important, both procedurally and substantively, in the area of water law. The discussion that follows will emphasize the three federal statutes that have substantive influence on instream flow maintenance; the Federal Power Act,[37] the Endangered Species Act,[38] and the Wild and Scenic Rivers Act.[39] A number of federal laws that have merely procedural requirements for consideration of instream flow maintenance will also be discussed.[40] We will begin with one of these, the National Environmental Policy Act (NEPA),[41] because NEPA provides the overall federal framework for consideration of environmental impacts. It should be reiterated, though, that these federal statutes can only augment state efforts toward stream flow maintenance, they cannot replace them. While federal agencies can assist

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36. 33 U.S.C. § 1251(g) (1982).

37. 16 U.S.C. §§ 791(a)-823a (1982). *See infra* notes 60-91 and accompanying text.

38. 16 U.S.C. §§ 1531-1543. *See infra* notes 92-113 and accompanying text.

39. 16 U.S.C. §§ 1271-1287. *See infra* notes 114-133 and accompanying text.

40. Other federal laws that relate indirectly to stream flow maintenance include: Federal Water Project Recreation Act of 1977, 16 U.S.C. §§ 4602-12 to -21 (1982); Federal Land Policy and Management Act of 1976, Pub. L. No. 94-579, 90 Stat. 2744 (codified at scattered sections of Titles 7, 16, 30, 40, & 43 U.S.C.); Watershed Protection and Flood Protection Act, 16 U.S.C. §§ 1001-1009 (1982); 16 U.S.C. § 475 (1982) (governing the President's power to establish National Forests); Multiple Use-Sustained Yield Act of 1960, 16 U.S.C. §§ 528-531; National Forest Management Act of 1976, Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended in scattered sections of 16 U.S.C.). For a more exhaustive discussion of these and other federal laws, see Heath, Protection of Instream Flows in Legal and Administrative Systems for Water Allocation and Management: Options for Change 107-177 (1984) (Virginia Water Resources Research Center). *See also* State Water Control Law, Va. Code Ann. §§ 62.1-44.2 to -44.34:7 (Repl. Vol. 1982).

41. 42 U.S.C. §§ 4321-4370 (1976 & Supp. V 1981).

state governments and provide technical assistance, the ultimate responsibility for establishing an operative aquatic base flow policy for Virginia lies with the state.

A. *National Environmental Policy Act*

The National Environmental Policy Act of 1969 (NEPA)[42] is perhaps the most important federal statute discussed here because it establishes both the general environmental policy of Congress and, more significantly, a strenuous procedural framework for making environmentally sensitive agency decisions. NEPA's policy, set forth in section 101, is "to use all practicable means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans."[43] This protective mandate is weakened somewhat by the requirement that such efforts use "practicable means, consistent with other essential considerations of national policy."[44] No substantive rights to a healthful environment are created; Congress merely "recognizes that each person should enjoy a healthful environment."[45]

The Act does, however, set forth a formidable array of procedural requirements designed to encourage government agencies to make responsible decisions concerning the environmental impact of all major federal actions. For example, section 102, the heart of NEPA, requires, among other things: a systematic approach to planning and decisionmaking which utilizes natural and social sciences and the environmental design arts; consideration of unquantified environmental amenities; and a detailed statement included in every recommendation or report which specifically addresses the environmental impact of the proposed action, alternatives to the proposal, short and long term effects on the productivity of the environment, and irreversible commitments of resources associated with the proposed action.[46]

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42. *Id.*
43. *Id.* § 4331(a).
44. *Id.* § 4331(b) (1976).
45. *Id.* § 4331(c).
46. *Id.* § 4332. The text, in full provides:

> (1) the policies, regulations and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal government shall—
>
> (A) utilize a systematic, interdisciplinary approach which will insure the inte-

Early decisions of a majority of federal circuits interpreted this section of NEPA to place substantive requirements on federal agencies[47] "to develop new procedures to accomplish the innovative task of implementing NEPA through rulemaking."[48] The United States Supreme Court, however, overturned this interpretation in 1978 in *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*,[49] holding that the procedural protections of NEPA are limited to those found "in the plain language of the Act."[50]

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grated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5 and shall accompany the proposal through the existing agency review process.

47. Sierra Club v. Froehlke, 486 F.2d 946 (7th Cir. 1973); Silva v. Lynn, 482 F.2d 1282 (1st Cir. 1973); Conservation Council of N.C. v. Froehlke, 473 F.2d 664 (4th Cir. 1973); Environmental Defense Fund, Inc. v. Corps of Eng'rs, 470 F.2d 289 (8th Cir. 1972); Calvert Cliffs' Coordinating Comm. v. Atomic Energy Comm'n, 449 F.2d 1109 (D.C. Cir. 1971), *cert. denied*, 404 U.S. 942 (1972); Environmental Defense Fund, Inc. v. Tennessee Valley Auth., 371 F. Supp. 1004 (E.D. Tenn. 1973), *aff'd per curiam*, 492 F.2d 466 (6th Cir. 1974); Conservation Soc'y of S. Vt. v. Secretary of Transp., 362 F. Supp. 627 (D. Vt. 1973), *aff'd on other grounds*, 508 F.2d 927 (2d Cir. 1974), *vacated*, 423 U.S. 809 (1975). *But see* Lathan v. Brinegar, 506 F.2d 677 (9th Cir. 1974); National Helium Corp. v. Morton, 486 F.2d 995 (10th Cir. 1973).

48. Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, 435 U.S. 519, 548 (1978) (quoting Natural Resources Defense Council v. Nuclear Regulatory Comm'n, 547 F.2d 633, 653 (D.C. Cir. 1976)).

49. 435 U.S. 519 (1978).

50. *Id.* at 548 (citing Kleppe v. Sierra Club, 427 U.S. 390, 405-06 (1976)).

The lower court in *Vermont Yankee*,[51] applying a process of "hybrid rulemaking,"[52] had determined that the rulemaking procedures followed by the agency, though complying with the Administrative Procedure Act (APA),[53] were inadequate to assess environmental risks. The court had ordered the agency to improve its procedures and produce a comprehensive record.[54] The Supreme Court, however, found nothing in NEPA to indicate a "repeal by implication of any other statute,"[55] and concluded that NEPA clearly "cannot serve as the basis for a substantial revision of the carefully constructed procedural specifications of the APA."[56]

By this ruling, the Supreme Court limited the scope of a court's inquiry into procedures an agency follows under NEPA. So long as the agency has met the statutory minimum of the APA, the reviewing court cannot set aside the agency action unless that action is arbitrary, capricious or an abuse of discretion.[57] The court is not free to substitute its judgment for the agency's[58] or to require the

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51. Natural Resources Defense Council v. Nuclear Regulatory Comm'n, 547 F.2d 663 (D.C. Cir. 1976).

52. *See* Bunker Hill Co. v. EPA, 572 F.2d 1286, 1305 (9th Cir. 1977); South Terminal Corp. v. EPA, 504 F.2d 646, 665-66 (1st Cir. 1974); Mobile Oil Corp. v. Federal Power Comm'n, 483 F.2d 1238, 1263 (D.C. Cir. 1972); *see also* Williams, *"Hybrid Rulemaking" Under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U. CHI. L. REV. 401 (1975).

53. 5 U.S.C. § 553 (1982).

54. 547 F.2d 663 (D.C. Cir. 1976).

55. *Vermont Yankee*, 435 U.S. at 548 (quoting Aberdeen & Rockfish R. Co. v. SCRAP, 422 U.S. 289, 319 (1975) and United States v. SCRAP, 412 U.S. 669, 694 (1973)).

56. *Vermont Yankee*, 435 U.S. at 548.

57. Judge Butzner, in Maryland v. EPA, 530 F.2d 215, 219-20 (4th Cir. 1975), *vacated on other grounds*, 431 U.S. 99 (1977), outlined the proper steps for judicial review after *Vermont Yankee*. He further described the court's role in a subsequent article:

> The court must determine (1) whether the authority to make the regulations is found in the statutes; (2) whether the procedures followed by the agency were lawful; and (3) whether the plan is constitutional. If these requirements are met, the challenged regulation may not be set aside unless it is found to be "arbitrary, capricious, or an abuse of discretion." In arriving at that determination, the court must "engage in a substantial inquiry" into the reasonableness of the agency's decision. As a part of that inquiry, it must consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgement. The court must not substitute its judgement for that of the agency to whom Congress has entrusted the responsibility for making the substantive decision. Nevertheless, the record must indicate that all relevant factors were weighed by the agency, and it must show how the agency reached its decision.

Butzner, 4 ALI-ABA COURSE MATERIALS J. No. 2 (1979).

58. *Vermont Yankee*, 435 U.S. at 555 (quoting Kleppe v. Sierra Club, 427 U.S. 390, 410 n.21 (1976)). The Court reiterated this holding in Stryker's Bay Neighborhood Council v. Karlen, 444 U.S. 223 (1980), noting that the Court cannot "interject itself within the area of discretion of the executive as to the choice of the action to be taken." *Id.* at 227-28 (quoting

agency to follow more rigorous procedures.[59]

NEPA remains, however, a powerful tool for forcing agency consideration of environmental concerns affecting major federal projects. Proponents of maintaining adequate aquatic base flows still have an avenue, through substantive participation in the administrative process leading to the development of a NEPA-mandated environmental impact statement, for airing concerns about stream flow maintenance.

B. *Federal Power Act*

The Federal Water Power Act of 1920,[60] now the Federal Power Act, was the result of early attempts by conservationists to construct a comprehensive regulatory scheme for development of the Nation's water power resources.[61] Section 10(a) of the Act conditions the licensing of a project on the requirement:

> That the project adopted . . . shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, *and for other beneficial public uses, including recreational purposes* . . . .[62]

This section has become a potent weapon for close scrutiny of hydroelectric projects. The term "recreational purposes" "encompasses the conservation of natural resources [as well as] the maintenance of natural beauty and the preservation of historic sites."[63] Under this section of the Act, the Federal Power Commission, now the Federal Energy Regulatory Commission,[64] has denied licenses

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Kleppe, 427 U.S. at 410 n.21).

59. *Vermont Yankee*, 435 U.S. at 548.

60. Act of June 10, 1920, ch. 285, 41 Stat. 1063 (codified at 16 U.S.C. §§ 791a-828c (1982)).

61. *See* Pinchot, *The Long Struggle for Effective Federal Water Power Legislation*, 14 GEO. WASH. L. REV. 9 (1945).

62. 16 U.S.C. § 803(a) (1982) (emphasis added).

63. Scenic Hudson Preservation Conference v. Federal Power Comm'n, 354 F.2d 608, 614 (2d Cir. 1965) (*Scenic Hudson I*) (citing Namekagon Hydro Co. v. Federal Power Comm'n, 216 F.2d 509, 511-12 (7th Cir. 1954)), *cert. denied sub nom.* Consolidated Edison Co. v. Scenic Hudson Preservation Conference, 384 U.S. 941 (1966).

64. The Federal Power Commission was dissolved and its functions under § 10(a) were transferred to the Federal Energy Regulatory Commission by 42 U.S.C. §§ 7172(a)(1)(A), 7193 (Supp. V 1981).

for environmental reasons to otherwise economically feasible water power projects. The case of *Namekagon Hydro Co. v. Federal Power Commission*[65] is a prime example; the Commission denied a license because an area of outstanding fishing, canoeing, and scenic attraction was threatened.[66]

Standing for actions under the Federal Power Act is not as automatic as under citizen suit provisions of the more modern federal environmental laws. Review of agency decisions under the Act is restricted to an "aggrieved party."[67] However, this term was held, in the landmark environmental case *Scenic Hudson Preservation Conference v. Federal Power Commission*,[68] to be sufficiently broad, given the Commission's comprehensive public interest mandate, to grant standing to environmental groups who participated meaningfully in the administrative process that led to the licensing of a pumped storage project. The Second Circuit, in *Scenic Hudson I*,[69] remanded the case to the Commission with instructions to consider alternatives to the proposed action with less significant effects on the river, particularly examining impacts on an anadromous striped bass fishery.[70]

Upon remand, the Federal Power Commission held extensive hearings and substantially modified the project. The power house was to be placed completely underground and transmission lines in the scenic river valley were to be placed underwater or underground. Fish protective devices were to be installed and a fish hatchery to be built. A riverfront park was to be substituted for the originally proposed visitors center. The Federal Power Commission's approval of this modified project was subsequently challenged in *Scenic Hudson II*.[71] In this latter case, the Court found the mitigation plan satisfactory and denied the petitioners' claims of the need for a broader scope of review on matters of environmental policy, distinguishing the "searching and careful" scrutiny given to environmental matters in the Supreme Court's decision in

65. 216 F.2d 509 (7th Cir. 1954).

66. *Id.*

67. 16 U.S.C. § 825*l*(b) (1982).

68. 354 F.2d 608 (2d Cir. 1965).

69. The Second Circuit's decision is known as *Scenic Hudson I* because of a companion case on the same project five years later. *See* Scenic Hudson Preservation Conference v. Federal Power Comm'n, 453 F.2d 463 (2d Cir. 1971) (*Scenic Hudson II*).

70. *Scenic Hudson I*, 354 F.2d at 624-25. Anadromous fish are marine species which migrate in fresh water rivers to spawn. M. LANDY, *supra* note 5, at 272.

71. 453 F.2d 463 (2d Cir. 1971).

Citizens to Preserve Overton Park, Inc. v. Volpe.[72]

Ironically, for reasons unrelated to the litigation, the pump storage project at issue in *Scenic Hudson II* was never built. However, the environmental groups involved established standing and won important concessions. Through these decisions the modern environmental movement gained its first major legal triumph.

Neither *Namekagon Hydro Co.* nor *Scenic Hudson I* relied on any federal statutory law other than the Federal Power Act. Most subsequent cases, however, have. In *Udall v. Federal Power Commission*,[73] the Supreme Court combined the Federal Power Commission's "recreational purposes" mandate with the Secretary of the Interior's mandate under the Anadromous Fish Act[74] and the Fish and Wildlife Coordination Act,[75] and remanded the decision of the Federal Power Commission to license a dam project on the Snake River in Washington. The Commission was ordered to give additional consideration to environmental factors, particularly the passage by dams of anadromous Chinook salmon migrating upriver.[76]

The application of the National Environmental Policy Act of 1969 (NEPA)[77] was considered by the Second Circuit in *Scenic Hudson II*.[78] The court found that the procedural measures mandated by NEPA were met by the extensive hearing process and subsequent modification of the project.[79] The case of *Greene County Planning Board v. Federal Power Commission*[80] also addressed the application of NEPA to part of a Federal Power Com-

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72. 401 U.S. 402, 416 (1971), *cited in Scenic Hudson II*, 453 F.2d at 468.

> To read these cases as sanctioning a new standard of judicial review on matters of environmental policy is to misconstrue both the holdings in these cases and the nature of our remand in *Scenic Hudson*. An element common to all these cases was the failure of an agency or other governmental authority to give adequate consideration to the environmental factors in the situations with which they were presented.

Scenic Hudson II, 453 F.2d at 468.

73. 387 U.S. 428 (1967).

74. 16 U.S.C. §§ 757a-757f (1982). For a discussion of this Act, see *infra* notes 149-54 and accompanying text.

75. 16 U.S.C. §§ 661-668ee (1982). For a discussion of this Act, see *infra* notes 134-48 and accompanying text.

76. *Udall*, 387 U.S. at 442 n.10, 450.

77. 42 U.S.C. §§ 4321-4370 (1976 & Supp. V 1981). For a discussion of NEPA, see *supra* notes 42-59 and accompanying text.

78. 453 F.2d at 481.

79. *Id.*

80. 455 F.2d 412 (2d Cir.), *cert. denied*, 409 U.S. 849 (1972).

mission license decision for a pumped storage facility.[81] Petitioners in *Greene County*, however, were contesting approval of a transmission line associated with the project, so considerations of environmental impacts of the dam project itself were not considered.

None of these cases related directly to the maintenance of stream flows. Had that issue specifically arisen, however, it could have been addressed in an affirmative manner in accordance with the Federal Power Act's section 10(a) mandate. In *California v. Federal Power Commission*,[82] the court did consider the issue of stream flow maintenance for salmon runs on California's Tuolumne River. The Tuolumne in its natural state is characterized by a high flow from March to June, when the area has about ninety percent of its annual rainfall, which averages only twelve inches. At other times of the year, there is very little flow in the river.[83] Because of this variable flow and the presence of salmon in the Tuolumne, the Federal Power Commission's license for the project provided that for the first twenty years of the project's operation, minimum stream flows must be maintained in the river during the spawning season for fish run purposes.[84] Provision for different minimum flows in "normal" and "dry" years was provided.[85] The minimum flows were to be reconsidered after twenty years of operations.[86]

Petitioners contended that the flow restrictions impaired irrigation rights acquired under California law, which the Federal Power Commission lacked authority to do.[87] The court disagreed, holding that the Federal Power Commission did have the authority to restrict irrigation rights, reasoning that section 10(a) of the Federal Power Act required the Commission to consider all beneficial uses including recreational uses.[88] The petitioners further challenged the Commission's actions in adopting its own "inflow" formula for determining minimum flow, rather than the "natural flow" formula recommended by California, even though the Commission's analy-

81. The *Greene County* project involved a dam on the river for a lower storage reservoir, unlike the situation in the *Scenic Hudson* cases, where river flows were higher and no lower reservoir was needed. *Id.*

82. 345 F.2d 917 (9th Cir.), *cert denied*, 382 U.S. 941 (1965).

83. *Id.* at 919-20.

84. *Id.* at 921.

85. *Id.* at 921-22.

86. *Id.* at 922.

87. *Id.*

88. *Id.* at 923.

sis showed California's figures to be reasonable.[89] The court upheld the Commission's figures, holding that the Commission had adequately supported the low flow requirements by specific findings, supported by substantial evidence, relating to what average size salmon run should be protected, the number of spawning fish required for such a run, and the area of spawning gravel required for these spawning salmon.[90] The court additionally held that the twenty year reconsideration requirement was flexible enough to obviate, at least temporarily, the need to consider other mitigative measures, such as fish ladders and hatcheries, which might be necessary if the minimum flows could not be maintained.[91]

C. *Endangered Species Act*

In 1973, Congress attempted to provide a means to protect endangered and threatened species of animals and plants and their habitats through the adoption of the Endangered Species Act.[92] In particular, section 7 of this Act requires all federal agencies to "insure that any action authorized, funded or carried out . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species . . . unless . . . granted an exemption."[93] The rigorous exemption procedure, when triggered, involves the determination that no reasonable and prudent alternative to the project exists, that benefits clearly outweigh damages to the species or habitats, that the action is of regional or national significance, and that reasonable mitigation and enhancement measures will be taken.[94]

Under section 7, project abandonment or modification is often required to avoid the proscribed damage to species and habitat. This law has been a potent vehicle for stopping or delaying projects that threatened critical habitat of species on the Department of the Interior's Endangered or Threatened Species List.[95]

In the leading case under the Act, *Tennessee Valley Authority*

89. *Id.* at 925-26.
90. *Id.* at 926.
91. *Id.* at 928-29. A different result might be obtained at the present time, given NEPA's influence on the consideration of alternatives at the outset of a project.
92. 16 U.S.C. §§ 1531-1543 (1982).
93. *Id.* § 1536(a)(2).
94. *Id.* § 1536(h).
95. *See id.* § 1533.

v. Hill,[96] plaintiffs challenged the congressional authorization of a dam and impoundment on the Little Tennessee River, because the impoundment would eliminate virtually all of the known habitat of the snail darter, a fish on the Endangered or Threatened Species List. Plaintiffs claimed that completion of the Tellico Dam would jeopardize the continued existence of the snail darter because of the impoundment's alteration of flow and other habitat conditions.[97]

The district court refused to enjoin completion of the project, noting that Congress, though fully aware of the snail darter problem, had continued the project's appropriations. The court held that at "some point in time a federal project becomes so near completion and so incapable of modification that a court of equity should not apply a statute enacted long after inception of the project to produce an unreasonable result."[98] The court of appeals reversed and remanded.[99]

On appeal, the Supreme Court held that the language of section 7 is plain and makes no exception for projects well under way when the Endangered Species Act was passed.[100] The Court found it clear from the Act's legislative history that Congress intended "to halt and reverse the trend toward species extinction, whatever the cost"[101] and that the limited "hardship exemptions" in the Act did not apply in this case.[102] Continued congressional appropriations to the project were not determinative; such a holding would violate the cardinal rule that repeals by implication are never favored.[103] *Tennessee Valley Authority v. Hill* thus firmly established the primacy of protection of endangered species and species habitat until the species is no longer classified as endangered or threatened.[104] Congress, however, overturned the specific protection given by the case to the snail darter by exempting the Tellico Dam from the Endangered Species Act.[105] The project, which had

96. Tennessee Valley Auth. v. Hill, 419 F. Supp. 753 (E.D. Tenn. 1976), *rev'd*, 549 F.2d 1064 (6th Cir. 1977), *aff'd*, 437 U.S. 154 (1978).

97. 419 F. Supp. at 756.

98. *Id.* at 760.

99. 549 F.2d 1064 (6th Cir. 1977).

100. 437 U.S. at 173.

101. *Id.* at 184.

102. *Id.* at 188.

103. *Id.* at 189-91.

104. *Id.*; *see also* Connor v. Andrus, 453 F. Supp. 1037 (W.D. Tex. 1978); Defenders of Wildlife v. Andrus, 428 F. Supp. 167 (D.D.C. 1977).

105. Pub. L. No. 96-69, tit. IV, 93 Stat. 449-50 (1979).

been seventy to eighty percent complete when the litigation was initiated, has now been completed.

Earlier Endangered Species Act cases did not arrive at such extreme results. In *Sierra Club v. Froehlke*,[106] plaintiffs sued to enjoin construction of a dam that would have flooded some but not all of the caves where an endangered species, the Indiana Cave Bat, lived. The court of appeals denied relief.[107] Likewise, in *National Wildlife Federation v. Coleman*,[108] the court noted that construction of a highway that would destroy only a tiny part of the critical habitat of the Sandhill Crane was permissible if it would not jeopardize the existence of the species.

The 1982 case of *Carson-Truckee Water Conservancy District v. Watt*[109] illustrates how the Endangered Species Act can be used to protect aquatic base flows. The case involved water releases from a dam in California into a river flowing into Pyramid Lake in Nevada, the habitat of the native species Lahontan cutthroat trout and the cui-ui fish, an endangered species whose sole habitat is Pyramid Lake.[110] The court held that the Secretary of the Interior was "required to give the Pyramid Lake fishery priority over all other purposes of [the Dam] until the cui-ui and the Lahontan cutthroat trout are no longer classified as endangered or threatened."[111]

Another case, *United States v. Cappaert*,[112] suggests that not only surface water allocation, but also groundwater allocation could be affected by the priority afforded endangered species. *Cappaert* did not raise the issue of the Endangered Species Act directly, but held that when the United States reserved an underground lake as a national monument, it acquired, by reservation, water rights to the underground water sufficient to maintain the level of the lake and preserve a rare species of fish.[113]

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106. 534 F.2d 1289 (8th Cir. 1976).

107. *Id.*, *aff'g* 392 F. Supp. 130 (E.D. Mo. 1975).

108. 529 F.2d 359 (5th Cir.), *cert. denied sub. nom.* Boteler v. National Wildlife Fed'n, 429 U.S. 979 (1976).

109. 549 F. Supp. 704 (D. Nev. 1982).

110. *Id.* at 706.

111. *Id.* at 710.

112. 426 U.S. 128 (1976), *aff'g* 508 F.2d 313 (9th Cir. 1974).

113. 426 U.S. at 141-47.

D. *Wild and Scenic Rivers Act*

The Wild and Scenic Rivers Act,[114] adopted in 1968, established a national system of free flowing rivers[115] and instituted procedures for the inclusion of additional qualifying rivers by either Congress or the states.[116] Streams or stream segments fall into one of three classifications under the system, depending on the degree of modification of the stream from its free flowing state: (1) Wild river areas, free from impoundments and generally inaccessible except by trail, (2) Scenic river areas, free from impoundments, largely undeveloped but accessible in places by road, and (3) Recreational river areas, readily accessible, some development, and some impoundment or diversion in the past.[117]

Virginia has no rivers included in any of the three classifications of the federal system, nor are there any studies presently in progress to recommend for inclusion any Virginia stream segments. However, Virginia has established a system of state scenic rivers.[118]

Inclusion of a river in the National Wild and Scenic Rivers System restricts the uses to which it may be put. The requirement that rivers in the system "shall be preserved in free flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations"[119] proscribes impoundments within the system and strongly implies flow requirements for non-system upstream segments. This implication is supported by the specific requirement that project works authorized under the Federal Power Act cannot be on or directly adversely affect rivers already in the system.[120] On the other hand, a department or agency of the United States, if it complies with certain procedural requirements, may recommend a water resources project that would have a direct and adverse effect

114. 16 U.S.C. §§ 1271-1287 (1982).

115. *Id.* § 1274. For interesting background on the origins of this preservation-oriented law, which arose out of the multiple use concept of natural resource management developed under President Theodore Roosevelt (particularly as a reaction to the large-scale water development projects that ultimately ensued), see Tarlock & Tippy, *The Wild and Scenic Rivers Act of 1968*, 55 CORNELL L. REV. 707 (1970).

116. 16 U.S.C. § 1275 (1982).

117. *Id.* § 1273(b).

118. VA. CODE ANN. §§ 10-167 to -175 (Repl. Vol. 1978). *See infra* notes 289-96 and accompanying text.

119. 16 U.S.C. § 1271 (1982).

120. *Id.* § 1278(a).

on the values for which such a river was established.[121]

However, before any of the foregoing protections afforded by the Wild and Scenic Rivers Act can be effected, a river must have achieved designed status under the Act. In *North Carolina v. Federal Power Commission*,[122] petitioners sought to protect a segment of the New River in North Carolina from FPC licensing[123] of a dam in Virginia. The proposed dam would have caused inundation of this segment of the New River in North Carolina being considered for inclusion in the Wild and Scenic Rivers System. Petitioners contended that section 7(b) of the Act[124] prohibited the Federal Power commission from licensing the dam project.[125] The court disagreed, however, and held that such protection was available only for rivers already achieving designed status under section 7(a) of the Act.[126]

The protection offered to river segments already in the system or nominated for study for inclusion in section 7(a) of the Act is by no means absolute. In *Swinomish Tribal Community v. Federal Energy Regulatory Commission*,[127] the approval of a proposed modification to a dam on the Skagit River in Washington was alleged to be in conflict with section 7(b) of the Act because it would affect a section of the river approximately eleven miles below the dam that was designated in section 5(a) of the Act for potential addition to the system. This case is particularly germane to this article because at issue was the question of flow requirements needed to preclude diminishment of downstream fish and wildlife

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121. *Id.* The agency or department must, however, notify in writing the Secretary of the Interior or the Secretary of Agriculture sixty days in advance, and must report to Congress in writing relating to the conflict between such project and the values of the Act.

122. 533 F.2d 702 (4th Cir. 1976), *vacated*, 429 U.S. 891 (1976).

123. *See supra* notes 60-91 and accompanying text.

124. 16 U.S.C. § 1278(b) (1982).

125. 533 F.2d at 708.

126. *Id.* at 708-09. Section 7(a) of the Act is found at 16 U.S.C. § 1278(a) (1982). North Carolina v. Federal Power Comm'n was decided by the district court on March 24, 1976. On September 11 of that year, 16 U.S.C. § 1278 was amended by Public Law 94-407 to include a 26.5 mile segment of the New River in North Carolina ending at the Virginia State Line. The amendment specifically precluded any FPC project that would "inundate or otherwise adversely affect" the river segment. Pub. L. No. 94-407, 90 Stat. 1238 (1976). The Appalachian Power Company contended that the congressional action amounted to an unconstitutional taking. The U.S. Court of Claims held that the congressional action, taken during the pendancy of Federal Power Commission proceedings on the company's dam project did not amount to a taking, since the FPC license granting the right to build the project was still subject to judicial review. Appalachian Power Co. v. United States, 607 F.2d 935 (Ct. Cl. 1979).

127. 627 F.2d 499 (D.C. Cir. 1980).

values. Here petitioners and intervenors did not question the sufficiency of the agency record but focused on legal arguments relating to section 7 of the Act.[128]

The court found that proper consideration had been given to the requirements of section 7 of the Wild and Scenic Rivers Act, even though the downstream flow requirements had not been specifically addressed in the Federal Energy Regulatory Commission proceedings themselves, because the Departments of Interior and Agriculture had elected to address them in separate proceedings.[129] In upholding the agency decisions, the court noted *Vermont Yankee*,[130] and held that "administrative agencies should be free to fashion their own rules of procedure and to pursue methods of inquiry capable of permitting them to discharge their multitudinous duties."[131]

In a strongly worded dissent to the deference of the court to the agencies' "piecemealing" of the important issues surrounding the case, Judge Wald observed that "[a]ll of the legally critical issues pertaining to High Ross [dam modification] could have and should have been decided in one proceeding, and it is management fault and a statutory lapse that they were not."[132] The dissent went on to cite numerous references in the record to detrimental downstream effects due to changes in flow regime as well as to unanswered questions relating to these changes.[133] The dissent, probably the better reasoned holding in this situation, underscores the need for interest groups not only to participate in the development of the administrative record but also to forcefully bring the record to a reviewing court's attention.

E. *Fish and Wildlife Coordination Act*

The Fish and Wildlife Coordination Act (FWCA),[134] was enacted in 1958 "to provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs" through "protection . . . of all species of wildlife, resources thereof, and their habitat."[135] The Act is

128. *Id.* at 521 n.7.
129. *Id.* at 507-10.
130. 435 U.S. 519 (1978). *See supra* notes 49-59 and accompanying text.
131. *Swinomish Tribal Community*, 627 F.2d at 510.
132. *Id.* at 518 (Wald, J., dissenting).
133. *Id.* at 521-25.
134. 16 U.S.C. §§ 661-666(c) (1982).
135. *Id.* § 661.

potentially important for assuring maintenance of instream aquatic base flow, as it requires that when any federal agency, or public or private agency under a federal permit or license, proposes or authorizes impounding, diverting or controlling waters, that agency shall consult with the U.S. Fish and Wildlife Service "with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water resource development."[136] Impoundments with surface areas of less than ten acres and "land management and use carried out by federal agencies with respect to federal lands under their jurisdiction[s]," are exempted under this Act from the foregoing provisions.[137]

In practice, the Fish and Wildlife Coordination Act has not achieved its potential. The emphasis of agencies consulting with the Fish and Wildlife Service has not been upon protecting and augmenting resources but rather upon limiting losses, and even this aim has been poorly achieved.[138] The cases that interpret the provision for equal consideration for wildlife conservation in this Act attach to it little, if any, substantive protection.[139] Rather, it is interpreted to mandate NEPA-like procedural requirements that, once considered, need not necessarily affect the outcome of the agency decision, unless ignored in an arbitrary and capricious manner.

Issues of downstream flow maintenance often occur in impoundment projects, but the results have not been particularly satisfying. Treatment of the Fish and Wildlife Coordination Act issue in a Fourth Circuit case is illustrative. In *Cape Henry Bird Club v. Laird*,[140] a case involving the construction of the Gathright Dam on the Jackson River in Allegheny and Bath Counties in western Virginia, plaintiffs sought to enjoin construction of the dam claiming that the Corps of Engineers had failed to sufficiently mitigate the loss of fish and wildlife values. The court held that the Act only required the Corps attempt to mitigate losses by consulting with appropriate state and federal agencies, and noted that the Corps' good faith compliance with the requirements of NEPA automatically complies with the Fish and Wildlife Coordination

136. *Id.* § 662(a).
137. *Id.* § 662(h).
138. W. RODGERS, ENVIRONMENTAL LAW 826 (1977).
139. *See, e.g.*, Akers v. Resor, 339 F. Supp. 1375 (W.D. Tenn. 1972); Environmental Defense Fund, Inc. v. Corps of Eng'rs, 324 F. Supp. 878 (D.D.C. 1971).
140. 359 F. Supp. 404 (W.D. Va. 1973).

Act.[141] It had been previously held that an agency does not have to surpass strict NEPA compliance to satisfy the Fish and Wildlife Coordination Act unless NEPA compliance allowed omission of FWCA recommendations as an integral part of its progress reports to Congress on projects being funded under congressional authorization.[142]

The Act provides even less substantive protection for already existing impoundments where flow maintenance for aquatic habitat and fishery protection is affected. In *County of Trinity v. Andrus*,[143] for example, the court considered well-documented needs to increase flows to improve king salmon and steelhead trout habitat and spawning in the Trinity River in northern California after eighty-five to ninety percent of the river's flow had been diverted for other purposes by the Central Valley Project of the Federal Bureau of Reclamation.

Both the California Department of Fish and Game and the U.S. Fish and Wildlife Service had concluded that some level of increased flow would improve fish habitat in the river, and had recommended that annual flows be increased some two and a half times the originally agreed-upon minimum release of 120,000 acre feet per year to 315,000 acre feet per year. Most of the increase would have been concentrated in May and June to simulate natural snow melt conditions.[144] The Bureau of Reclamation had agreed to a compromise release of 245,000 acre feet per year and a monitoring and evaluation study was in progress to reassess the quantity and timing of releases necessary to restore the fishery.[145]

An extended period of drought reduced the availability of water drastically and the Bureau of Reclamation informed Trinity County that it would return to the old minimum release of 120,000 acre feet per year.[146] The County Board of Supervisors brought an action claiming, among other things, that the Fish and Wildlife Coordination Act required the Bureau of Reclamation to release sufficient amounts of water to sustain fish populations in the Trinity River.[147] The Court found this claim without merit, holding that no private right of action arises under the Fish and Wildlife Coor-

141. *Id.* at 417-18; *see also Akers*, 339 F. Supp. at 1380.
142. National Wildlife Fed'n v. Andrus, 440 F. Supp. 1245, 1255 (D.D.C. 1977).
143. 438 F. Supp. 1368 (E.D. Cal. 1977).
144. *Id.* at 1372-73.
145. *Id.* at 1373.
146. *Id.* at 1373-74.
147. *Id.* at 1374.

dination Act.[148]

Thus, while the consultation procedure mandated by the Fish and Wildlife Coordination Act can lead to coordinated planning of water projects which takes into account instream aquatic base flow needs, it is by no means assured that such coordinated planning will take place. Stream flow maintenance advocates are well advised to participate actively in the inter-agency process of the Fish and Wildlife Coordination Act to insure that its procedural steps produce a clear record for agency decisionmaking.

F. *Anadromous Fish Conservation Act*

In 1965, Congress passed the Anadromous Fish Conservation Act,[149] and authorized funds for the conservation, development, and enhancement of the nation's anadromous fisheries stocks. The bill authorized the Secretary of the Interior to enter into cooperative agreements with the states:

> (1) to conduct investigations, engineering, and biological surveys, and research, (2) to carry out stream clearance activities, (3) to construct, install, maintain, and operate devices and structures for the improvement of feeding and spawning conditions, for fisheries resources protection, and for facilitating the free migration of any fish, (4) to construct, operate, and maintain fish hatcheries, (5) to conduct studies and make recommendations . . . , (6) to acquire lands . . . , (7) to accept donations of funds and to use such funds for acquiring or managing lands, and (8) to administer such lands and interest . . . for the purposes of the act.[150]

Congress viewed the law as augmenting the Fish and Wildlife Coordination Act.[151]

The Act, however, made no changes in existing law.[152] Thus, reviewing courts have followed the example of the court in *County of*

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148. *Id.* at 1383. *See also* Sierra Club v. Morton, 400 F. Supp. 610, 640 (N.D. Cal. 1975); Environmental Defense Fund, Inc. v. Corps of Eng'rs, 325 F. Supp. 749, 754 (E.D. Ark. 1971).

149. Pub. L. No. 89-304, 79 Stat. 1125 (1965) (codified as amended at 16 U.S.C. § 757(a)-(f) (1982)). For the legislative history of this Act, see 1965 U.S. CODE CONG. & AD. NEWS 3837-59.

150. 1965 U.S. CODE CONG. & AD. NEWS 3839.

151. *Id.* In the Act's legislative history, Virginia was noted as having anadromous alewife, shad, striped bass, and herring fisheries. *Id.* at 3842.

152. *See supra* notes 134-48 and accompanying text.

Trinity v. Andrus,[153] where the court, after dismissing plaintiff's Fish and Wildlife Coordination Act claim, dismissed the plaintiff-intervenor's Anadromous Fish Act claim noting that the latter act provided "even less support for relief in this case, since it merely authorizes the Secretary to enter into cooperative agreements with the states for the conservation of anadromous fish."[154]

G. *Soil and Water Resources Conservation Act of 1977*

The Soil and Water Resources Conservation Act[155] was enacted to further the conservation of soil, water, and related resources through programs administered through the Secretary of Agriculture.[156] The Act provides for a continuing appraisal of the soil, water and related resources of the Nation, periodic updating of the program in conjunction with the roles and program responsibilities of other federal, state, and local agencies, and an annual evaluation report to be presented to Congress.[157]

Although the Act does not specifically mention stream flow maintenance as a factor in the continuing appraisal of the Nation's resources, the Secretary of Agriculture is required to consider "data on the quality and quantity of soil, water, and related resources, including fish and wildlife habitats."[158] The Secretary is also required to "establish an integrated system capable of using combinations of resource data to determine the quality and capabilities for alternative uses of the resource base."[159]

The Act provides both that soil conservation practices be coordinated with fish and wildlife habitat and water and related resource protection, and that NEPA-like procedural mandates be established in an integrated system for considering alternatives. The "multiple use" language of the Act is, in all likelihood, too vague to provide any judicially enforceable standards.[160] On the other hand, the Act does provide an opportunity for administrative appraisal at the programmatic level of all Soil Conservation Service

153. 438 F. Supp. 1368 (E.D. Cal. 1977).
154. *Id.* at 1383.
155. 16 U.S.C. §§ 2001-09 (1982).
156. *Id.* § 2003(a).
157. *Id.* § 2003(c).
158. *Id.* § 2004(a).
159. *Id.* § 2004(b).
160. *See* Sierra Club v. Hardin, 325 F. Supp. 99 (D. Alaska 1971) (dealing with the Multiple-Use Sustained Yield Act of 1960, 16 U.S.C. §§ 528-532 (1982)).

projects.[161] This appraisal opportunity can, perhaps, be a useful tool in directing these projects—rather notorious for their single purpose nature—toward a more balanced approach, including a consideration of stream flow maintenance.

IV. Current Virginia Statutes, Regulations and Policies

The Code of Virginia and the regulations and policies of the State Water Control Board contain no explicit aquatic base-flow requirements. A strong case can be made, however, that they provide substantive agency authority and responsibility to ensure adequate flows when the circumstances arise. Virginia has no program in place for directly regulating the consumptive use of surface water. However, as discussed above, the State exercises substantial authority over federally-licensed projects under the certification requirements contained in section 401 of the Clean Water Act[162] and there are several regulatory vehicles at the state level for implementation of flow requirements.

Numerous expressions of policy contained in the Code or adopted by the State Water Control Board establish some direction that applies—or should apply—to State agencies in carrying out their regulatory and other functions. Furthermore, article XI of the Virginia Constitution requires that agency actions affecting the environment must fully weigh impacts and alternatives.[163] The lack of criteria for implementing those policies and legislative declarations has made their application spotty, however. Lack of explicit statutory requirements for consideration and protection of aquatic base flows has given the State Water Control Board reason to assume more discretion than it should have in light of legislative policy and the requirements of the Virginia Constitution. Moreover, the Board's clear ability to impose minimum flow requirements appears to be entangled unnecessarily with the issue of water allocation among competing users, leading to an excess of caution. This section examines the present Code requirements and the regulations and policies of State agencies pertaining to regulation of instream flow.

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161. 16 U.S.C. § 2002(2) (1982).

162. 33 U.S.C. § 1341 (1982). *See supra* notes 25-28 and accompanying text.

163. Va. Const. art. XI.

A. *Sources of State Authority*

Determination of Virginia's authority and policies regarding water management requires the examination of the state constitution[164] and various statutes, regulations and policies, which have been enacted or adopted over a period going back to the mid-nineteenth century. Most of these statutes, regulations, and policies, however, date no further back than the end of World War II.

B. *State Water Control Law*

The State Water Control Law (SWCL)[165] is the basic statute governing water resource management in the Commonwealth. Although it is applied primarily to the control of activities that result or may result in the discharge of pollutants, it is not so restricted by its own terms. An examination of the SWCL's pertinent provisions supports the interpretation that the State Water Control Board's responsibilities extend equally to activities that may affect stream carrying capacity. The SWCL begins with a statement declaring it to be the policy of the Commonwealth—and the purpose of the law—to:

> (1) protect existing high quality state waters and restore all other state waters to such condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life . . . which might reasonably be expected to inhabit them, (2) safeguard the clean waters . . . from pollution, (3) prevent any increase in pollution, (4) reduce existing pollution, and (5) promote water resource conservation, management and distribution, and encourage water consumption reduction . . . for the health, safety and welfare of the present and future citizens of the Commonwealth.[166]

The SWCL defines "state waters" to include all water, on the surface and under the ground, whether wholly or partially within the state's jurisdiction.[167] "Pollution" is defined, significantly, as:

> such alteration of the physical, chemical or biological properties of any state waters (a) as will or is likely to create a nuisance or render

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164. *Id.*
165. VA. CODE ANN. §§ 62.1-44.2 to -44.37:1 (Repl. Vol. 1982).
166. *Id.* § 62.1-44.2.
167. *Id.* § 62.1-44.3(4).

> such waters harmful or detrimental or injurious to the public health, safety or welfare, or the health of animals, fish or aquatic life; (b) unsuitable with reasonable treatment for use as . . . [a] public water supply; or (c) unsuitable for recreational, commercial, industrial, agricultural or other reasonable uses . . . .[168]

The SWCL further defines "pollution" as any alteration of the property of state waters or any discharge of wastes into state waters which by itself is not sufficient to cause pollution but which, in combination with alteration or discharge by other owners, is sufficient to cause pollution, and which contributes to the contravention of water quality standards adopted by the Board.[169] The definition of "pollution" in the SWCL is thus sufficiently broad to encompass any activities that would alter or affect water quality—including impoundment, withdrawal and other changes in stream flow.

1. State Control; Public Policy

Section 62.1-44.4(1) of the SWCL reserves and affirms "[t]he right and control of the State in and over all state waters" and denies any prescriptive right to denigrate water quality by past or future discharge of wastes or other actions by any owner.[170] Section 62.1-44.5 of the law declares it to be against public policy for any owner to discharge wastes or to alter the properties of state waters and make them detrimental to public health, animal or aquatic life, or to use for domestic, industrial, recreational or "other uses," unless the owner obtains a certificate from the Board.[171]

2. State Water Control Board; Powers and Duties

The State Water Control Law and certain other water management programs are administered by the State Water Control Board, a seven-member citizen panel appointed by the Governor. A staff of about 350 persons, distributed among the headquarters office in Richmond and six regional offices, performs the technical, administrative and clerical functions of the agency. The staff is

168. *Id.* § 62.1-44.3(6).

169. *Id.* The definition refers to both the alteration of the properties of state waters and the discharge of wastes to state waters. Thus, the alteration of properties encompassed by the definition of "pollution" must include activities other than the discharge of pollutants.

170. *Id.* § 62.1-44.4(1).

171. *Id.* § 62.1-44.5.

headed by an Executive Director, who is also a gubernatorial appointee. The Board is empowered to delegate all but a few of its functions to the Executive Director, but in practice the Board has maintained an active role in both setting and implementing its policies.[172]

The Board's authority over water quality management is virtually unrestricted under the SWCL. Section 62.1-44.15(1), for example, declares it to be the duty and power of the Board "to exercise general supervision and control over the quality, management and distribution of all state waters and to administer and enforce [the SWCL], and all certificates, standards, policies, rules, regulations, rulings and special orders promulgated thereunder."[173] Succeeding subsections prescribe the duty and authority of the Board to establish standards of quality and policies for state waters and to take all appropriate steps to prevent quality alteration "contrary to the public interest,"[174] to conduct studies, investigations and research on carrying out the purposes of the SWCL,[175] to issue certificates for the discharge of wastes into or "the alteration otherwise of the physical, chemical or biological properties of state waters,"[176] to enforce its policies and programs and to adopt regulations it deems necessary to enforce its general water quality management program.[177] Remaining sections of the SWCL deal with discharge permit requirements,[178] enforcement,[179] procedures for decisionmaking,[180] judicial review,[181] penalties and recovery for oil spill damages and costs.[182]

Sections 62.1-44.2 to -44.15 are the "heart" of the SWCL in that they prescribe the Board's powers and duties and establish the policy background against which these powers and duties are to be administered.[183] While there is no explicit mention of instream flow anywhere in the SWCL, it seems evident that the law empowers the Board to establish and impose—by certification—instream

172. *Id.* §§ 62.1-44.7 to -44.15.
173. *Id.* § 62.1-44.15(1).
174. *Id.* § 62.1-44.15(3)(a).
175. *Id.* § 62.1-44.15(4).
176. *Id.* § 62.1-44.15(5).
177. *Id.* § 62.1-44.15(6), (10).
178. *Id.* §§ 62.1-44.18 to -44.19.2.
179. *Id.* §§ 62.1-44.20 to -44.30.
180. *Id.* §§ 62.1-44.24 to -44.28.
181. *Id.* § 62.1-44.29.
182. *Id.* §§ 62.1-44.32, -44.34:2, -44.34:7.
183. *Id.* §§ 62.1-44.2 to -44.15.

flow maintenance requirements to be met by persons whose activities may affect water quality.[184]

The extent of the Board's duty in this regard is less obvious. The broad definition of pollution, coupled with the statutory statement of public policy requiring certification for activities that alter the characteristics of state waters, strongly implies that some form of Board approval is required for activities that materially affect stream flow. These considerations are usually addressed where an existing certification program is in place, although the adequacy of protection is questionable. With regard to water withdrawals, however, this generalization seems to run head-on into other long-standing policies. With one narrow exception,[185] the legislature has so far avoided the adoption of any program or requirement respecting water allocation or requiring permits for water withdrawal. The assumption that this precludes the Board from controlling consumptive uses to the extent that they conflict with the public interest in environmental protection is, however, unwarranted.

The Board is charged in a separate chapter with the development of "a coordinated policy for the use and control of all the water resources of the State,"[186] which must foster and encourage, among other thing, "[t]he maintenance of stream flows sufficient to support aquatic life and to minimize pollution."[187]

The Board is also required to prepare plans and programs for water resource management in all major river basins of the state, "to encourage, promote and secure the maximum beneficial use and control thereof."[188] In preparing these plans, the Board is required to:

> estimate, for each major river and stream, the minimum instream flows necessary during drought conditions to maintain water quality and avoid permanent damage to aquatic life in streams, bays and estuaries, [and to] . . . evaluate, to the extent practicable, the ability of existing subsurface and surface waters to meet current and future water uses, including minimum instream flows, during drought conditions.[189]

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184. *See supra* note 163 and accompanying text.
185. Groundwater Act of 1973, VA. CODE ANN. §§ 62.1-44.83 to -44.107 (Repl. Vol. 1982).
186. *Id.* § 62.1-44.36.
187. *Id.* § 62.1-44.36(5).
188. *Id.* § 62.1-44.38(A).
189. *Id.* § 62.1-44.38(B).

In order to compile sufficient information to carry out these responsibilities, the Board is authorized to require water users whose average withdrawals exceed 10,000 gallons per day in any month to register and submit certain use data.[190] The Board has recently promulgated regulations to that effect.[191]

The legislative policy set forth at the end of this chapter of the SWCL, however, appears to restrict the Board's ability to implement its findings. The chapter is not to be construed "as altering, *or as authorizing any alteration of*, any existing riparian rights or other vested rights in water or water use."[192]

Similar legislative sentiments are found in yet another chapter of title 62.1—"State Policy as to Waters."[193] The chapter defines "water" in terms identical to the definition of state waters in the SWCL[194] and "beneficial use" as "domestic, agricultural, recreational and commercial and industrial uses."[195] The "State Policy" chapter declares all waters to be "a natural resource which should be regulated by the State" and provides, in part, that:

> (b) The regulation, control, development and use of waters for all purposes beneficial to the public are within the jurisdiction of the State which in the exercise of its police powers may establish measures to effectuate the proper and comprehensive utilization and protection of such waters.
>
> (c) The changing wants and needs of the people of the State may require [its] water resources . . . to be put to uses beneficial to the public . . . .
>
> (d) The public welfare and interest of the people of the State require the proper development, wise use, conservation and protection of water resources . . . .
>
> (e) The right to the *use* of water *or to the flow* of water in or from any natural . . . watercourse in this State is and shall be limited to such water as may reasonably be required for the beneficial use of

190. *Id.* § 62.1-44.38(C). Crop irrigation is exempted from this requirement. *Id.*

191. SWCB Reg. No. 11 (effective March 1, 1982).

192. VA. CODE ANN. § 62.1-44.44(b) (Repl. Vol. 1982) (emphasis added).

193. *Id.* §§ 62.1-10 to .1-13.6 (Repl. Vol. 1982 & Cum. Supp. 1983).

194. *Id.* § 62.1-10(a) (Repl. Vol. 1982).

195. *Id.* § 62.1-10(b). There is no mention of aquatic life or habitat protection, although recreational and commercial uses might be construed to incorporate protection of at least those species of commercial or recreational significance.

> the public to be served; such right shall not extend to the waste or unreasonable use or unreasonable method of use of such water.[196]

The clarity of this statement of purpose is somewhat clouded, however, by the closing disclaimer:

> Nothing in this chapter shall operate or affect any existing valid use of such waters or interfere with such uses hereafter acquired, nor shall it be construed as applying to the determination of rights in any proceeding now pending or hereafter instituted.[197]

Thus, the SWCL and supporting policies can readily be construed as requiring Board approval for consumptive uses, impoundment and other activities affecting stream characteristics. It is not limited solely to the discharge of pollutants. Furthermore, certification is not a mere formality; it must be conditioned sufficiently to protect all beneficial uses including public health, aquatic life and habitat, domestic, agricultural and industrial water supply and recreation.[198]

Statements of policy in the SWCL itself, in the "State Policy as to Waters," and in the water policy planning provisions of the Virginia Code evince legislative intent to protect a wide range of values, including those dependent upon sufficient flow maintenance, and to ensure compatibility among consumptive and non-consumptive uses. The disclaimers denying any intent to assume a regulatory role over water allocation or supply management have possibly been misconstrued as vitiating this comprehensive authority. There is no question that control over allocation is not legislatively favored. Legislative efforts to enact a system whereby the State Water Control Board or some other state agency would allocate supply have been uniformly rejected.[199]

It may appear at first glance that water policies expressed at various times in the Code are mutually contradictory, and that the legislative disclaimers effectively eviscerate the clear and desirable

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196. *Id.* § 62.1-11 (emphasis added).

197. *Id.* § 62.1-12.

198. *Id.* § 62.1-44.5.

199. *See, e.g.*, the proposed Water Code of Virginia, VIRGINIA WATER RESOURCES RESEARCH CENTER, A WATER CODE FOR VIRGINIA (1980). The proposed water law, which would have instituted a permit system for ground and surface water allocation, was introduced in the 1981 General Assembly, H.B. 1420, 1981 Va. Gen. Assem. § 62.2-40, but was defeated in committee. 1981 VA. HOUSE JOURNAL 1290.

policies for water quality protection. Upon closer scrutiny, however, the conflict does not appear to be so evident. There is no necessary contradiction between the legislative reaffirmation of the existing common law system of allocation and the declaration of a public interest sufficient to invoke the police power to ensure water quality protection.

A regulatory program requiring certification for water withdrawal, imposing conditions sufficient to protect beneficial uses determined to be in the public interest, would not be incompatible with the legislative intent to preserve riparian property rights expressed in the Virginia Code.[200] After all, the fundamental purpose of the police power is to permit the orderly coexistence of private rights and the public welfare. Controls on water use to achieve the purposes set forth in the Code would not involve the Board in the determination of rights among competing private claimants, but would merely provide for the imposition of limitations, deemed to be in the public interst, on the exercise of private property rights. There is no functional difference between a permit requirement for withdrawal and a permit requirement for the discharge of pollutants, where the purpose of the requirements is to protect the quality of the resource. Waste disposal is traditionally as much an incident of riparian ownership as other uses are, yet there has been no hesitation to impose limitations and certification requirements on that class of activity.[201] Thus, it is submitted, there is no irreconcilable conflict in the coexistent legislative policies to protect beneficial uses of state waters and to preserve existing property rights.

Nonetheless, the State Water Control Board has traditionally

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200. VA. CODE ANN. §§ 62.1-12, -44.44 (Repl. Vol. 1982). *See also id.* §§ 62.1-44.83 to -44.107 (an example of police power control over a surface owner's right to use groundwater).

201. *See, e.g.*, the Clean Water Act's National Pollutant Discharge Elimination System (NPDES), requiring permits of all dischargers of industrial waste. 33 U.S.C. §§ 1311(a), 1342 (1982). The permit program is administered in Virginia by the SWCB. VA. CODE ANN. § 62.1-15(5) (Repl. Vol. 1982); SWCB Reg. No. 6 (1981). Under the riparian ownership concept, an owner can use a stream for waste disposal as long as his use does not materially impair other riparian owners from enjoying their rights. The test for acceptable riparian use focuses on the effect such use has on other riparian owners. *Cf.* Panther Coal Co. v. Looney, 185 Va. 758, 40 S.E.2d 298 (1946); Arminius Chem. Co. v. Landrum, 113 Va. 7, 73 S.E. 459 (1912). The actual discharge of waste, however, is more directly governed today by statute. *See, e.g.*, VA. CODE ANN. § 62.1-44.4 (Repl. Vol. 1982). Thus, waste disposal in a stream may violate state law without intruding upon the rights of other riparian owners. Conversely, possession of a discharge permit is not a defense to an action by another riparian owner. SWCB Reg. No. 6.19(d).

steered clear of imposing state certification requirements or restrictions on consumptive uses of surface waters. Given the highly sensitive nature of real or perceived encroachments on the riparian system in Virginia, this is clearly a case in which discretion has been the better part of valor. The statutory policies protecting instream flow are primarily implemented in those cases where there is an already-existing regulatory "peg"—such as a permit requirement—under state or federal law, to which flow conditions can be attached.

C. *Other Virginia Statutes*

Several other state laws impose permit and regulatory requirements on activities which substantively affect state waters. Most of these requirements rely upon the recommendations of the SWCB for water quality requirements, and all state agencies are bound by the requirements of article XI of the Virginia Constitution.[202] Thus, the fundamental policies expressed in the SWCL are applicable to those agencies, even where the SWCB is not the licensing authority.

1. State Ownership of Submerged Lands

One of the earliest, still-extant enactments concerning public rights to Virginia waters can be found in chapter 1 of the SWCL, which declares the beds of all bays, rivers, and creeks and the seashores of the State, to the low water mark (that were not previously conveyed by grant or compact) are the property of the Commonwealth to "be used as a common by all the people of the State, for the purpose of fishing and fowling, and of taking and catching oysters and other shellfish."[203] This section is merely declarative of the common law "public trust doctrine" and creates no new property right in the Commonwealth.[204] At common law, the state holds all submerged lands in public trust, subject to certain public rights such as navigation and fishery.[205] Conveyances or uses of such lands must be accomplished without substantial impairment of the public's rights.[206] The scope and extent of lands and uses protected

202. *See supra* note 163 and accompanying text.
203. VA. CODE ANN. §§ 62.1-1 to -2 (Repl. Vol. 1982).
204. Meredith v. Triple Island Gunning Club, 113 Va. 80, 84, 73 S.E. 721, 723 (1912).
205. Illinois Cent. R.R. v. Illinois, 146 U.S. 387, 452 (1892).
206. *Id.*

by the public trust may vary from state to state,[207] but as one commentator has stated, "[a]t a minimum the public trust doctrine requires a state to assume some responsibility for resource management on behalf of the public."[208]

The narrowest application of the trust classifies use of waters for navigation and commerce as public rights that must be protected. Other uses, such as fishery and recreation, may not enjoy such protection, and may be alienated to a private use or subordinated to another public use that has been deemed superior. In Virginia, for example, the Supreme Court has classified navigation as an "inherent and inseparable incident" of sovereignty and therefore inalienable insofar as public rights, or *jus publicum*, would be improved, while uses classified as *jus privatum*, such as fishery, may be conveyed or destroyed by a legislative decision to give preference to a competing public use.[209]

The exercise of the Commonwealth's preeminent authority over submerged lands is accomplished by section 62.1-3 of the Code, which declares it unlawful to "build, dump, or otherwise trespass upon or over or encroach upon or take or use any materials" from submerged lands that are the property of the Commonwealth without statutory authority or a permit from the Marine Resources Commission (MRC).[210] The section grants statutory authority for a number of activities, including the erection of dams "authorized by proper authority."[211] The MRC is authorized to issue permits "for all other reasonable uses of state-owned bottomlands," including the taking of material, constructing of bulkheads and wharves, and dredging and filling.[212]

In granting or denying a bottomland permit, the MRC is to be "guided in its deliberations" by article XI, section 1 of the Virginia Constitution,[213] and must "consider, among other things" the effect of the project on "other reasonable and permissible uses of state waters and . . . bottomlands, its effect on the marine and fisheries

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207. *See* Berryhill & Williams, *Taking Precedents in the Tidelands: Refocusing on Eminent Domain*, 18 U. RICH. L. REV. 453, 465 n.62 (1984).

208. Butler, *The Commons Concept: An Historical Concept with Modern Relevance*, 23 WM. & MARY L. REV. 835, 884 (1982).

209. Commonwealth v. City of Newport News, 158 Va. 521, 552, 164 S.E. 689, 698-99 (1932).

210. VA. CODE ANN. § 62.1-3 (Repl. Vol. 1982).

211. *Id.*

212. *Id.*

213. VA. CONST. art. XI. *See supra* note 163 and accompanying text.

resources of the Commonwealth," wetlands, and the project's public and private benefits.[214] The Commission is also required to give "due consideration" to the water quality standards established by the State Water Control Board.[215]

This section has limited use as an affirmative means of regulating instream flow. State ownership is restricted, with few exceptions, to the beds of navigable and tidal waters;[216] the beds of nonnavigable streams belong in most cases to the respective riparian owners. Whatever rights the public may have in the waters overlying privately-owned stream bottoms (e.g., commercial navigation) are unaffected by the MRC, whose regulatory jurisdiction extends only to subaqueous land owned by the state. Furthermore, exceptions in the statute for dams, congressionally-approved navigation and flood control projects exclude from MRC's permitting requirements major classes of projects with significant effects on instream flow.[217] Nonetheless, the statutory criteria that MRC must follow in granting or denying permits[218] are sufficiently broad to require at least the consideration of instream flow factors in those cases where an MRC permit is required.

2. Surface and Floodwater Impoundment

Virginia's common law system of allocation has been somewhat modified with respect to certain uses of impounded floodwaters, where the surface water flow is in excess of "normal." Chapter 8 of the SWCL, "Impoundment of Surface Waters," allows the capture of diffused surface waters in accordance with the common law rule, and declares such waters when impounded to be the property of the impounding owner.[219] Thus, there is no attempt to regulate deflection of runoff which might otherwise augment flow in streams or recharge aquifers. The statute goes further, however, and allows riparian owners, upon approval of the local circuit court, to capture and store "water in watercourses which is over and above the aver-

214. VA. CODE ANN. § 62.1-3 (Repl. Vol. 1982).
215. *Id.*
216. Boerner v. McCallister, 197 Va. 169, 89 S.E.2d 23 (1955).
217. VA. CODE ANN. § 62.1-3 (Repl. Vol. 1982).
218. *Id.*
219. *Id.* §§ 62.1-104 to -115. At common law, "surface water" is defined as that which results from rainfall or melting snow and is diffused across the ground. Upon entering a natural stream or watercourse, it is no longer surface water. A landowner may divert or obstruct surface water as long as other property is not unreasonably damaged or impaired thereby. *See* Note, *Surface Water Law in Virginia*, 44 VA. L. REV. 135 (1958).

age flow of the stream."[220] This may be accomplished under several statutory conditions, the most important that "there be no damage to others,"[221] that the flow below the impoundment be maintained at a specified level,[222] that priority to state floodwaters goes to upstream owners,[223] and that the impoundment conform to "rules and regulations promulgated" by the SWCB.[224]

In addition, the SWCB must review the impounding owner's petition and advise the circuit court concerning the average flow of the stream, potential conflicts with other development in the watershed, the effect of the impoundment on pollution abatement, and any other relevant matters the Board desires to raise.[225] The court must deny the petition if it determines that other riparian owners will be injured or that there are "other justifiable reasons" for denial. Furthermore, the petition may not be granted in any case where the SWCB has certified that "the reduction of pollution will be impaired or made more difficult."[226] If the court grants the petition, it is required to "place the applicant under such terms and conditions as shall seem to it right."[227]

Any owner whose petition is granted pursuant to the chapter is entitled to "sole and unrestricted use" of the stored floodwaters for the purpose authorized.[228] The owner is also granted statutory permission to use the bed of the watercourse if title is in the Commonwealth.[229]

At first glance this statute may appear to provide substantial private authority to appropriate waters that exceed "average" stream flow (whatever that may be), restricting the rights of down-

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220. VA. CODE ANN. §§ 62.1-106 to -107 (Repl. Vol. 1982).

221. *Id.* § 62.1-106(1).

222. *Id.* § 62.1-106(5). The flow level below the impoundment must be at least equal to that above the impoundment when the above-impoundment flow is less than or equal to the stream's average flow, or must be equal to the average stream flow when the above-impoundment flow exceeds that average flow.

223. *Id.* § 62.1-106(9). Presumably, the right of location takes precedence over temporal right, although this is uncertain in view of the requirement that no one else be damaged.

224. *Id.* § 62.1-106(11). It is not clear whether this refers only to the SWCB's surface impoundment regulations, which are primarily structural (SWCB Reg. No. 9, (1979)) or to water quality requirements as well.

225. VA. CODE ANN. § 62.1-109 (Repl. Vol. 1982).

226. *Id.* § 62.1-111. Given the broad definition of "pollution" under § 62.1-44.3(6), the SWCB has wide latitude here.

227. *Id.* § 62.1-111.

228. *Id.* § 62.1-115. This means, presumably, that the reasonableness of any non-wasteful use, including interbasin transfer, is statutorily assumed.

229. *Id.* § 62.1-113. No MRC permit is therefore required.

stream owners to an average flow determined by the court. Although the flow for maintenance of instream uses below the impoundment would have to be held at least at the level of the upstream flow, the court on its own or at the SWCB's recommendation could presumably impose additional requirements, such as flow augmentation in drought periods. However, the statute's applicability is restricted by the definition of "watercourse,"[230] which applies only to rivers, streams, etc., which are nonnavigable in fact and which lie wholly within the jurisdiction of the state.[231] Furthermore, the chapter does not apply to any project undertaken pursuant to the Virginia Water Power Development Act[232] or to any case which requires federal "consent," for example, a section 404 permit[233] or a FERC license.[234] As the federal government's permit jurisdiction has been so broadened with the enactment of the Clean Water Act's section 404 permit program, it is difficult to imagine many circumstances where this exclusion would not apply.[235] The most that can be said about the Floodwater Statute, then, is that in those few cases where it does apply, it would require flow protection of a sort by requiring that the impoundment have a zero net effect; that is, it must actually withdraw only "excess" water. The primary reason for this provision is to protect downstream riparian owners, but the broad power given to the SWCB and to the circuit court allows for the imposition of conditions sufficient to protect instream uses.[236] Such permit conditions would likely be necessary to protect flow levels, despite the statutory "average flow" requirement, which is of little use standing alone.

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230. *Id.* § 62.1-104(4).

231. This apparently is intended to exclude those streams actually used in commercial navigation, as opposed to those that can be made navigable with improvements. It is unclear whether it would exclude intrastate tributaries of interstate waterways.

232. VA. CODE ANN. §§ 62.1-80 to -103 (Repl. Vol. 1982).

233. 33 U.S.C. § 1344 (1982). *See supra* notes 13-15 and accompanying text.

234. 16 U.S.C. § 797(e) (1982). *See supra* notes 16-21 and accompanying text.

235. VA. CODE ANN. § 62.1-114 (Repl. Vol. 1982).

236. For example, the "average flow" requirements could be met by periodic releases with little or no flow in the interim periods. This might meet the requirements of the statute, satisfy downstream owners and even be beneficial to some uses such as recreation. It might, however, be harmful to aquatic life, scour bottom habitats, cause excessive bank erosion, and have other harmful effects.

3. Water Power Act

Construction of dams for electric power development is a major—perhaps *the* major—factor affecting stream flow in states like Virginia that do not provide for out-of-basin water allocation. While such uses are "non-consumptive" in the sense that they eventually release most of the water back into the stream, they nonetheless require controls to ensure adequate flows in drought periods and to prevent excessive fluctuations that may destroy aquatic habitats, cause bank erosion and otherwise impose flow-related impacts on the downstream reaches.

Primary state jurisdiction over all aspects of water power development in Virginia is vested in the State Corporation Commission (SCC) under the 1928 Water Power Act.[237] Although the Act imposes State licensing requirements on hydroelectric and certain other impoundments, its applicability to many projects is limited by the extensive federal preemption established by the Federal Power Act.[238] The discussion that follows—insofar as it relates to the SCC licensing authority—is pertinent to those SCC-regulated impoundments over which the Federal Energy Regulatory Commission would lack jurisdiction. In addition, the Virginia Water Power Act has been construed to give primacy to the SCC in determining the conditions for certification of federally-licensed water power projects under section 401 of the Clean Water Act.[239]

The Water Power Act's purpose is the conservation and utilization of the "otherwise wasted energy from the water powers in this State," it is stated policy

> to encourage the utilization of the water resources in the State to the greatest practicable extent and to control the waters of the State . . . and also the construction . . . of a dam in any river or stream within the State for the generation of hydroelectric energy for use or sale in public service . . . .[240]

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237. VA. CODE ANN. §§ 62.1-80 to -103 (Repl. Vol. 1982).

238. 16 U.S.C. §§ 791-823 (1982).

239. *See infra* notes 263-73 and accompanying text.

240. VA. CODE ANN. § 62.1-80 (Repl. Vol. 1982). This is a prime example of the kind of conflicting policy language found throughout the Code. Contrast it, for example, with the language found in §§ 10-167, 62.1-11 and 62.1-44.2. These sections relegate water power development either to a clearly subordinate position, as in the case of the Scenic Rivers Act, *id.* § 10-167 (Repl. Vol. 1978), or require that it be given, at most, equal status with other beneficial uses, as in the latter two sections. This problem becomes one of more than academic interest, as we will see, because permits for water power projects are issued, not by

The term "waters of the State" is defined in the Act as: (1) any stream declared navigable prior to June 21, 1932, (2) any stream or stream segment the bed of which is owned by the Commonwealth, or (3) any stream or other body of water which is used or suitable for use in its natural or improved state for transportation of goods in interstate or foreign commerce, and any other stream in which the construction of a dam or works would affect interstate or foreign commerce.[241] This definition essentially incorporates those bodies of water meeting the test of navigability traditionally applied to determine federal admiralty or FERC jurisdiction,[242] as well as some nonnavigable streams that would be included because of state bed ownership. The Virginia Supreme Court has construed the Act to extend jurisdiction to any commercial hydroelectric project in the state, regardless of the navigability of the stream in question.[243]

Administration of the Water Power Act is charged to the State Corporation Commission, which is empowered to exercise the State's "paramount" control and regulation of the development of the waters of the state.[244] The Act provides, however, that the state may exercise this power to the detriment of riparian owners only by condemnation and payment of just compensation.[245]

The Act prohibits construction or reconstruction of any dam across or in the "waters of the state"[246] or a dam in any river or streams "within the State" when such dam is for the commercial generation of hydroelectric power, without a license from the SCC.[247] License proceedings include application with proper plans and specifications, consultation with the SWCB, and notice and

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the SWCB, but by the State Corporation Commission.

241. *Id.* § 62.1-81 (Repl. Vol. 1982). Note that this would exclude most, if not all streams covered by the Floodwaters Statute. *See supra* notes 219-36 and accompanying text. Also, it is a much narrower definition than the "State Waters" over which the Commonwealth exerts its police power jurisdiction. *Id.* § 62.1-44.3(4).

242. United States v. Appalachian Elec. Power Co., 311 U.S. 377, 405-10 (1940) (applying a test of capacity for navigation to determine the jurisdiction of the Federal Power Commission (now FERC)); The Daniel Ball, 77 U.S. 557, 563 (1870) (establishing the jurisdiction of the admiralty courts over navigable waters). It does not, however, necessarily include waters that are regulated or "navigable waters" under the Clean Water Act, 33 U.S.C. § 1362(7) (1982). *See supra* note 14. These statutes encompass virtually all waters of the United States, regardless of their actual or potential navigability.

243. Vaughan v. Virginia Elec. & Power Co., 211 Va. 500, 178 S.E.2d 682 (1971).

244. VA. CODE ANN. § 62.1-82 (Repl. Vol. 1982).

245. *Id.*

246. As defined in *id.* § 62.1-81.

247. *Id.* § 62.1-82.

hearing. Before making its determination, the SCC must "weight all the respective advantages and disadvantages from the standpoint of the State as a whole and the people thereof" and investigate the effect of the project on local governments and the prospective development of natural resources and private property.[248] The Commission is required to grant the license if, "in pursuance of the . . . policy of the State to encourage water power development," it finds that the applicant's plans provide for the "greatest practicable extent of utilization" of the stream in question and that "the general public interest will be promoted thereby."[249] The license may be denied if the project is deemed inadequate, wasteful or "prejudicial to the public interest."[250] The Commission may include such terms and conditions in the license as it determines are reasonably necessary for public safety and prevent "unreasonable" obstruction of existing navigation or interference with stream flow.[251]

The scope of the Water Power Act was initially determined in the case of *Garden Club of Virginia v. Virginia Public Service Co.*[252] This case involved a challenge to the SCC's refusal to take regulatory jurisdiction over a proposed hydroelectric dam across the North (now Maury) River at Goshen Pass, on the ground that the project did not involve waters of the State as defined in the Act.[253]

The parties stipulated that the river had never been declared navigable, had never been used and was not suitable for use in interstate or foreign commerce and that the bed was privately owned. However, water impounded by the project would have required the relocation of a public highway; thus it was argued that the "interests of interstate and foreign commerce" would be affected and, therefore, SCC approval was required. The court refused to construe the Act so liberally, and held that the definition applied only to effects on waterborne commerce.[254]

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248. *Id.* § 62.1-88.
249. *Id.* § 62.1-89.
250. *Id.* § 62.1-90.
251. *Id.* § 62.1-91.
252. 153 Va. 659, 151 S.E. 161 (1930).
253. *Id.*
254. *Id.* at 674, 151 S.E. at 165. The court cited, as an example, interference with a hypothetical barge canal adjacent to an impounded stream, which itself did not meet any of the other conditions for applicability. Note that the provisions of VA. CODE ANN. § 62.1-83 (Repl. Vol. 1982), which refer distinctly to dams on "waters of the State" and "rivers or streams within the State when such dam is for the purpose of generating hydroelectric en-

In the later case of *Vaughan v. Vepco*,[255] adjoining property owners challenged the Commission's authority to license Vepco's impoundment on the North Anna River for the purpose of providing cooling water to the North Anna Nuclear Power Station. They argued that the North Anna did not meet any of the criteria for definition as waters of the State in the Water Power Act,[256] and that the SCC would, therefore, have jurisdiction only if the project was for hydroelectric power generation.[257] Because the impoundment would be used to supply cooling water rather than to generate power, they argued, the SCC had no authority to license the dam.

The court agreed that the Commission's authority over "waters within the State" was limited to hydroelectric dams. As to "waters of the State," however, the court held that "the authority of the commission extends to the licensing of any dam . . . regardless of [its] purpose."[258] The North Anna River met the definition of "waters of the State," the court ruled, because the electricity generated at the power station would flow through interstate transmission lines and the construction of the cooling water impoundment would therefore "affect the interests of interstate or foreign commerce within the meaning of [the statute]."[259] No attempt was made to reconcile this holding with the comparatively narrow construction applied in *Garden Club*.[260] The opinion makes it clear, however, that the SCC's jurisdiction extends to any dam on the "waters of the State," whether or not the dam is associated with a power generating facility, that any dam associated with a facility that generates electricity for sale in interstate commerce will probably "bootstrap" the stream into "waters of the State" status, and that any commercial hydroelectric dam falls under SCC jurisdiction regardless of the status of the stream. Accordingly, the state agency with primary jurisdiciton over most major impoundments in Virginia is the State Corporation Commission. At the same time, the State Water Control Board has the responsibility to implement

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ergy" would appear to encompass this project.

255. 211 Va. 500, 178 S.E.2d 682 (1971).

256. VA. CODE ANN. § 62.1-81 (Repl. Vol. 1982).

257. That is, jurisdiction must be found under the provision applicable to hydroelectric dams for "waters within the State," which the court assumed to mean all streams not otherwise fitting the definition of "waters of the State." *Vaughan*, 211 Va. at 501, 178 S.E.2d at 684.

258. *Id.* at 502, 178 S.E.2d at 684.

259. *Id.* (quoting VA. CODE ANN. § 62.1-81 (Repl. Vol. 1982)).

260. 153 Va. 659, 151 S.E. 161 (1930).

the policies set forth in the State Water Control Law[261] and, with respect to federally-licensed projects, to administer the certification program under section 401 of the Clean Water Act.[262] This poses the potential for jurisdictional conflict, although conflict has usually been more perceived than real.

The jurisdictional issue did arise in 1970 over the licensing of the impoundment for the North Anna Nuclear Power Station. The SCC issued a license for the project in 1969, incorporating minimum release schedules for the maintenance of flow in the river below the dam.[263] Subsequently, the SWCB amended the SCC certificate, incorporating higher flow release requirements and certifying that the requirements would be sufficient to protect water quality standards.[264]

Prompted by concerns about the seemingly conflicting jurisdictional requirements of the Water Power Act and the State Water Control Law, the Board sought an opinion from the Attorney General on the issue of whether it had the authority to require more stringent flow release requirements than those imposed by the SCC, if the requirement were deemed necessary to protect water quality below the impoundment.[265] The Attorney General acknowl-

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261. VA. CODE ANN. § 62.1-44.15(1) (Repl. Vol. 1982).

262. 33 U.S.C. § 1341 (1982). Section 401 requires any applicant for a federal license or permit to conduct any activity which may result in any discharge into the waters of the U.S., as encompassed by the Clean Water Act, to obtain certification from the state in which the discharge will originate that the project will comply with applicable water quality requirements. The State Water Control Board was given the responsibility to administer the program by Governor Holton in 1970 (letter of June 25, 1970). *See* 1971 Op. Va. Att'y Gen. 453. At that time the requirement was contained in section 21(b) of the Federal Water Quality Act, Pub. L. No. 91-224, § 21(b), 84 Stat. 91, 108-10 (1970), and applied only to waters meeting the traditional test of navigability. *See supra* note 242 and accompanying text. Because of the pervasive federal licensing authority over hydroelectric projects and the Corps of Engineers Rivers and Harbors Act and Clean Water Act, and jurisdiction over other impounding structures, the state function is ordinarily exercised in the context of section 401 and the federal proceeding. *See infra* notes 306-35 and accompanying text.

263. State Corporation Commission certificate no. 1912, issued June 19, 1969.

264. It was later determined that, because the Corps of Engineers concluded that the North Anna River was not navigable, the state certification requirement did not apply. Subsequent changes in the federal law would mandate a different result today. (Section 404 of the Clean Water Act (33 U.S.C. § 1349), added to the Code in 1972, requires a permit from the Corps of Engineers for the discharge of dredge or fill material into the waters of the United States. The Corps has, by regulation extended the program to cover all waters subject to CWA jurisdiction and their adjoining wetlands. 33 C.F.R. § 3232. The North Anna River, while nonnavigable in the traditional sense, is navigable for CWA jurisdiction. Issuance of a section 404 permit would trigger the state certification requirement under section 401 (33 U.S.C. § 1341)).

265. 1971 Op. Va. Att'y Gen. 452.

edged the "apparent discrepancy" between the two statutes, commenting that both agencies had been granted broad powers in areas of major concern. He resolved the discrepancy in favor of the SCC by resorting to the language of section 62.1-82,[266] which specifies that the "paramount" control of the State in the control and regulation of its waters pursuant to the Act is to be exercised through the Commission. Although the Attorney General acknowledged the large body of environmental law that had been enacted since the 1928 passage of the Water Power Act (including the State Water Control Law), he cited section 62.1-44.6 of the SWCL,[267] which makes that law supplementary rather than preemptive, the broad policy language of the Water Power Act,[268] and the strong presumption against repeal by implication, to support his opinion that "in water power projects the final decision as to flow release schedules is that of the State Corporation Commission."[269]

However, the opinion contined, section 62.1-44.6 of the SWCL also requires that the administration of other laws pertaining to the pollution of State waters "shall be in accord with" the SWCL.[270] Therefore, the SCC is required to "consider the advice and judgment" of the SWCB regarding water quality effects of projects it licenses.[271] As to the effect of this consultation requirement on the resolution of differences between the two agencies, the opinion does not offer much encouragement. The Attorney General determined that exercise of the SWCB's federal water quality certification authority under section 401[272] was subordinate to the SCC licensing power and could not contravene the SCC's license conditions. Therefore, he concluded, the SWCB does not have the authority to issue a certificate incorporating a flow maintenance schedule more stringent than that in the SCC license and any conflicts must be resolved in favor of the SCC.[273]

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266. VA. CODE ANN. § 62.1-82 (Repl. Vol. 1982).

267. *Id.* § 62.1-44.6.

268. *See supra* note 240 and accompanying text.

269. 1971 Op. Va. Att'y Gen. 452, 455.

270. VA. CODE ANN. § 62.1-44.6 (Repl. Vol. 1982).

271. 1971 Op. Va. Att'y Gen. 452, 456.

272. *See supra* note 262.

273. 1971 Op. Va. Att'y Gen. 452, 457. In closing, the Attorney General acknowledged a problem inherent in Virginia's environmental regulatory programs and suggested a solution that—nearly 15 years later—has yet to be adequately resolved:

> [This case has] focused upon the delicate—but crucial—policy problems confronting both corporate and private entities: how best to balance and accommodate the growing need for electric power and the necessity for environmental protection and enhancement. These problems are heightened when governmental responsibilities are

Although in practice the SCC has tended to rely upon the SWCB for determination of stream flow requirements, it is not required to accept the Board's recommendations. Furthermore, the Commission's mandate under the Water Power Act, to encourage and promote the utilization of State waters for power development, is not necessarily compatible with the policies administered by the SWCB. SWCB policies provide for multiple beneficial use, speaking to the protection, maintenance and enhancement of State waters for all reasonable public uses and for the propagation and growth of aquatic life[274] and to the regulation, control, development, and use of waters for "all purposes beneficial to the public."[275] Where the multiple beneficial use concept is to be altered in favor of economic development (at least on waters of better quality than applicable standards), the proposal must satisfy both stringent tests of necessity and conditions to ensure protection of present and anticipated uses.[276] For all projects other than those licensed by the SCC, the multiple beneficial use, non-degradation requirements apply.[277] Because the SCC's authority is not subordinated to the SWCL, the resolution of an actual conflict between optimal generating capacity and sufficient flow maintenance would appear to be in the direction of development. This assumption is highly tentative, however, because of changes since publication of the 1971 Attorney General's Opinion.

The Water Power Act has always required the SCC to find that "the general public interest" will be promoted by issuance of a license thereunder.[278] Although this requirement is modified by the mandate that its findings be made in pursuance of explicit State policy to encourage water-power development,[279] the Commission has since been placed under other requirements that can be construed to require a broader view of "the public interest." First, and

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fragmented, conflicting or in need of clarification. In such cases, it would seem advisable to consider legislation to delineate clear lines of responsibility. In this case, especially, there is a definite need to consider the legislation that would redefine—and perhaps redetermine—more clearly the locus of responsibility for controlling stream flow releases from water power projects where water quality standards of the State are affected.

Id.

274. VA. CODE ANN. § 62.1-44.2(1) (Repl. Vol. 1982).

275. *Id.* § 62.1-11(b).

276. *Id.* § 62.1-44.4(2).

277. *See* 33 U.S.C. § 1313 (1982).

278. VA. CODE ANN. § 62.1-89 (Repl. Vol. 1982).

279. *Id.*

most important, is the constitutional expression of the public interest in protecting the environment of the Commonwealth "from pollution, impairment or destruction . . . ."[280]

The SCC is expressly required to exercise its authority subject to the Virginia Constitution.[281] In determining whether issuance of a license under the Water Power Act will in fact serve the public interest, the Commission must follow the public policy expressed in article XI, which is itself intended to promote the "general welfare of the people of the Commonwealth" by protecting the environment.[282] As one commentator has stated, referring to the responsibilities of Virginia agencies under article XI:

> It is most clear that a Virginia agency must observe the mandate of [article XI], section 1 where the relevant enabling legislation requires the agency to consider the "public interest" . . . before acting. An agency's action cannot . . . be in the "public interest" if no attention has been given, where relevant, to environmental consequences of the action.[283]

In order to fulfill its constitutional responsibility, the SCC (as must all state agencies) must weigh environmental impacts and alternatives and incorporate those factors into its decision.

The Virginia Environmental Quality Act,[284] enacted in 1972, provides that "[i]n furtherance of Article XI of the Constitution of Virginia" it is the policy of the Commonwealth to promote the wise use of its environment and resources and to protect them from pollution and impairment, as well as to "initiate, implement, improve and coordinate environmental plans, programs and functions of the State in order to promote the general welfare" of the State's citizens.[285] Agencies are directed to interpret and administer "the laws, regulations and policies of the Commonwealth" in accordance with the policies of the Act.[286]

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280. VA. CONST. art. XI, § 1.

281. *Id.* art. IX, § 2.

282. *Id.* art. XI, § 1.

283. Howard, *State Constitutions and the Environment*, 58 VA. L. REV. 193, 211-12 (1972).

284. VA. CODE ANN. §§ 10-177 to -186 (Repl. Vol. 1978 & Cum. Supp. 1983).

285. *Id.* § 10-178 (Repl. Vol. 1978).

286. *Id.* § 10-179. Note that this imposes a requirement on agencies to look beyond their own statutes and programs and consider relevant requirements of statutes not directly applicable to them. In the case of the SCC, this would include the State Water Control Law, for example. This is consistent with the holding in Blue Cross of Va. v. Commonwealth, 211

Changes in the statutory provisions enacted in 1972, under which the SCC regulates electric utility facilities, require that the Commission give consideration to the environmental effects of facilities it licenses and "establish such conditions as may be desirable or necessary to minimize adverse environmental impact."[287] Furthermore, the SCC is required to "receive and give consideration to all reports" from state environmental agencies that relate to the facility.[288]

Finally, other enactments of state policy that impact directly on the SCC's impoundment licensing authority override the SCC's authority under the Water Power Act in certain cases. The clearest example is the Virginia Scenic Rivers Act,[289] which requires "full consideration and evaluation of [any] river as a scenic resource" before impoundments or other uses that may change the character of the river can be approved.[290] The General Assembly, based on review and recommendations by the Commission of Outdoor Recreation, SWCB and other agencies, may designate any stream or segment as a scenic river.[291] After the General Assembly makes such a determination, legislative authority is required for the construction of any dam or impoundment.[292] The Act assures that designated scenic rivers cannot be dammed without an evaluation of the public's use and enjoyment of the river and its value as a scenic, recreational, geologic, fish and wildlife, historic, or cultural resource.[293]

While the Scenic River Act may itself be an effective tool to achieve substantive stream flow protection in some cases, it also imposes on the SCC the duty to evaluate flow-related factors prior to licensing any impoundment, regardless of whether a Scenic River designation is eventually made.[294] There is no clear mandate in the Act, however, respecting the effect of such evaluation in those cases where the decision is made not to designate a river scenic. There is no "intermediate" level of protection under the

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Va. 180, 176 S.E.2d 439 (1970).

287. VA. CODE ANN. § 56-46.1 (Cum. Supp. 1983).

288. *Id.*

289. *Id.* §§ 10-167 to -175 (Repl. Vol. 1978).

290. *Id.* § 10-167(d).

291. *Id.* § 10-174. Only a few designations have been made, most recently the Falls of the James River in Richmond. *See id.* § 10-176.

292. *Id.* § 10-174.

293. *Id.* § 10-167(c), (d).

294. *Id.* § 10-167(d).

Act for streams that don't make it into the Scenic River system. However, the data necessary to conduct a satisfactory evaluation for Scenic River status will nonetheless be relevant to analysis required under other statutory and constitutional requirements.

Although it can be argued convincingly that constitutional and legislative developments since the 1971 Attorney General's opinion have substantially altered the balance of factors to be considered in a licensing decision and have relatively diminished the development bias in the Water Power Act, the decision on flow maintenance requirements for projects covered by the Water Power Act still technically rests with the SCC. Likewise, although water quality compliance certification for federal licensing under section 401 of the Clean Water Act is the responsibility of the State Water Control Board, the Commission has the final say in the conditions affecting those projects which it has authority to license under the Water Power Act. While the SWCB must be consulted, it does not have the authority to overrule the SCC.[295]

While article XI and subsequent statutory enactments broaden the range of relevant factors, there is no bright line to balance water power development versus water quality requirements in setting license conditions. Presumably, the SCC could establish conditions that would not satisfy the policy requirements of the State Water Control Law, leaving to judicial interpretation the effect of article XI and the subsequently-enacted statutory policies. Given the SWCB's clear mandate to exercise supervision and control in all areas of water quality[296] as well as its specialized expertise in such matters, clearly a more satisfactory arrangement would be to give the SWCB primacy in setting stream flow and other water quality requirements for *all* impoundments, whether in the context of SCC licensing or section 401 certification, regardless of other agency jurisdiction.[297]

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295. *See supra* notes 265-73 and accompanying text.

296. VA. CODE ANN. § 62.1-44.15(1) (Repl. Vol. 1982).

297. As a practical matter, there are few circumstances where a federal permit would not be required for a project within the SCC's Water Power Act jurisdiction. Thus, the primary vehicle for establishing water quality requirements would be the section 401 certificate and licenses or permits issued pursuant to federal law.

4. State Control of Federally-Licensed Hydroelectric Plants

As mentioned above, most impoundments designed with a hydroelectric component require licensing under federal law.[298] Extensive substantive and procedural requirements under federal law must be satisfied to assure adequate consideration of environmental factors prior to federal project licensing.[299] Flow maintenance conditions would be established in the context of developing the federal license.

The balancing process at the federal level, however, is complicated by a jurisdictional split similar to that existing between the SWCB and the SCC. On the one hand, subchapter I of the Federal Power Act,[300] empowers the Federal Energy Regulatory Commission (FERC) to exercise control over water power development. FERC's jurisdiction extends to projects with any water power component, not merely to projects whose primary purpose is water power development.[301] With the exception of projects located on or affecting federal reservations, courts have generally construed the authority of FERC to be comprehensive and exclusive.[302] When Congress transferred the functions and authority of the Federal Power Commission to the FERC in 1977,[303] it gave FERC exclusive jurisdiction over matters formerly charged to the FPC and stated that matters transferred to FERC were within the "sole responsibility of [FERC] to consider and to take final agency action on without further review by . . . any other executive branch official."[304] The power to issue licenses for hydroelectric projects is specifically included in the transfer of exclusive jurisdiction to FERC.[305]

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298. *See supra* notes 60-91 & 262 and accompanying text.

299. *See, e.g.*, NEPA, *supra* note 46 and accompanying text.

300. 16 U.S.C. §§ 792-828 (1982). The Federal Power Act was initially enacted in 1920 as the Federal Water Power Act. Act of June 10, 1920, ch. 285, 41 Stat. 1063.

301. *See* Escondido Mut. Water Co. v. Federal Energy Regulatory Comm'n, 692 F.2d 1223, 1230 (9th Cir.), *cert. granted sub nom.* Escondido Mut. Water Co. v. La Jolla, 104 S. Ct. 272 (1983) (Commission's jurisdiction not limited to projects where the primary purpose is to generate power).

302. *See, e.g.*, Federal Power Comm'n v. Union Elec. Co., 381 U.S. 90 (1959); First Iowa Hydroelec. Coop. v. Federal Power Comm'n, 328 U.S. 152 (1946); Northwest Paper Co. v. Federal Power Comm'n, 344 F.2d 47 (8th Cir. 1965).

303. Department of Energy Organization Act of 1977, Pub. L. No. 95-91, 91 Stat. 565, 583-84 (codified at 42 U.S.C. § 7172 (Supp. V 1981)).

304. H.R. REP. No. 539, 95th Cong., 1st Sess. 75, *reprinted in* 1977 U.S. CODE CONG. & AD. NEWS 854, 925.

305. 42 U.S.C. § 7172(a)(1)(A) (Supp. V 1981).

Since the enactment of the Federal Water Power Act in 1920, Congress has substantially expanded the scope of federal activity in the water quality area. Most notably, the enactment of the Federal Water Pollution Control Act Amendments of 1972, the Clean Water Act,[306] created substantial, substantive authority and duties in other federal agencies to regulate water quality in virtually all U.S. waters. The agencies with primary responsibility under the Clean Water Act are the U.S. Environmental Protection Agency (EPA) and the Army Corps of Engineers (Corps). EPA administers the Act generally,[307] while the Corps is given regulatory responsibility for the administration of the dredge and fill permit program of section 404.[308] Under the Rivers and Harbors Act of 1899, the Corps is also given licensing authority over construction of any dam or dike across navigable waters,[309] or any other construction in or alteration of U.S. navigable waters.[310]

Under the "404" program, a Corps permit is required for the discharge of dredged or fill material into the "navigable waters," which under the Clean Water Act includes virtually all waters of the U.S.[311] Primary authority for administration of the program may be transferred to the states,[312] although this function has not been sought or assumed by Virginia. When certain restrictions on disposal areas may be imposed by the EPA Administrator,[313] the Secretary of the Interior, acting through the director of the U.S. Fish and Wildlife Service, must be given the opportunity to comment.[314]

Absent an express or implied exemption, section 404 applies to hydroelectric projects licensed under the Federal Power Act.[315] The question thus arises whether FERC-licensed projects are ex-

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306. Pub. L. No. 92-500, 86 Stat. 816 as amended by Pub. L. No. 95-217, 91 Stat. 1566 (codified as amended at 33 U.S.C. §§ 1251-1376 (1982)). Officially referred to as the Federal Water Pollution Control Act.

307. 33 U.S.C. § 1251 (1982).

308. *Id.* § 1344.

309. *Id.* § 401.

310. *Id.* § 403.

311. *See* Leslie Salt Co. v. Froehlke, 578 F.2d 742 (9th Cir. 1978). *See supra* note 14.

312. 33 U.S.C. § 1344(g) (1982).

313. *Id.* § 1344(c).

314. *Id.*

315. Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired . . . shall be required to have a permit under this section.

Id. § 1344(f)(2).

empt from its requirements because of the latter statute's apparent conferral of exclusive jurisdiction in FERC over water power projects.[316] There is a clear conflict in the federal court decisions on this question.

In *Scenic Hudson Preservation Conference v. Callaway*,[317] the district court examined the coextensive licensing authority of the Corps and the FPC, and held that projects licensed under the Federal Power Act were exempt from the Corps' permitting requirements under section 10 of the 1899 Rivers and Harbors Act.[318] Citing both the clear legislative intent behind the 1920 Federal Water Power Act[319] and the Supreme Court's subsequent decisions in *First Iowa Hydroelectric Cooperative v. Federal Power Commission*,[320] the court had "no hesistation in holding that the Federal Power Act preempted the Corps' § 10 authority to grant permits for the construction of hydroelectric plants,"[321] leaving the Corps, under its section 10 authority, with the function of making recommendations to the FPC concerning matters affecting navigation.

As for section 404, however, the court held that the comprehensive purpose of the 1972 Federal Water Pollution Control Act Amendments,[322] together with the outright prohibition on the unpermitted discharge of pollutants contained in the Clean Water Act's section 301[323] and the lack of any applicable exemption from permitting requirements in section 404, indicated that the Clean Water Act was intended to apply to FPC-licensed projects.[324] The court rejected the utility's argument that the Clean Water Act's

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316. *See supra* notes 301-04 and accompanying text.

317. 370 F. Supp. 162 (S.D.N.Y. 1973), *aff'd*, 499 F.2d 127 (2d Cir. 1974). This case was part of the long-running and well-known battle over Consolidated Edison's Storm King Mountain pumped storage hydroelectric project. The "Scenic Hudson" cases (Scenic Hudson Preservation Conference v. Federal Power Comm'n, 354 F.2d 608 (2d Cir. 1965), *cert. denied*, 384 U.S. 941 (1966) [*Scenic Hudson I*]; Scenic Hudson Preservation Conference v. Federal Power Comm'n, 453 F.2d 463 (2d Cir. 1971), *cert. denied*, 407 U.S. 926 (1972) [*Scenic Hudson II*]) are early landmarks in the development of environmental law, requiring federal licensing agencies to fully examine environmental factors in performing their regulatory functions. *See supra* notes 68-72 and accompanying text.

318. 370 F. Supp. at 168. Section 10, 33 U.S.C. § 403 (1982), which is primarily for the protection of navigation in the navigable waters, prohibits construction in or modification of the channel of navigable waters without a permit from the Corps. 33 U.S.C. § 403 (1982).

319. 370 F. Supp. at 165-66 (citing Act of June 10, 1920, ch. 285, 41 Stat. 1063 (codified at 16 U.S.C. §§ 791a-828c (1982)).

320. *Id.* (citing 328 U.S. 152 (1946)).

321. *Id.* at 167.

322. *Id.* at 169 (citing 33 U.S.C. § 1251(a) (1982)).

323. *Id.* (citing 33 U.S.C. § 1311 (1982)).

324. *Id.* at 168-69.

section 511(a)[325] served as an exemption because the FPC, under the Federal Power Act, would perform all the environmental functions of the Corps and EPA in any event. The court observed that, while the FPC *could* fulfill the requirements of section 404, nothing in the Federal Power Act required it to do so. This made the statutes inconsistent, in the court's opinion, so that section 511 would not apply.[326]

The opposite result was reached in the more recent case of *Monongahela Power Co. v. Alexander*,[327] which involved a challenge to the Corps' denial of a 404 permit for a project licensed by the FPC. The court noted two significant intervening events that justified a departure from *Scenic Hudson*. First, the FPC/FERC's exclusive jurisdiction over hydroelectric projects had been reaffirmed in the 1977 Energy Organization Act,[328] and second, the Supreme Court held in 1976, in *Train v. Colorado Public Interest Research Group*,[329] that exemptions to the comprehensive Clean Water Act permitting scheme may be inferred in some cases.[330]

The court rejected the argument that if Congress had wanted to exempt FPC-licensed projects, it would have done so in the 1977 Clean Water Act amendments. It found instead that the two statutes were not irreconcilable; therefore, the presumption against repeal by implication required that the FPC's exclusive jurisdiction be affirmed. In finding the statutes compatible, the court gave much weight to what it found to be similar mandates to the agencies to weigh specific factors, including environmental factors, in determining the public interest—the fundamental criterion in granting a permit or license. The court disagreed with the argument, based on the holding in *Scenic Hudson*,[331] that the FPC's review of environmental factors was discretionary and that its mission was so different from that of the Corps that the programs

325. *Id.* (citing 33 U.S.C. § 1371(a) (1982)).

326. *Id.* at 170-71.

327. 507 F. Supp. 385 (D.D.C. 1980).

328. *Id.* at 389.

329. 426 U.S. 1 (1976).

330. 507 F. Supp. at 389. *Colorado PIRG* held that source, by-product and special nuclear materials regulated by the Atomic Energy Commission were not subject to control under the Clean Water Act's (CWA) NPDES permit program, *supra* note 201, because of the AEC's exclusive jurisdiction in that area. 426 U.S. at 25. As the Court noted in *Monongahela Power*, however, the legislative history of the CWA supported such an exemption. 507 F. Supp. at 389. No such exemption could be found in the legislative history for FPC-licensed projects, *id.*, so the court relied on other factors to find the "inferable exemption."

331. *See* supra notes 68-72 & 317-26 and accompanying text.

were in fact irreconcilable. It found instead that the FPC was expressly required to weigh all relevant factors, including environmental protection, recreation, fish, wildlife and wilderness preservation, and that while its emphasis might differ from that of the Corps, the difference was not sufficient to support an implied repeal.[332]

Where *Monongahela Power*[333] will leave the section 404 permit program vis-a-vis FERC-licensed hydroelectric projects is open to question; the case is still on appeal. Whatever the ultimate outcome, it is clear that FERC is required to weigh and incorporate relevant environmental factors into its decision when considering a license application. These requirements apply under the agency's own regulations[334] as well as under the National Environmental Policy Act and other federal statutes as discussed above.[335]

It is reasonable to argue that despite these factors, FERC's power development responsibilities may result in a less environmentally-oriented emphasis than that applied by the Corps under section 404 of the CWA. However, the courts have consistently required the Commission to include both environmental and conservation factors, including preservation of adequate stream flow and fish habitat in its determination of the public interest.[336]

The implications of the Clean Water Act's non-applicability are of more concern with respect to the section 401 certification program, although again the Federal Power Act makes provision for state input on these aspects of a project. Under section 401, as noted above,[337] states may veto the issuance of a federal license by refusing to certify project compliance with state water quality standards, or more frequently, the state may insist upon the inclusion of certain conditions (for example, maintenance of minimum flows) before it grants certification. If, under the reasoning of *Monongahela Power*, the Federal Power Act is construed as unaf-

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332. 507 F. Supp. at 391-92 (citing NAACP v. Federal Power Comm'n, 425 U.S. 662 (1976); Udall v. Federal Power Comm'n, 387 U.S. 428, 450 (1967); Greene County Planning Board v. Federal Power Comm'n, 455 F.2d 412 (2d Cir.), *cert. denied*, 409 U.S. 849 (1972); *Scenic Hudson I*, 354 F.2d 608; National Environmental Policy Act, 42 U.S.C. §§ 4321-4371 (1976 & Supp. V 1981)).

333. 507 F. Supp. 385 (D.D.C. 1980).

334. 18 C.F.R. §§ 4.41, 4.51 (1983).

335. *See supra* notes 42-59 and accompanying text.

336. *See* Udall v. Federal Power Comm'n, 387 U.S. 428, 450 (1967); Hudson River Fishermans Ass'n v. Federal Power Comm'n, 498 F.2d 827 (2d Cir. 1974); *Scenic Hudson I*, 354 F.2d 608.

337. *See supra* notes 25-28 and accompanying text.

fected by the CWA, then the state certification requirement is likewise cast in doubt. The Federal Power Act provides that nothing contained therein "shall be construed as affecting . . . [state laws] . . . relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein."[338] Applicants for hydroelectric licenses must submit "[s]atisfactory evidence" that they have complied with state law requirements "with respect to bed and banks and to the appropriation, diversion and use of water."[339] These requirements are by no means comparable to the state veto power granted by the CWA's section 401.[340] In *First Iowa Hydroelectric Cooperative v. Federal Power Commission*,[341] the Supreme Court made it clear that the FPC could require the applicant to show compliance with those state requirements that the Commission considered appropriate to "effect the purposes of a federal license."[342] However, it was within the Commission's discretion to determine the extent to which state requirements were material. Compliance with state requirements was not a condition precedent to the granting of a federal license, nor were state requirements necessarily incorporated into the federal standards.[343] State requirements are merely advisory in the case of an actual conflict.

This construction has been consistently applied with respect to FPC/FERC licensing authority,[344] and appears consistent with the initial intent of the Federal Power Act. The effect of section 401 of the CWA on the formerly and indisputably exclusive scheme of federal control over hydroelectric projects on navigable waters is another matter. The CWA was enacted long after the Federal Power Act and contains no express exemption for FPC/FERC-licensed facilities; in fact, it is worded in rather absolute form.[345] The only change to section 401 made since its enactment has been to make clear that compliance by FERC-licensed facilities with

338. 16 U.S.C. § 821 (1982).

339. *Id.* § 802(b).

340. 33 U.S.C. § 1341 (1982).

341. 328 U.S. 152 (1946).

342. *Id.* at 167.

343. *Id.* at 170. The requirement at issue was a state law mandating that any water used must be returned to the stream at "the nearest practicable place" without being materially diminished, polluted or "rendered deleterious to fish life." *Id.* at 166.

344. *See* Springfield v. Vermont Envtl. Bd., 521 F. Supp. 243, 250 (D. Vt. 1981).

345. "No license or permit shall be granted until the certification . . . has been obtained . . . . No license or permit shall be granted if certification has been denied . . . ." 33 U.S.C. § 1341(a)(1) (1982).

state water quality standards adopted under section 303 was intended.[346] The legislative history of the 1972 amendments gives some support to the position that section 401 is not subordinated to the Federal Power Act.[347]

Furthermore, even if the approach used in *Monongahela Power* were applied to determine the effect of section 401, there are sufficient differences between section 401 and section 404 to justify different results. Section 401 does not by its terms establish a parallel federal permitting program, as section 404 does; instead, it gives states the authority to veto or demand that appropriate conditions be placed in any federal license, regardless of the issuing agency.[348] Although judicial authority is sparse, the prevailing view is that the exclusive federal jurisdiction in this area has been somewhat modified, empowering states to review FPC/FERC licenses under section 401.[349] In no case, however, was the court faced with a proposed state veto or refusal to certify a project. Because section 401 provides for inclusion of state-recommended conditions in the federal project license, and because FERC itself is under a strong statutory mandate to protect water quality and stream resources,[350] it is unlikely that state recommendations would be challenged on preemption grounds as long as they fell short of blocking a project that FERC was prepared to license. The effect of a state refusal to certify, or a conditional certification (for example, stream flow maintenance requirements) that would make a FERC-licensed project economically unviable, is uncertain.

5. Virginia Endangered Species Act

While state laws to protect endangered fish and wildlife species may sometimes be useful elements of a stream flow protection

346. S. REP. No. 370, 95th Cong., 1st Sess. 72, *reprinted in* 1977 U.S. CODE CONG. & AD. NEWS 4326, 4397.

347. See comments of Senator Muskie, during the Senate debate: "[Federal] agencies shall accept as dispositive the determinations of EPA and the States (under section 401 . . . of the FWPCA . . .)." 118 CONG. REC. 33,701 (1972).

348. 33 U.S.C. § 1341 (1982).

349. Power Auth. of N.Y. v. Department of Envtl. Conservation, 379 F. Supp. 243 (N.D. N.Y. 1974) (section 401 requires FPC licensees to comply with state standards, even if those are more stringent than federal requirements); de Rham v. Diamond, 343 N.Y.S.2d 84, 90 (1973) (FPC license preempts all state licensing requirements, but states may review application to determine "narrow question" of whether a project will comply with State Water Quality Standards).

350. FERC requires section 401 certification as part of the application package. Thus, there is no contention by that agency that section 401 is superseded.

strategy,[351] the Virginia Endangered Species Act[352] does not offer any help in that regard. The Act restricts only the taking, transporting, handling and selling of endangered fish and wildlife species.[353] It does not provide for the protection of their habitats, nor does it authorize the Game Commission to regulate for that purpose.[354] Thus, there is no direct authority under Virginia law to establish minimum flows to protect endangered species.

D. *Relevant State Water Control Board Regulations and Policies*

As discussed earlier, the Virginia Code contains adequate authority to support a state stream flow protection program. An examination of the State Water Control Board's regulations, policies and standards indicates that the Board is cognizant of some responsibility in this area, but it has avoided directly specifying requirements in particular cases.

1. Water Resources Policy

The State Water Control Board's "Water Resources Policy," adopted in 1974,[355] devotes a significant amount of attention to flow maintenance issues, but its effectiveness as an affirmative mechanism is questionable. As an adopted policy, it cannot be entirely ignored by the agency. However, the policy is only a general, self-imposed guideline and has no regulatory requirements of its own.

The policy consists of three parts. Part 1.0 states general and unexceptionable findings upon which water resource policy must be based, including a finding relevant to this inquiry, that surface flow quality is dependent on the quantity of the flow.[356] Part 2.0 of the policy declares that the purpose for adopting the policy is to

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351. *See* DEWSNUP & JENSEN, PROMISING STRATEGIES FOR RESERVING INSTREAM FLOWS 13 (1977) (U.S. Fish and Wildlife Service Publication).

352. VA. CODE ANN. §§ 29-230 to -237 (Repl. Vol. 1979).

353. Endangered species are defined in the Act to include those species listed by the Secretary of the Interior as endangered under the Federal Endangered Species Act, 16 U.S.C. §§ 1531-1541 (1982), and those listed by the Virgnia Commission of Game and Inland Fisheries under VA. CODE ANN. § 27-233 (Repl. Vol. 1979).

354. *Id.* § 29-234.

355. STATE WATER CONTROL BOARD, STATUTES, REGULATIONS AND POLICIES (2d ed. 1982).

356. *See* State Water Control Board Policy § 1.6 (1982), ("Quality of surface flows is, to a degree, dependent upon quanities of flow, natural pollution sources, and in part, activities of man.").

fulfill certain of the Board's "statutory responsibilities," which, again, include several factors that are relevant to stream flow regulation.[357] Part 3.0 contains the "specific policies" adopted by the Board for its use "in the preparation of Water Resource Management Plans, advising on the adequacy/desirability of water resource projects or in commenting on prospects which affect water resources."[358] The "specific policies" bearing on flow considerations are:

> *3.2.1* - The natural values and natural processes occurring in water resources in an undisturbed state constitute a substantial social and economic benefit . . . and (this) protection . . . should be considered in any resources management plan.
>
> . . . .
>
> *3.2.4* - Flow releases from reservoirs for the purpose of maintaining minimum flows necessary for prevention of eutrophic conditions (due to natural sources); protection of fish and wildlife values, marine organisms; and protection of aesthetic values will be considered as beneficial uses.[359]
>
> *3.2.5* - Generation of electricity by hydropower, both in conventional and pump storage developments, is considered a beneficial use of water resources, provided that the system is so operated that neither maximum nor minimum operations flow releases are unreasonable and so that the rate of flow does not change so rapidly as to be hazardous.[360]

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357. The Board is directed to "[a]ssure, insofar as possible, that domestic, municipal, industrial, agricultural and other water quality and quantity needs are met at all times consistent with the responsibility of the State to protect the natural values of Virginia's water resources and assure equitable allocations in times of shortage consistent with . . . Virginia law," State Water Control Board Policy § 2.1 (1982); "[r]ecognize the importance of water transportation to the economy and recreation, and assure the optimum use of waterways in Virginia," *id.* § 2.3; "[r]ecognize and foster the unique and diverse role of water in recreation," *id.* § 2.4; and "[e]xercise the responsibility of the State within the framework of the existing common law riparian rights of land owners," *id.* § 2.8.

358. *Id.* § 3.0.

359. As beneficial uses, these factors would normally be protected under the legislative policy set forth in the State Water Control Law, VA. CODE ANN. §§ 62.1-44.2, -44.4, -44.5, discussed *supra* notes 183-92 and accompanying text. Note, however, that the policy does not declare them categorically to be beneficial uses, but simply requires that they be considered in each case, with the decision to be in the Board's discretion. This apparently places them in the dubious status of what might be called "second-hand" beneficial uses under the policy.

360. Note the difference in wording between this section and sections 3.2.1 and 3.2.4. Section 3.2.5 appears to ensure preferential status to hydropower as a categorical "beneficial

. . . .

3.2.7 - The consideration of water resources projects by the Board shall include coordination with other public agencies in order to insure that all relevant public policy and formal standards will have an appropriate bearing on the final decision.

. . . .

3.4.1 - Industrial processes should be designed to minimize system demand . . . . As a goal the Board favors the design of industrial processes with minimum withdrawal.

3.4.2 - Flow releases from reservoir systems to dilute wastes are not to be considered as a substitute for adequate treatment of waters from industry, agriculture or municipalities.[361]

Thus, while the Board has established policies to guide its deliberations in authorizing and regulating projects that affect flow volume, little exists in the nature of hard and definite standards to which the agency can be held accountable. The policy is sufficiently vague to allow the Board to apply it as it desires.

2. Water Quality Standards

The State Water Control Board is charged with the authority and duty to promulgate water quality standards for all Virginia waters[362] and has issued at least rudimentary standards for all of the stream basins in the state. These standards consist of both narrative statements that describe water quality requirements in general terms[363] and numeric limits for specific chemical, physical or biological "parameters."[364]

Certain standards apply statewide, while others apply to specific

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use", as long as it meets the very broad criteria of being neither unreasonable nor hazardous. The factors cited in section 3.2.4 would then appear to be little more than precatory, entitled to no weight unless they could be implemented without intefering with the project's generation capacity.

361. State Water Control Board Policy § 3 (1982).

362. VA. CODE ANN. § 62.1-44.15(3) (Repl. Vol. 1982).

363. State Water Control Board Water Quality Standards § 1.01, pt. A (1982) [hereinafter cited as Water Quality Standards] requires that "[a]ll state waters shall be maintained at such quality as will permit all reasonable, beneficial uses and will support the propagation and growth of all aquatic life, including game fish, which might be expected to inhabit them."

364. *Id.* §§ 1.04-.08 (specifying standards for dissolved oxygen, pH and temperature).

stream segments according to a seven-part classification. As regulations, the standards have substantive status in the administration of the Board's regulatory programs, particularly the NPDES permit program and the CWA section 401 certification program. Under the former, the standards may be used as the basis for effluent limitations imposed on individual dischargers.[365] Under the latter, the standards form the basis for the state certification necessary for issuance of the federal license.[366] The Board may certify a project as in compliance with water quality standards "as is," it may impose design or operating conditions necessary to ensure compliance, or it may simply refuse to certify on the ground that water quality standards cannot be met by any feasible combination of conditions.

Because the standards refer to instream conditions rather than effluent quality, they are unavoidably dependent upon flow volume. Extreme diminution or fluctuations in flow may interfere with beneficial uses and the stream's ability to support aquatic life, both of which are required by the general standard.[367] Furthermore, compliance with specific quality requirements, such as dissolved oxygen levels, depends on flow.

Wastes discharged into a moving body of water are diluted and dissipated as they flow downstream. Biodegradable wastes, such as treated municipal sewage, are broken down, dissipated, and absorbed by the stream's natural processes. Dissolved oxygen, necessary both for aquatic life and the stream's continued ability to assimilate wastes, is used in the process. Other demands are placed on the stream's assimilative capacity, for example, decaying organic material that is naturally present or that is washed into the stream from adjacent uplands. As long as the stream's assimilative capacity is not exceeded, it is capable of maintaining a level of quality adequate to protect other instream uses. If the capacity is exceeded, one or more parameters (e.g., dissolved oxygen) may change sufficiently to place unacceptable stress on some species and to impair or destroy those uses dependent on the affected pa-

365. This is the alternative to the technology-based effluent standards promulgated by the EPA and applicable to categories of dischargers. Where compliance with the instream water quality standard requires tighter control on individual discharges than that provided by the technology-based standards, the more stringent requirements apply. *See supra* note 201.

366. 33 U.S.C. § 1341 (1982).

367. Water Quality Standards, *supra* note 363.

rameter.[368] A stream's ability to assimilate a given quantity of wastes (and thereby comply with its designated standards) will fluctuate depending upon flow level. In large bodies of water, normal fluctuations are not critical unless the stream is receiving wastes at its maximum assimilative capacity or it is at extremely low flow. Smaller streams are less able to dilute and absorb wastes and are more sensitive to fluctuations in flow.

The Water Quality Standards do not include flow levels as a specific physical parameter, although artificially-induced flow conditions may violate the broad mandate of the general standard by interfering with stream uses. The interdependence of stream flow and water quality is addressed through the indirect mechanism of establishing a flow level as the benchmark for standards applicability. The assimilative capacity of a stream is based on an assumed flow level which represents below-normal conditions. Thus, the Water Quality Standards provide that "Stream Standards will apply whenever flows are equal to, or greater than, the minimum 7-consecutive day drought [low] flow with a 10-year return frequency."[369] While standards "ideally" should be met at all times, "[i]t is generally accepted that to require standards maintenance at all times is unreasonable."[370] This means that while dischargers will still be held to the conditions of their permits, they will not be required to cut back or take extraordinary measures to maintain instream quality during periods of extreme low flow.[371]

Although the Water Quality Standards do not specify an "acceptable" flow level or a definitive means of determining appropriate levels, they do contain relevant factors that must be weighed when this aspect of a proposal is being considered. The General Standard repeats the policy statement found at section 62.1-44.2 of the Virginia Code.[372] The Anti-Degradation Policy[373] of the Code

368. The uses that are most susceptible to water quality degradation are recreation and maintenance of a balanced population of fish and wildlife. Protection of these uses usually is sufficient to protect others such as irrigation, navigation and industrial water supply. *Id.*

369. *Id.* § 1.03. This is usually expressed as the "7Q10", or the lowest flow which, on a statistical basis, would occur for a seven consecutive day period once every ten years.

370. *Id.*

371. Interruptions in flow caused by impoundment or withdrawal can result in a stream being at or near this stress condition for a significant part of the time, even during periods of adequate rainfall. When that happens, what should be a relatively unusual phenomenon within the stream's capacity to absorb becomes the norm, and the stream may be overstressed. Unfortunately, the "7Q10" is often used as the flow maintenance level, a function for which it is inappropriate.

372. "All State waters shall be maintained at such quality as will permit all reasonable,

requires that waters whose existing quality is better than the standards established for them be maintained at such quality. The guidelines for implementing the policy include the requirement that "[e]xisting instream beneficial water uses will be maintained and protected, and actions that would interfere with or become injurious to existing uses should not be undertaken."[374]

The requirements of the State Water Control Law are not restricted solely to discharges.[375] Similarly, the requirements of the Water Quality Standards, particularly those just mentioned, apply to any activities that affect the chemical, physical or biological characteristics of state waters. Thus, any activity that comes within the Board's certification power or requires SWCB approval must at least meet the requirements of the General Standard, the Anti-Degradation policy where applicable, and the specific standards adopted for that stream. Because alterations in flow level may affect the stream's ability to support beneficial uses as well as its capacity to assimilate the effects of other activities such as waste discharges, the Board must impose conditions on consumptive use or impoundment where appropriate to meet those statutory and regulatory requirements. In many cases, the Board has simply set the "7Q10"[376] as the average flow requirement; however, this level may not necessarily meet the requirements of the SWCL or of the standards.

Amendment of the Water Quality Standards to incorporate policies, requirements and procedures for establishment of instream flows is an appropriate way to correct the lack of a coherent state approach to this issue. While each case must still be weighed on its own facts, this subject would be more appropriately treated by agency rulemaking than by the current ad hoc approach.[377] Although the General Standard may be better than nothing, it is prone to subjective interpretation, allows far too much discretion, and from the standpoint of both the public and the regulated com-

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beneficial uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them." Water Quality Standards, *supra* note 363, § 1.01A.

373. *Id.* § 1.02 (repeating the policy of VA. CODE ANN. § 62.1-44).

374. *Id.*

375. *See supra* note 198 and accompanying text.

376. *See supra* note 369.

377. The State Water Plan Advisory Committee, established in 1983 pursuant to VA. CODE ANN. § 62.1-44.38, is charged with examining policy options on instream flows, among other issues, and making recommendations to the Board.

munity, gives little guidance on what to expect when planning, designing or commenting on a given project.[378]

E. *Common Law of Riparian Rights*

Virginia, like most eastern states, determines water rights according to the riparian doctrine. As a general rule under the riparian doctrine, owners of property bordering or crossed by a natural stream have exclusive right to the reasonable use of the water in that stream, provided that the use does not materially diminish or pollute the stream to the detriment of other riparian owners.[379] The right is an incident of property ownership and does not depend upon its exercise; thus, the rights of riparian owners are protected regardless of whether the owners have exercised their rights to use the water. Riparian owners hold their rights subject to certain public uses; the extent of the public use varies depending on the jurisdiction.[380] In Virginia, the extent of the public right has been clearly established only with respect to navigation and its improvements,[381] and to municipal sewage discharge.[382] Exercise of riparian rights may be regulated by means of the police power, such as the controls imposed on pollutant discharges.

In determining and enforcing rights among riparian owners, the

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378. An example of the way in which this approach can reach a happy ending was seen recently in the case of Vepco's application for a FERC permit to reactivate the Twelfth Street Hydroelectric Power station in Richmond, a case that generated much public scrutiny and pressure. In order to protect fish habitat and spawning areas, the SWCB announced its intention to place minimum flow release conditions in the section 401 certification, based on maintenance of a percentage of mean flow. *Rationale for Instream Flow Recommendation in the James River at the Proposed Twelfth Street Hydroplant* (Oct. 19, 1982) (SWCB Staff Memorandum). This, in Vepco's opinion, made the plan uneconomical. The authors agree entirely with the Board's action in that case, which represented a rather more protective approach than the Agency has characteristically taken on this issue.

379. Town of Purcellville v. Potts, 179 Va. 514, 520-21, 19 S.E.2d 700, 702 (1942); Virginia Hot Springs Co. v. Hoover, 143 Va. 460, 130 S.E. 408 (1925).

380. *See supra* note 207 and accompanying text.

381. Oliver v. City of Richmond, 165 Va. 538, 178 S.E. 48 (1935). Navigability in Virginia is based narrowly on the commercial-use test. *See* Boerner v. McCallister, 197 Va. 169, 89 S.E.2d 23 (1955). The public right to use streams that flow in privately-owned beds—even if they are navigable in fact—does not, apparently, extend to recreational uses such as canoeing, kayaking, fishing, etc. Some other states have included—either legislatively or judicially—recreational uses within the scope of the public navigation right. *See* Watson, *Public Rights in Pennsylvania Waters*, 49 TEMPLE L.Q. 515 (1976); Cox, *Public Recreational Rights in Virginia's Inland Streams* (Special Report No. 10, Virginia Water Resources Research Center, VPI & SU) (Jan. 1980).

382. Ancarrow v. City of Richmond, 600 F.2d 443 (4th Cir.), *cert. denied*, 444 U.S. 992 (1979).

test to be applied in Virginia is whether the challenged use is unlawful and interferes unreasonably with the complainant's own right to reasonable use of the waters flowing past or through his property.[383] No definite rule exists for determining what is or is not a permissible use; this requires an examination of the facts in each case.[384] More importantly, the riparian doctrine is a private property doctrine and is enforceable only by those having rights derived from riparian ownership.

By its nature, therefore, the riparian right can provide a coincidentally useful tool for protection of stream flows by the mechanism of private owners protecting their rights. It is not, however, a consistently reliable framework for protecting instream uses.[385] There are a number of situations where the common law, standing alone, would be inadequate to protect instream flows despite a clear public interest in doing so. For example, riparian rights may be condemned or purchased, leaving no one to claim injury from unlawful use. A riparian owner whose holdings are extensive may divert the stream and return it to its course at the downstream end of his property, causing damage to the watercourse but no actionable injury to other riparians. Riparian owners may be unaware of unlawful diversions or may simply have no interest in spending the time and money to pursue them. A diversion that may be considered non-injurious to riparian owners may in fact overstress the stream. Assuming someone did assert the right, each new riparian use would require a new judicial determination of "reasonableness," and the courts would be guided primarily in each case by property considerations rather than by technical standards for protection of the aquatic ecosystem.

Thus, while the riparian doctrine may be satisfactory as a means of allocating rights among private users, its nature as a private property right precludes its use, except coincidentally, as a means of protecting stream flows for public purposes such as conservation, recreation and aquatic habitat protection. That is not to say that the state does not have the authority to regulate stream flows

383. *Potts*, 179 Va. 514, 19 S.E.2d 700; 1972 Op. Va. Att'y Gen. 79 (stating that an interbasin transfer of water, which diverts water beyond riparian property, is unlawful at common law).

384. *Potts*, 179 Va. 514, 19 S.E.2d 700; Davis v. Town of Harrisonburg, 116 Va. 864, 83 S.E. 401 (1914). *See generally* RESTATEMENT (SECOND) OF TORTS § 850A (1982) (discussing the reasonable uses of water).

385. *See* Davis, *The Riparian Right of Stream Flow Protection in the Eastern States*, 36 ARK. L. REV. 47 (1982).

for such purposes, but only that it derives no useful regulatory authority from the common law riparian doctrine.[386]

The other question pertaining to the riparian doctrine's effect on stream flow regulation is whether state-imposed flow requirements, based on the police power, might be deemed an unconstitutional taking of a riparian right. Although the constitutionality of a specific regulatory exercise challenged on this ground must be determined on the particular facts, it is difficult to conceive of a flow maintenance regulation being overturned as a taking. An owner holds his property subject to the lawful exercise of police power; such exercise is deemed a taking only when it deprives the owner of all reasonable uses of the property. The use preferred by the owner is not necessarily constitutionally protected.[387] Unless the regulation prohibits use of water by riparian owners or deprives them of all the beneficial incidents of their property, it would undoubtedly stand.

V. State Programs to Protect Instream Flows

State laws and regulations drawn specifically to protect instream flows are still the exception rather than the rule, although interest in developing flow protection programs has increased.[388] Allocation systems historically have focused on the economic and property aspects of water use. Instream uses without definable economic value have not fit comfortably into this perspective. Some states have instituted programs to protect instream flow for public uses, however, and the issue appears to be attracting more interest as consumptive uses compete increasingly with public demand for recreation, regulatory requirements for the protection of water quality and habitat, the need for assimilative capacity to accommodate multiple uses, and a more sophisticated awareness of the complex ecology of freshwater aquatic systems.[389] Expanding interest in hydroelectric power, encouraged by rising energy costs and by new

386. Where the state is in fact a riparian owner, it has the same rights as any other owner similarly situated. Thus, for example, it would be entitled to assert its riparian status to protect a stream flowing through a state park.

387. Commonwealth v. County Utils., 223 Va. 534, 542, 290 S.E.2d 867, 872 (citing Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104 (1978)).

388. *See* Ausness, *Water Rights Legislation in the East: A Program for Reform*, 24 Wm. & Mary L. Rev. 547, 556-76 (1983) (summary of water rights in the eastern states); Davis, *supra* note 385, at 48.

389. *See generally* Ausness, *supra* note 388.

government incentives to small generators,[390] has also helped to elevate interest in the subject.

Several riparian doctrine states have instituted permit systems to manage at least some aspects of water allocation.[391] The requirement for a use permit, issued by a state administrative agency, provides a ready mechanism for the imposition of flow maintenance requirements as part of an overall management scheme. However, the lack of clearly-stated legislative standards and policies would hamper the effectiveness of this approach; a permit requirement alone is insufficient.

States that employ the prior-appropriation system of water allocation, the system used by most western states, already have an administrative mechanism in place, as this is necessary for the orderly functioning of the appropriation system. Instream flows may be protected by the state's authority to deny an appropriation as contrary to the public interest, by state appropriation for maintenance of instream uses, by purchase or condemnation of appropriated rights, by withdrawal of certain streams from appropriation, or by imposing conditions on appropriation permits, transfers or exchanges.[392]

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390. The Public Utilities Regulatory Policy Act, 16 U.S.C. §§ 2701-2708 (1982), provides incentives for small hydropower developers, for example, by requiring purchase of their power by utilities. Other incentives include government surveys of potential power sites. (See for example the 1981 Virginia Hydro Inventory, which lists 119 sites on Virginia streams).

391. Maryland, for example, requires a permit from the Department of Natural Resources to:

> appropriate or use, or begin to construct any plant, building or structure which may appropriate or use any waters of the state, whether surface or underground. . . . The applicant shall provide the department with satisfactory proof that issuing the permit will not violate the state's water quality standards or jeopardize its natural resources.

MD. NAT. RES. CODE ANN. § 8-802 (Repl. Vol. 1983). The statute exempts domestic, agricultural, and certain municipal uses. *Id.* Florida requires a permit for consumptive use and construction and maintenance of dams and reservoirs. The permit must conform to a water resources plan developed by the Department of Environmental Regulation and administered by regional management districts. FLA. STAT. ANN. §§ 373.013 -.443 (West 1974 & Supp. 1983). Delaware requires a permit for any increase in present use. DEL. CODE ANN. tit. 7, § 6030 (1974). Iowa has the perhaps the most comprehensive program of any riparian state, including establishment of flow standards, designation of "protected" streams and administrative controls on withdrawals during drought periods. IOWA CODE ANN. §§ 455B.261 -.280 (West Supp. 1983). *See also* Ausness, *supra* note 388, at 580.

392. *See* Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211, 213-14; DEWSNUP & JENSEN, *supra* note 351; and STATE LAWS AND INSTREAM FLOWS (1977) (published by the U.S. Fish and Wildlife Service); Heath, *Protection of Instream Flows*, in WALKER, LEGAL AND ADMINISTRATIVE SYSTEMS FOR WATER ALLOCATION AND MANAGEMENT: OPTIONS FOR CHANGE 107,

Systematic protection of instream flows in a riparian doctrine state, such as Virginia, does not have to depend on a use permit system, although such a program, properly administered, would allow a measure of protection more comprehensive than is otherwise available.[393] Most major non-consumptive activities affecting stream flow usually require permits under state law (e.g., dam construction permits)[394] or state certification of water quality standard compliance prior to issuance of a federal license or permit (e.g., a FERC license or Corps of Engineers permit).[395] Assuming that there is adequate underlying authority, these permits can be conditioned to include appropriate flow maintenance conditions. Explicit standards for instream flow protection have been set by some states in their statutes governing these programs.[396] Other states have drawn upon the general water quality protection requirements of their environmental statutes and have promulgated regulations requiring compliance with stream flow maintenance requirements in permitted projects.[397]

113-16 (1984) (published by the Virginia Water Resources Research Center, VPI & SU).

393. Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 KY. L. J. 191 (1977); Davis, *Eastern Water Diversion Permit Statutes: Precedents for Missouri?*, 47 Mo. L. REV. 429, 445-64 (1982). Issues and implications of a Virginia administrative allocation system are discussed in detail in W. COX, VIRGINIA'S WATER RESOURCES: POLICY AND MANAGEMENT ISSUES (1982) (published by Virginia Water Resources Research Center, VPI & SU); Abrams, *Interbasin Transfer in a Riparian Jurisdiction*, 24 WM. & MARY L. REV. 591 (1983). A withdrawal permit requirement, standing alone, does not necessarily provide stream flow protection. The statute must provide sufficient authority and criteria to ensure this protection is accomplished through the administration of the system.

394. *See supra* notes 237-97 and accompanying text.

395. *See supra* note 262.

396. *See, e.g.*, N.Y. ENVTL. CONSERV. LAW §§ 15-0801 to -0807 (McKinney Supp. 1983) (requiring the Commissioner of Environmental Conservation to promulgate regulations for certain impoundments respecting volume, timing, rate of change in volume and other conditions on releases, to protect recreational uses, trout fishing, canoeing and other beneficial uses). North Carolina's Dam Safety Law requires all dams subject to its provisions to maintain flows sufficient to sustain stream classifications and water quality standards. N.C. GEN. STAT. §§ 143-215.25 to -215.37 (1983). Maryland requires hydroelectric dam operators to release water sufficient to maintain water quality and aquatic habitat. MD. NAT. RES. CODE ANN. § 4-513 (Repl. Vol. 1983). *See also* Heath, *supra* note 392, at 111.

397. Pennsylvania Department of Environmental Resources regulations provide that

> [t]he Department will impose such general and special conditions regarding release rates in any permit for a dam or reservoir as it deems necessary to maintain stream flows for the purposes of protection of public health, water quality control, conservation of fisheries and aquatic habitat, improvement of recreation, and protection of instream and downstream water uses.

Dam Safety and Waterway Management Rules and Regulations § 105.113. The regulations provide that the minimum release rate cannot be less than the 7-day, 10-year low flow, but that higher minimum flows must be set if necessary to protect particular instream flows. *Id.*

Most eastern states, including Virginia, evaluate stream flow factors on a case-by-case basis whenever water quality factors are relevant to the project in question.[398] Determinations are guided by the general statutory requirements of beneficial use protection and the states' water quality standards. The statutory criteria, standing alone, are rather subjective and do not provide much guidance, particularly where competing beneficial uses are involved. Likewise, the water quality standards, as in Virginia,[399] may be either so general as to be of little guidance or so specific as to be inapplicable. Absent criteria specific to stream flow maintenance considerations, the decision in each case may be arbitrary, as in the SWCB's general practice of applying the "7Q10,"[400] or may reflect inconsistent factors. For example, there are numerous technically acceptable formulas for establishing base flow standards.[401] The results of using any one in a given case may vary considerably, to the extent of making the difference between project feasibility and infeasibility at one extreme[402] or to the extent of causing serious stream damage at the other. While specific technical recommendations are beyond the scope of this article, it seems clear that a regulatory approach falling between the vagaries of the general standard and a single numerical formula with statewide applicability is advisable. In some cases, a numerical formula may be adequate; in others, for example, where the stream is a critical habitat, extensive and costly instream analysis may be necessary.

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398. Davis, *supra* note 385, at 48; Heath, *supra* note 392, at 110.

399. *See supra* notes 362-78 and accompanying text.

400. *See supra* note 369. This approach has been found wanting elsewhere. For example, the Report of the 1982 Instream Flow Workshop, sponsored by the Illinois Division of Water Resources and Illinois Department of Conservation, noted with evident dissatisfaction that

> the only standard which has periodically been used in the part to condition some major water withdrawal permits was the "water quality standard" flow of 7-day Q10. This standard has been recommended mainly because it is the 'only' low flow standard in general use even though it is widely recognized as wholly inappropriate.

REPORT OF INSTREAM FLOW WORKSHOP (1982).

401. *See* Gregory, *supra* note 3, which describes sixteen methods for establishing base flow standards.

402. The Illinois workshop report, for example, found that use of the "Montana Method," a widely-accepted method which is based on preserving a percentage of mean annual flow, would result in "the prohibition of virtually any surface water supply developments in central and southern Illinois." REPORT OF INSTREAM FLOW WORKSHOP (1982). However, the method has been used successfully in numerous cases and under different conditions, and has been employed extensively by the U.S. Fish and Wildlife Service. W. COX, SPECIAL REPORT TO THE VIRGINIA STATE WATER STUDY COMMISSION ON WATER SUPPLY MANAGEMENT IN THE COMMONWEALTH OF VIRGINIA 17-18 (1980) (published by VPI & SU).

VI. Current Virginia Aquatic Baseflow Policy

At present, the State Water Control Board (SWCB) has no formally adopted flow policy or requirements. As described above, the SWCB has arbitrarily used the "7Q10" as the minimum acceptable flow which could be certified not to contravene water quality standards.[403] Legislation in the 1981 General Assembly[404] directed the SWCB to determine the minimum instream flows necessary during drought conditions to maintain water quality and to avoid permanent damage to aquatic life in streams, bays and estuaries. This is a less than clear charge for establishment of aquatic base flow regulations, but the Board has interpreted the directive to mean that it should investigate the difference between flows that are designed not to contravene minimum water quality standards and flows that might actually be required to maintain instream biota for other reasons.

During 1982, sixteen techniques for the evaluation of instream flows needed for the maintenance of fish and aquatic life were reviewed by the SWCB.[405] A modification of the U.S. Fish and Wildlife Interim Regional Policy for New England Flow Recommendations[406] was considered to be the most appropriate method for Virginia, since the objective of study was to determine a uniform statewide policy that could be based on existing stream flow data.

Computer studies for ninety stations on unregulated streams established that September median flows were the lowest of the year and were consistently higher than the 7Q10 flow.[407] Using the U.S. Fish and Wildlife Service New England methodology, September median flows were recommended for establishment as the aquatic base flow, although flows during the spring spawning periods may be more critical.[408] Hence higher, tiered flows might be required during these periods.

Using the U.S. Fish and Wildlife Service New England methodology, aquatic base flow was also determined for streams with inadequate flow records. Correlation of the policy with streams having historical gauging records yielded a method of determining

403. *See supra* note 369.

404. Va. Code Ann. § 62.1-44.38 (Repl. Vol. 1982).

405. Gregory, *supra* note 3.

406. H.N. Larsen, Interim Regional Policy for New England Stream Flow Recommendations (1981) (published by the U.S. Fish and Wildlife Service).

407. Gregory, *supra* note 3. *See also supra* note 369 (definition of 7Q10 flow).

408. Gregory, *supra* note 3.

aquatic base flow based on multiplying the square miles of drainage area of the stream segment by 0.26 cubic feet per second of flow.[409]

In another experiment, the SWCB used the "Montana Method"[410] to determine the minimum instream flow value necessary to maintain a good habitat for aquatic life and to allow fish passage in the James River below the proposed reactivation of the Virginia Electric and Power Company Twelfth Street Hydro Power Plant in Richmond.[411] This method yielded a figure similar to that of an independent study of fish passages for the project done for the Virginia Commission of Game and Inland Fisheries.[412] Both minimum flows were over three times the 7Q10 flow for that segment of the James River.[413]

VII. RECOMMENDATIONS

The State Water Control Board needs no additional statutory authority to promulgate regulations prescribing stream flow maintenance requirements for consumptive uses and impoundments. The policies set forth in the Code and in article XI of the Virginia Constitution [414] provide strong underpinning for the assertion that the SWCB is not only authorized but required to regulate activities materially affecting stream flows where to do otherwise would contravene beneficial public uses. In those cases where Board certification is nonetheless required, such as Clean Water Act section 401 certification for impoundments and other federally-licensed projects,[415] the SWCB usually does include flow conditions although they are almost always based on the seven day ten year low flow (7Q10).[416] The SWCB does not have even this minimal criterion for setting rates to protect the receiving stream from excessive

409. *Id.*

410. The "Montana Method," *supra* note 402, yields a figure of 30% of the historic mean annual flow.

411. R.E. BOWLES, RECOMMENDED INSTREAM FLOW REQUIREMENT IN THE JAMES RIVER BELOW THE TWELFTH STREET HYDROPLANT (1983) (published by the Virginia State Water Control Board).

412. B. Rizzo, Preliminary Report on the Feasibility of Constructing Fish Passage Facilities at Dams on the James River in Richmond 10 (March 1983), *reprinted in* EXECUTIVE SUMMARY: FEASIBILITY STUDY OF FISH PASSAGE FACILITIES IN THE JAMES RIVER, RICHMOND, VIRGINIA (Prepared for the Virginia Commission of Game and Inland Fisheries).

413. R.E. BOWLES, *supra* note 411.

414. *See supra* notes 164-69 and accompanying text.

415. *See supra* note 262.

416. *See supra* note 369.

fluctuations in releases.

Where the SWCB bases its conditions on the 7Q10, the project's compliance with the requirements of the SWCL and consequently the Board's fulfillment of its statutory and constitutional responsibilities are fortuitous. The level is based, not on the stream's ability to support beneficial uses, but on the benchmark for water quality standard compliance by individual dischargers. Growing dissatisfaction in other states with use of the 7Q10 as a generic standard for flow maintenance, as well as the demonstrated inadequacy of the method in cases such as the Twelfth Street Hydropower Project,[417] indicates that a better method is needed. It is encouraging that the SWCB is at least considering a more rational policy for aquatic baseflow requirements,[418] and that rulemaking appears likely. In the meantime, the SWCB should approach individual cases on their own merits and avoid arbitrary application of the 7Q10.

The Board has no procedures or requirements for ensuring maintenance of adequate flows where a consumptive use or other use not requiring a discharge permit or a federal license requiring section 401 certification is involved. While it is true that the Board does not have the authority to allocate water supplies, it does have the authority and duty to prevent actions that may result in contravention of instream uses. Concededly, imposition of a withdrawal permit system is probably not feasible. However, such a permit system is not necessary to a flow protection regime. The Board may issue regulations prohibiting withdrawals that would violate water quality standards linked to reporting requirements of the State Water Control Law.[419] This would provide a regulatory handle for application in specific cases, without establishing the across-the-board restrictions on withdrawal that are inherent in a permit system.

Although comprehensive answers to Virginia water management issues may yet be years away, there is no need to follow an all or nothing approach, merely forestalling action on everything while waiting for the most unattainable part (an administrative allocation system) to fall into place. Stream flow protection ideally may be addressed as part of an overall state water plan, but it is neither necessary nor wise to wait for that development. The statutory

417. R.E. BOWLES, *supra* note 411.
418. *See supra* notes 405-13 and accompanying text.
419. VA. CODE ANN. § 62.1-44.38(c) (Repl. Vol. 1982).

mandates provide ample authority for rulemaking to establish statewide regulatory policies and requirements. The most effective approach, in the opinion of the authors, would be to establish a conservative standard, based on objective criteria, for statewide application, with well-defined variance provisions and procedures to allow case-by-case flexibility. The burden of obtaining the variance would fall upon the applicant or user. Where a more stringent standard is required in a particular case, the Board would have the authority to set a special standard or to impose stricter conditions based on demonstrated need. The standard could be supplemented by flow levels designed for specific streams, but would not be dependent on completion of that task.[420]

This approach is similar to that used for applying water quality standards.[421] By placing the burden upon the applicant to show why the underlying conservative standard should be modified, this approach allows flexibility where appropriate but recognizes the fundamental orientation of interests involved. The result is more likely to protect the public interest in most cases, but still will allow the applicant a reasonable degree of certainty. This contemplates no change in Virginia's common law system of allocating private rights.[422] Instead, it supplements the shortcomings of the allocation system by strengthening the Commonwealth's ability to protect public rights to maximum beneficial use of a resource on which all life depends.

420. These are to be developed for all major stream basins in Virginia under the requirements of *id.* § 62.1-44.38(B).

421. *See, e.g.*, Water Quality Standards, *supra* note 363, §§ 1.04-1.08 (water quality standard for temperature).

422. Tarlock, *Introduction to Proceedings of Virginia Water Rights Symposium*, 24 WM. & MARY L. REV. 535, 538 (1983).