Federal Law, Irrigation and Water Pollution

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FEDERAL LAW, IRRIGATION AND WATER POLLUTION

Irrigated agriculture consumes more water than any other use in the United States. It is also responsible for a great portion of the water pollution problem. The Federal Water Pollution Control Act Amendments of 1972 were designed to control all water pollution from all sources. This comment discusses the Environmental Protection Agency's regulations interpreting that law and the EPA's attempt to make certain exceptions for irrigated agriculture. It also discusses the power of the EPA to regulate the activities of other federal agencies, and the responsibility of those agencies for water pollution caused by their projects.

INTRODUCTION

"Pure" water is a theoretical construct. In reality all water contains some other dissolved, suspended and colloidal constituents. Only the kind and amount varies. The problem is one of keeping water purity at a level adequate for its intended use.[1] Virtually every use man makes of water adversely affects water quality. Whether we drink it, run it through storm sewers, use it in our factories or pour it on the ground, we have altered its natural state and pollution results.[2] It can be purified after use, but spaceship earth is essentially a closed system, and the removed pollutants have to go somewhere. That "somewhere" is inevitably back into the hydrosystem: rivers, streams, lakes, oceans and underground acquifers.

The problems associated with irrigated agriculture are not new. The demise of early cultures which flourished along the Euphrates and Tigris Rivers was at least partially attributable to salinization of the soil from the use of highly saline water for irrigation.[3] The degradation process occurred over approximately 3000 years from the time of the initial small stream diversions until the entire area was returned to its present state of salt flats and desert.[4] This was not an isolated occurrence in human history. There is evidence

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1. *See* Law & Skogerboe, *Potential for Controlling Quality of Irrigation Return Flows*, 1 J. ENVT'L QUALITY 140 (1972).
2. *See* U.S. WATER RESOURCES COUNCIL, THE NATION'S WATER RESOURCES 3-2-13 (1968) [hereinafter cited as WATER RESOURCES].
3. *See* Marr, *The Social Context of Irrigation*, IRRIGATION OF AGRICULTURAL LANDS, AGRONOMY MONOGRAPH SER. NO. 11, AM. SOC. OF AGRONOMY 120 (1967).
4. *Id.*

that similar disasters occurred in the southwestern United States in pre-Columbian times as well as in the Middle East.[5]

The Federal Water Pollution Control Act Amendments of 1972[6] (FWPCA) represent the current legislative approach to solving the problem of water pollution. The FWPCA is comprehensive. Its purpose is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters,"[7] and it professes to cover every possible source of water pollution including irrigated agriculture. The law was written primarily, however, for the kind of pollution that comes out of a factory pipe and runs into a stream. That kind of water pollution is easily recognizable, unlike the pollution that results when seemingly clean, clear water is applied to crops. The FWPCA approaches irrigation-caused water pollution in the same way it approaches industrial pollution. The tool used for both is a permit program that controls effluent discharges from point sources.

The difficulties in adopting such a system rather than a water quality standards approach are obvious for irrigated agriculture. The water that is applied in irrigation does not follow an easily traceable path before it re-enters the streams and rivers. Some of it evaporates, some transpirates from vegetation, some percolates into the ground, some runs across the surface of the ground. The problem is, therefore, much more difficult to solve than controlling the effluent from a factory pipe. The existing law may not approach the problem directly, but it is the main law attempting a solution, and it must be understood to be useful.

This comment analyzes water control law, and is presented in three parts. The first part provides a skeletal explanation of how and why irrigated agriculture causes water pollution. The emphasis is on basic concepts and mechanisms without attempting scientific thoroughness. The second part traces the development of the Environmental Protection Agency (EPA) regulations interpreting those sections of the FWPCA that apply to irrigation. In the third part the emphasis is on judicial decisions that appear to limit the effectiveness of the EPA enforcement capabilities over federal facilities and other federal agencies.

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5. Moore, *On the Necessary and Sufficient Conditions for a Long-Term Irrigated Agriculture*, 8 WATER RESOURCES BULL. 802, 803 (1972) [hereinafter cited as Moore].

6. 33 U.S.C. §§ 1251-1376 (Supp. IV, 1974). References in this comment will be to section numbers of Pub. L. 92-500 since they are commonly referred to in the literature. For a discussion of the structure of the FWPCA see Montgomery, *Control of Agricultural Water Pollution: A Continuing Regulatory Dilemma*, 1976 U. ILL. L.F. 533, and sources cited therein. *See also* Bernbom, *The National Permit Program: A Polluter's Bridge Over Troubled Waters?*, 7 LOY. CHI. L.J. 1 (1976); Wenner, *Federal Water Pollution Control Statutes in Theory and Practice*, 4 ENVIRON. L. 251 (1974).

7. 33 U.S.C. § 1251(a) (Supp. IV, 1974).

I. IRRIGATION AND WATER POLLUTION

A. *Background*

Irrigation is the man-caused application of water to land for the purpose of producing economically valuable crops. The water may be applied in a variety of ways.[8] Each method has different efficiencies and cost factors, and each performs differently on different soils, in different climates, and on different crops.[9] Choice of method will have an appreciable effect on water quality.[10]

In arid and semi-arid regions of the world, almost all the productivity of agricultural lands results from the use of irrigation. Achieving such a result, however, requires an immense amount of fresh water. Irrigated agriculture in the United States accounts for approximately eighty-five percent of the total national water consumption.[11] The water is applied to approximately 44,000,000 acres, ninety percent of which is in the seventeen western states.[12]

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8. Irrigation water is usually applied in one of four general ways:
—by flooding, which wets all the soil surface
—by furrows, which wets only part of the soil surface
—by sprinkling or overhead irrigation
—by sub-irrigation, in which the crops are irrigated by control of a high water table
(a) All methods, except sprinkling, require regular land levelling to assure uniform wetting of the soil. Irregularities may often cause salt spots, when there is a danger of salinization.
(b) The efficiency of irrigation is high for sprinkling and the basin methods. The efficiency of other methods is largely dependent on precise land levelling.
(c) Where leaching is regular practice as a result of relative saline irrigation water or of a high ground-water table, the descending order of leaching efficiency is: basin, border, furrow, contour ditch, sprinkling, sub-irrigation. It is clear that the regular water distribution in basins results in a very regular leaching pattern.
(d) With sub-irrigation, leaching is quite impossible, but as for this method the land has to be flat, basins can easily be formed by small dikes around level plots. The sub-irrigation method is only possible where ground-water quality is excellent. This will be mostly so in regions with relatively high rainfall, eventually concentrated in one season. If groundwater is too saline, salinization of the soil might occur in one growing season and harm the crops. With good groundwater quality and scanty rainfall, the need for leaching may be limited to once in several years.

FAO/UNESCO, IRRIGATION, DRAINAGE AND SALINITY: AN INTERNATIONAL SOURCE BOOK 494 (1973) [hereinafter cited as SOURCE BOOK].

9. *See* TOUPS CORPORATION, WATER POLLUTION ABATEMENT TECHNOLOGY. CAPABILITIES AND COSTS, IRRIGATED AGRICULTURE 1 (1976) (prepared for the National Commission on Water Quality, NTIS order no. PB250 016/3GA) [hereinafter cited as TOUPS CORP.]; *see also* U.S. DEP'T OF AGRICULTURE, CONTROL OF WATER POLLUTION FROM CROPLAND VOL. 1. A MANUAL FOR GUIDELINE DEVELOPMENT (1975) (NTIS order no. PB249 517/4GA). This book does not include pollution from irrigation return flow.

10. TOUPS CORP., *supra* note 9, at 1.

11. OFFICE OF WATER PROGRAM OPERATIONS, EPA, EVALUATION OF SALINITY CREATED BY IRRIGATION RETURN FLOWS 8 (1974) (EPA doc. no. 430/9-74-006) [hereinafter cited as EPA SALINITY REPORT].

12. *Id.* at 7, 8. The states referred to are those west of the eastern boundaries of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma,

This acreage is ten percent of the nation's cropland, but it generates twenty-five percent of the total crop value.[13] Irrigation of arid and semi-arid regions of the United States has grown tenfold in the past seventy to seventy-five years.[14] The trend in water use and thus in water pollution is definitely upward.[15]

B. *The Problem in General*

As much as sixty-five percent of water applied by irrigation is used consumptively.[16] Consumptively used water is that portion of the applied water which evaporates and transpirates into the atmosphere and is, therfore, no longer presently available for use in the hydrosystem.[17] During application, this water evaporates from

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and Texas. The 90% figure referring to where most of the water is being used may be even higher: "Western regions account for 95% of total water withdrawals and consumption for irrigation in the Nation." WATER RESOURCES, *supra* note 2, at 4-4-2.

13. EPA SALINITY REPORT, *supra* note 11, at 8; *see also* WATER RESOURCES, *supra* note 2, at 1-12.

14. OFFICE OF RESEARCH AND DEVELOPMENT, EPA, DEVELOPMENT OF PREDICTORS OF FUTURE POLLUTION PROBLEMS 116 (1974) (EPA doc. no. 600/5-74-005) [hereinafter cited as EPA POLLUTION PREDICTION].

15. But it does not have to be disastrous or uncontrolled. Movement of pollutants into water is controllable if it results from man's activities. "No one has the right to pollute . . . pollution continues because of technological limits, not because of any inherent right to use the nation's waterways for the purpose of disposing of wastes." View adopted by the 1972 Amendments to the FWPCA as stated in S. COMM. ON PUBLIC WORKS, 93RD CONG., 1ST SESS., A LEGISLATIVE HISTORY OF THE WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972 (1973) [hereinafter cited as LEGISLATIVE HISTORY]. The National Water Commission recommended abolishing federal subsidy of new irrigation, drainage and flood control projects because "subsidization is not justified on either social or economic grounds." NAT'L WATER COMMISSION, NEW DIRECTIONS IN U.S. WATER POLICY, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FROM THE FINAL REPORT 85 (1973). The Commission emphasized certain trends and themes in its findings:

(1) The level of future demand for water is not inevitable, but derives in large part from policy decisions within the control of society;
(2) National priorities are shifting from development to restoration;
(3) Water resource planning must be more closely tied to land use planning;
(4) Policies should be implemented which will lead to the conservation of water;
(5) We must use sound economic principles when deciding whether to build water projects;
  (a) benefit-cost analysis is not the whole answer, traditional means of consumer's willingness to pay full costs should be used;
  (b) users should pay for development projects while the government should pay for improvement of water quality;
(6) Existing institutional arrangements for development of water projects are unsatisfactory;
(7) The level of government involved should be that closest to the problem.

Id. at 6-10. The Commission also summarized with a cautionary note:

> In the Commissions' view it would be highly imprudent to conclude, as a matter of national policy, that the bringing into production of new farm lands should continue to be subsidized on the basis of speculations of food shortages that might arise because farm technology may falter; or because blights and droughts of catastrophic proportion may occur; or because other nations . . . may become dependent upon the United States for food supply. *Id.* at 14.

16. EPA SALINITY REPORT, *supra* note 11, at 9.

17. At least it is not available until it falls as rain at some later time

the surface of the soil, and transpirates[18] from the surface of any existing vegetation. If an irrigation project is considered as a whole, the consumptive use totals are even higher. Estimates of the amount of water lost to evaporation and seepage from reservoirs and canals before the water gets to the point of application range from twenty percent[19] to forty-eight percent.[20] As a result of the evaporation losses during storage and transportation, the water undergoes some concentration of impurities before it reaches the point of application by the irrigator. The portion of the applied water remaining after all losses, thirty-five percent or less, is commonly termed "irrigation return flow," and it finds its way back into the surface and subsurface hydrosystem.[21]

Irrigation is a consumptive use, and the water used (*i.e.*, discharged into the atmosphere as vapor) is nearly pure. This occurs because the dissolved and suspended materials in the applied water do not evaporate or transpirate but remain in solution. The water left behind, the irrigation return flow, is, therefore, of lesser quality than the applied water. Evaporation and transpiration alone may concentrate dissolved minerals in the water by as much as 300 percent.[22] The water also may and usually does acquire sedi-

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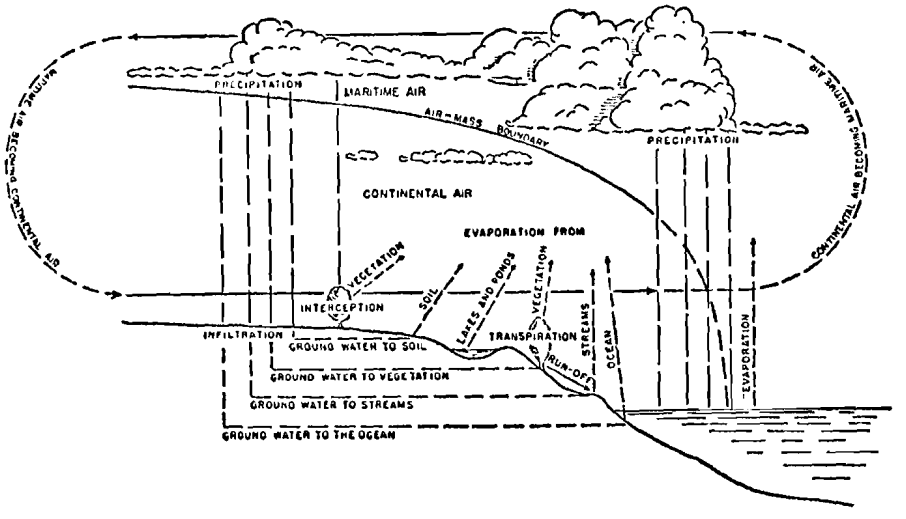
and other place:



TRELEASE, BLOOMENTHAL & GERAUD, NATURAL RESOURCES 85 (1965).

18. Transpiration is the process of giving off moisture through the surface of plants.

19. WATER RESOURCES, *supra* note 2, at 4-4-2.

20. LAW, SKOGERBOE & DENIT, WATER POLLUTION CONTROL RESEARCH SERVICE, EPA, THE NEED FOR IMPLEMENTING IRRIGATION RETURN FLOW QUALITY CONTROL 10 (1971) (EPA doc. no. 13030 [hereinafter cited as LAW].

21. EPA SALINITY REPORT, *supra* note 11, at 9.

22. EPA SALINITY REPORT, *supra* note 11, at 9, 10. Another authority has noted:

ments,[23] pesticides, fertilizers, organic residues, heavy metals, trace elements, farm oils and greases, bacteria and other forms of pollution.[24]

C. *Evapotranspiration*

Evapotranspiration is the process by which water is lost as vapor from the combined mechanisms of evaporation from the soil and transpiration from vegetation.[25] The rate of evapotranspiration is higher where there is much vegetation, high temperatures, and low humidity. In the arid southwestern United States evapotranspiration losses of up to eighty inches annually have been recorded.[26]

In the western United States, where most of the nation's irrigated land is located, there is a natural water deficiency of zero to twenty inches annually.[27] This means that the potential evapotranspiration amount exceeds the average annual precipitation. All water applied in an area with a natural water deficiency will be consumed by the evapotranspiration process up to the process limit. There will be no irrigation return flow until water is applied in amounts in excess of the potential evapotranspiration limit. Artificially introducing water into water-deficient regions becomes quite inefficient because of the high potential evapotranspiration rates. Very large amounts of water must be applied and very large amounts are consumptively used. As a result, irrigation return flows in these regions tend to be far more polluted than in the more humid irrigation regions.[28]

> As a general average, each diversion and use of water for irrigation could be reasonably expected to result in a consumed loss of 50-70% of the water applied with a concommitant concentration of salt by two to three times, assuming that all nonconsumed water returns to the streambed.

THORNE & PETERSON, SALINITY IN UNITED STATES WATERS, AGRICULTURE & THE QUALITY OF OUR ENVIRONMENT 230 (1967).

23. In terms of quantity sediment is the worst pollutant of the nation's waters. Excess sediment impairs recreation, interferes with aquatic life, and is the major carrier of pesticide residues and chemical nutrients. Hines, *Agriculture: The Unseen Foe in the War on Pollution*, 55 CORNELL L. REV. 740, 754 (1970).

24. EPA SALINITY REPORT, *supra* note 11, at 10, 11; LAW, *supra* note 20, at 2. Almost all agriculture-related pollutants mix to a considerable degree in water. LEGRAND, MOVEMENT OF AGRICULTURAL POLLUTANTS WITH GROUNDWATER, AGRICULTURAL PRACTICES AND WATER QUALITY 306 (1970).

25. EPA SALINITY REPORT, *supra* note 11, at 118. Evapotranspiration losses in areas of high water tables occupied by phreatophytic and riparian vegetation can reach phenomonal amounts. Phreatophytes are water-loving, deep-rooted plants that get their water supply at or near the water table, and transpirate relatively large amounts of water into the atmosphere. WATER RESOURCES, *supra* note 2, at 3-2-4.

26. WATER RESOURCES, *supra* note 2, at 3-2-4.

27. *Id.* The Southwest is even drier; natural water deficits there range from twenty to forty inches annually.

28. *See generally* SOURCE BOOK, *supra* note 8.

D. Salinity

The source of salts is the soil.[29] Over geologic time most of the naturally occurring salts have been leached from the upper layers of the soil by rainfall. The leaching process is less complete in arid and semi-arid regions, and therefore the soil is generally higher in salts.[30] Pure water falls as rain and eventully enters streams and underground aquifers after passing over and through the soil. As a result of the water's intimate contact with the soil, the water picks up or dissolves some of the salts and carries them away in solution.[31]

Salinity causes pollution problems in irrigation return flows in several ways. First, the concentration of the salts in the water is increased through the process of evaporation. The evaporation process starts with rainfall, and continues from streams, reservoirs and canals, and during irrigation. Secondly, the water picks up or dissolves salts from the soils in and below the root zone as it passes through them after it is applied in irrigation. Thirdly, some salts may be picked up by the water as it flows through unlined earthen canals. Such canals may be constructed of soil that comes from below the surface layer, and are thus higher in naturally occurring salts. As water is used by an irrigator, then used again by downstream irrigators, the salinity problem is compounded. Increasing salinity from use and re-use will ultimately result in very poor water quality,[32] but far more importantly, it will cause a great decline in the productivity of agricultural land.

When salts carried by irrigation water are deposited in the soil, salinity is raised and productivity is lowered. This process presents a potential hazard to approximately one-half the irrigated acreage in the western United States.[33] Salt problems already exist on one-

29. The principal constituents are the water-soluble salts of magnesium, calcium, sodium and potassium, plus minor traces of other cations. The dominant anions in the salts are carbonates, sulfates and chlorides. EPA SALINITY REPORT, *supra* note 11, at 11. Ions are atoms or groups of atoms that carry an electric charge as a result of having lost or gained one or more electrons. Cations are positively charged ions, and anions are negatively charged ions. Any combination of the above-listed cations and anions form the salt or "salinity" of irrigation return flow.

30. SOURCE BOOK, *supra* note 8, at 67. In arid, water-deficient regions the evapotranspiration process may even result in a net upward movement of groundwater, with a resulting increase in salinity near the surface of the land.

31. Because subsurface drainage water undergoes more intimate contact with the soil and dynamic soil-plant-water regime, the following changes are predictable: (a) considerable increase in dissolved solids concentrations; (b) a different distribution of various cations and anions; (c) variation in the total salt load depending on whether there has been deposition or leaching; (d) little or no sediment or collodial material; (e) general reduction of oxidizable organic substances; and (f) reduction of pathogenic organisms and coliform bacteria. LAW, *supra* note 20, at 7.

32. *See* EPA POLLUTION PREDICTION, *supra* note 14, at 119.

33. LAW, *supra* note 20, at 3.

fifth of the irrigated land in the United States, and on one-third of the irrigated land in the world.[34]

The United States Department of Interior (USDI) is the builder of the majority of the large-scale irrigation projects in this country; it has done extensive research and developed great expertise in defining the water and soil quality problems associated with irrigation. The Director of the USDI Office of Water Resources Research recently made the following statement about salinity problems:

> Salt problems are particularly insidious. They do not come charging at you with trumpets blowing and battle flags flying, a sight to set stirring the hearts of activists in any century. Rather, they slip in almost unnoticed. They invariably seem to promise to step aside and behave themselves in return for small additional concessions. Then one day, as witnessed by many dead civilizations, they assert their supreme command of the situation. Time is of no concern, for they are supremely confident of their ultimate victory. History is on their side, as are the laws of physics, and chemistry, and biology. They have quietly destroyed, without fuss or fanfare, more civilizations than all of the mighty armies of the world.
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> Today, every arid land region of the world is in some intermediate or final stage of this process, and nowhere, it would seem, has there been established a genuine detente with these deceptively simple destroyers of man's vaunted accomplishments.[35]

The use of irrigation water with a relatively high salt content results in a marked increase in soil salinity within a relatively short period of time.[36] Increased salinity results in reduced water uptake by plants, thus reducing their growth.[37] Waterlogging, saturation of the soil with water, is a function of both soil salinity and inadequate drainage; it decreases vegetation growth and further in-

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34. Yaron, *Economic Analysis of Optimal Use of Saline Water in Irrigation and the Evaluation of Water Quality*, in SALINITY IN WATER RESOURCES 60 (1974) (proceedings of the 15th Annual Western Resources Conference, 1973).

35. Hall, *Salty Solutions to Salty Problems*, in SALINITY IN WATER RESOURCES 166 (1974) (proceedings of the 15th Annual Western Resources Conference, 1973). Hall goes on to say "[W]e must confess that we do not know how to build that strategy [irrigated agriculture without salinity problems]." *Id.* at 169. *See also* KNEESE & BOWER, MANAGING WATER QUALITY: ECONOMICS, TECHNOLOGY, INSTITUTIONS (1968).

36. SOURCE BOOK, *supra* note 8, at 184. The effect of salts on crops is also a factor:

> The evaluation of a water must be based on the tolerance of a specific crop or crops in the rotation to the total salt content or specific ion concentration. The tolerance of a crop to salinity is that concentration of the soil solution that will give a certain reduction in yield as compared to non-saline conditions.

Id. at 192-193. In the United States the 50% yield decrement is taken as the tolerance limit for field and forage crops. The salinity is measured at the bottom of the root zone by measuring the electrical conductivity (EC) of the water. *Id.* at 193.

37. *Id.* at 213.

creases soil salinity.[38] Sulfate and chloride salts are the main compounds responsible for the formation of saline soils.[39] The presence of sodium salts in irrigated soils frequently leads to the formation of horizons or layers with a very compact structure ("hardpan").[40] Infiltration and rate of advance of water into soil are greatly affected by stratifications like "hardpan" and other non-uniform conditions.[41]

The soil salinity problem occurs when saline water is applied because the salts tend to accumulate in the root zone of the vegetation.[42] The salts are then further concentrated by evapotranspira-

38. The United States Salinity Laboratory's water evaluation standards are as follows:

Classification of Water	Electrical conductivity in mho/cm at 25° C	Salt concentration in grams/liter (approximate)
C1 *Low salinity water* can be used for irrigation with most crops on most soils, with little likelihood that a salinity problem will develop. Some leaching is required, but this occurs under normal irrigation practices, except in soils of extremely low permeability.	0 to 250	less than .2
C2 *Medium-salinity water* can be used if a moderate amount of leaching occurs. Plants with moderate salt tolerance can be grown in most instances without special practices for salinity control.	250 to 750	.2 to .5
C3 *High-salinity water* cannot be used on soils with restricted drainage. Even with adequate drainage, special management for salinity control may be required and plants with good salt tolerance should be selected.	750 to 2250	.5 to 1.5
C4 *Very high salinity water* is not suitable for irrigation under ordinary conditions but may be used occasionally under very special circumstances. The soils must be permeable, drainage must be adequate, irrigation water must be applied in excess to provide considerable leaching, and very salt tolerant crops should be selected.	2250 to 5000	1.5 to 3

Id. at 194.

39. *See* SOURCE BOOK, *supra* note 8, at 122-127.

40. *Id.* at 63. There are two main adverse effects of sodium: a reduction of soil permeability, and a hardening of the soil. Both are caused by the replacement of calcium and magnesium ions by sodium ions on the soil clay and colloids. *See id.* at 197.

41. *Id.* at 111. Most natural soils are non-uniform. This problem of relatively impermeable soil horizons is a major factor in the current controversy in the Oahe irrigation project in South Dakota. *See* letter from P. Rahn, Ground Water Geologist, to M. Weeks (Jan. 27, 1974) concerning South Dakota State University Soil Survey Reports on land in the Oahe project area (copy on file at S.D.L. REV.).

42. *See* SOURCE BOOK, *supra* note 8, at 122-153. California, which has the nation's largest acreage of irrigated land, also has the largest area of salt-affected soils. More than one-third of the irrigated lands in Colorado, Hawaii, Nevada, South Dakota and Utah are affected by highly saline soils.

tion. If normal rainfall cannot flush the salt from the root zone, excess irrigation water must be applied to do the flushing. Artificial flushing or "leaching"[43] is only useful where there are deep, well-drained soils, or where the soils may be economically drained artificially.[44] If the soil does not drain well it may become waterlogged.[45] Subsurface salts from below the root zone also pose a severe threat to soil productivity if the irrigation practice is not skillful. When applied waters do not drain downward rapidly, more saline groundwater from above the water table is drawn upward, thus contributing to the salinity of the topsoils. "The most common reasons, apart from fertility, for failure to maintain high yields are . . . waterlogging [and] salinisation [sic] . . . of soils being irrigated."[46] To mitigate this process, and assure a rapid, continuous downward movement of applied water, a common irrigation practice is to place artificial drainage under irrigated fields.

E. Groundwater Degradation

Natural groundwater quality varies widely. The most common natural groundwater quality problems, other than high salinity, are excessive hardness, and a surplus of iron, manganese and fluoride.[47] The sources of man-caused pollution to groundwater are many and varied, but irrigated agriculture is a major contributor. The sources, in approximate order of their severity, are (1) discharge of effluent from septic tanks and sewage treatment plants, (2) irrigation return flow, (3) dryland farming, (4) abandoned oil wells, (5) shallow disposal wells, (6) unlined surface impoundments, (7) mine tailings and mine drainage,(8) municipal and industrial landfills, and (9) radioactive waste disposal.[48] Other sources that appear to be of less importance but still must be considered include spills and oil leaks, application of fertilizers and pesticides, feedlots, and saltwater intrusion.[49] Salts contributing to aquifer degrada-

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LAW, *supra* note 20, at 3. In South Dakota three and one-half million acres are known to have enough salt in the critical top five feet of the soil to be classified as slightly too strongly alkaline. J. Isakson, *Know Your Soil and Water Limitations*, THE FARMER, Jan. 15, 1977, at 16.

43. Leaching means applying sufficient water to get the salts back into solution, then carrying them below or away from the root zone of the vegetation.

44. EPA SALINITY REPORT, *supra* note 11, at 21. This is an area of major controversy in the Oahe project in South Dakota. *See* note 41, *supra*.

45. *Id.* at 22. For most crops, water and air in the soil are both essential. Many plants cannot use ground water directly, but withdraw water only from the soil layers above the groundwater zone.

46. SOURCE BOOK, *supra* note 8, at 291.

47. EPA, GROUND-WATER POLLUTION PROBLEMS IN THE NORTHWESTERN UNITED STATES 1 (1975) (EPA doc. no. 660/3-75-018). Saline groundwater underlies more than half of Colorado, Montana and Wyoming. In the six northwestern states of Colorado, Montana, Idaho, Oregon, Washington and Wyoming, groundwater supplies 12% of the total water withdrawn for use.

48. *Id.* at 2.

49. *Id.*

tion can come from many sources, but the most difficult source to control is drainage water from irrigation return flow.[50]

The potential for, or the reality of, groundwater degradation in irrigation-intensive areas is a difficult problem. Even if extremely high quality water is used in irrigation, by the time it reaches the water table[51] it may be of lower quality than the existing groundwater.[52] The movement of water in soil is due to several complex mechanisms. Basically, the water in the unsaturated zone[53] of the soil cannot move freely, but depends on binding forces originating from the surface of fine soil particles.[54] The pore spaces in the soil are considered as narrow tubes or capillaries.[55] The narrower the capillary, the higher the water will rise. Under natural conditions there is an upward flow of groundwater as the water is removed by plants and by evaporation. There is a downward flow when it rains. If the groundwater is saline, the salinity near the surface will increase as a result of the upward flow. An important fact here is that salts are brought by upward capillary movement in the finest capillaries, whereas the downward movement of the salts by leaching takes place mainly in the wider capillaries and pores.[56] This means that leaching by applying excess irrigation water will seldom be 100 percent effective, because the mixing of irrigation water with the salt solution in the finest pores is difficult and slow.[57]

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50. Helweg & Labadie, *A Salinity Management Strategy for Stream-Aquifer Systems*, COL. ST. U. HYDROLOGY PAPER NO. 84 1 (1976). Irrigation return flow from subsurface sources is also a much more serious threat to stream and river water quality than is surface runoff water since this portion of return flow almost always contains much higher concentrations of dissolved and suspended solids. *See* Loehr, *Characteristics & Comparative Magnitude of Non-point Sources*, 46 WATER POLLUTION CONTROL FED. J. 1849, 1859-1860 (1975). *See also* Branson, Pratt, Rhoades and Oster, *Water Quality in Irrigated Watersheds*, 4 J. ENVT'L QUAL. 33 (1975).

51. The groundwater table in a soil forms the transition between the saturated and unsaturated soil. The groundwater below this level can move freely under the influence of gravity and a difference in the hydraulic head. This difference may be caused by a difference in rainfall in a landscape, differences in relative elevations, etc. Irrigation also causes local increases in the groundwater table, and these changes in hydraulic head will cause groundwater to flow from irrigated to non-irrigated areas, all other things being equal. *See* SOURCE BOOK, *supra* note 8, at 18. So in any situation where only some of the land in a given area is irrigated, there will be an effect on the water table under land that is adjacent but not irrigated. Depending on relative elevations and other factors, it is possible to waterlog soils and thus drastically reduce their productivity without even irrigating them.

52. *See* Nightingale & Bianchi, *Ground-Water Quality Related to Irrigation with Imported Surface or Local Ground Water*, 3 J. ENVT'L. QUAL. 356 (1974). The statement in the text may not be true in areas where the natural groundwater is of low quality. In such situations irrigation return flow reaching underground water may actually increase groundwater quality if the applied water is high quality.

53. The unsaturated zone is that portion of the soil from the surface down to the water table. *See* note 51, *supra*.

54. *See* SOURCE BOOK, *supra* note 8, at 18-19.

55. *Id.*

56. *Id.*

57. *Id.*

Groundwater pollution is essentially irreversible.[58] Once polluted water from irrigation return flow or from any source reaches the water table, no feasible means exist to remove it. The polluted water mixes with the existing groundwater, and eventually will degrade the quality of the entire aquifer. If the aquifer is large and the amount of pollutant small, the short-term effect may be negligible. But continuing pollution will inevitably lower the existing water quality in the aquifer to the same level as the applied water. If this level is too low for the aquifer's efficient and beneficial use, then it has, in effect, been destroyed.

F. Summary

In every river basin prior to the introduction of irrigation there exists a water balance between (1) rainfall and (2) streamflow, groundwater and evapotranspiration. Irrigation changes this balance. It also changes the natural salt profile in the soil. The key to achieving a permanent irrigated agriculture, therefore, is to achieve water and salt balances. That is, the amount of water and salt added by irrigation practices must not exceed that removed by consumptive use and by irrigation return flow. Achieving these equilibrium conditions is absolutely necessary to justify any irrigation project; once land is ruined, huge sums of money and many years are needed to make the land productive again.[59]

The problems with irrigated agriculture are not restricted to pollution of irrigation return flow. When saline water is applied the result is saline soils:

> Salinization or salts in soils is without question the most prevalent problem in irrigated arid regions of the world. . . . In fact, an economy or culture based on irrigated agriculture which has survived over a few hundred years is really an exception, rather than the rule.[60]

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58. The EPA has recognized this fact:
> Once an aquifer is contaminated by percolation from sursources, saltwater intrusion, or from injected wastes, it is difficult, or in most cases unfeasible, to remove the contaminants by flushing or pumping and restore the aquifer to its original condition.

EPA, SUBSURFACE POLLUTION PROBLEMS IN THE UNITED STATES 3 (1972) (EPA Report TS-00-72-02). The EPA concluded:
> By far the major source of contamination of groundwater is the wastes which percolate down through the soil to reach the water table. . . . Under normal conditions all of these processes: filtration, biodegradation, and adsorption serve to reduce the waste load which reaches the water table. These processes, however, are not effective in removing contaminants such as chlorides, nitrates, or pesticides and other non-degradable organic materials. . . . It seems reasonable that the soil's capacity for these processes can be exhausted, and the efficiency will decrease with time.

Id. at 10. "Agriculture is perhaps the major contributor to percolating groundwater contaminants." *Id.* at 13.

59. *Id.; See also* SOURCE BOOK, *supra* note 8, at 2-16.

60. Moore, *supra* note 5, at 803. Moore further describes the urgency of the situation: "[T]he problem is not to determine an optimum but to specify conditions for survival." *Id.* at 811.

The salinity problem must be dealt with effectively to prevent water pollution and the ultimate destruction of the productivity of irrigated lands. The approach taken to this problem by the present federal water pollution law is the subject of the next part of this comment.

II. Federal Law

A. *Development of the FWPCA*

(1) Structure

The Federal Water Pollution Control Act Amendments of 1972[61] (FWPCA) represent the current federal law governing water pollution in the United States.[62] The law seeks to establish constraints on water pollution by mandating water quality standards and pollutant discharge limitations. The immediate goal of the law is improved water quality; the ultimate goal is the elimination of all pollutant discharges into navigable waters by 1985.[63] Congress defined pollution very broadly in the FWPCA as meaning "the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water."[64] Congress recognized many causes of water pollution, and determined that whenever possible, pollution should be controlled at its source. The sole means established by Congress to eliminate pollutant discharges[65] is the National Pollutant Discharge Elimination System (NPDES) permit program.[66] The NPDES requires government issued permits for any discharge of pollutants from certain sources.[67]

The relevant portions of the FWPCA divide the water pollution problem into two areas: point sources and non-point sources of pollution.[68] Point sources include any discrete conveyance such as a ditch, channel, pipe or conduit.[69] Non-point source discharges, mainly those that result from natural events such as precipitation runoff over large areas of land, are excluded from the NPDES program. The thrust of the permit program is control of discharges

61. 33 U.S.C. §§ 1251-1376 (Supp. IV, 1974). *See* note 6, *supra*, and sources cited therein for a general discussion of the structure and operation of the FWPCA.

62. The material and analysis in the following paragraphs borrows from a letter from Holland & Hart (Attorneys, Denver, Col.) to the EPA (Mar. 11, 1976) (copy on file at the EPA Public Information Reference Unit, Washington, D.C.).

63. 33 U.S.C. § 1251(a)(1) (Supp. IV, 1974).

64. *Id.* at § 1362(19).

65. This is commonly referred to as the "zero discharge" goal. *Id.* at § 1251.

66. *Id.* at § 1342.

67. *See generally* Bernbom, *The National Permit Program: A Polluter's Bridge Over Troubled Waters?*, 7 Loy. Chi. L.J. 1 (1976).

68. 33 U.S.C. §§ 1311-1328 (Supp. IV, 1974).

69. *Id.* at § 1362(14).

of pollution from point sources. Control of non-point source pollution has been left to the states.[70]

The NPDES program exists at both the state and federal levels.[71] The states are allowed to establish and operate their own permit programs if such programs meet the requirements of the FWPCA and the approval of the EPA.[72] The EPA retains authority for those states which do not have their own programs, for certain types of interstate activities and for certain federal facilities.[73]

The scope of the NPDES is determined by the coverage of certain key terms: "pollutants," "discharge of a pollutant," and "discharge." These terms are defined in section 502 of the FWPCA as follows:

> (6) The term 'pollutant' means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological wastes, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. This term does not mean (A) sewage from vessels within the meaning of section 312 of this Act; or (B) water, gas or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if such State determines that such injection or disposal will not result in the degradation of ground or surface water resources.
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> . . .
>
> (12) The term 'discharge of a pollutant' and the term 'discharge of pollutants' each means (A) any addition of any pollutant to navigable waters from any point source, (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.
>
> . . .
>
> (16) The term 'discharge' when used without qualification includes a discharge of a pollutant, and a discharge of pollutants.[74]

Under section 301[75] it is unlawful to discharge any pollutant unless one complies with other sections of the FWPCA. The other sections

70. *Id.* at §§ 1288, 1313. The FWPCA also requires the states to identify and study methods for salinity control. *Id.* at § 1288(b)(2)(I). For a complete discussion of the FWPCA and how it deals with non-point sources of pollution in agriculture, see Montgomery, *Control of Agricultural Water Pollution: A Continuing Regulatory Dilemma*, 1976 U. ILL. L.F. 533.

71. 33 U.S.C. § 1342 (Supp. IV, 1974).

72. *Id.* South Dakota does not have an EPA-approved permit program.

73. *Id.* The problem of overlapping and conflicting jurisdictions will be discussed in Part III of this comment.

74. *Id.* at § 1362.

75. *Id.* at § 1311.

referred to are those which specify the requirements for getting a permit to allow "discharge" of pollutants within the guidelines given.[76] The pivotal term is "discharge." The definition of "discharge" determines whether water that flows from agricultural activities is subject to permit requirements. Congress expressly recognized "discharge" as a term of art in the legislation of the FWPCA;[77] therefore its meaning must be gained from a study of judicial and legislative interpretation.

Discharge connotes control. In fact, the EPA based its technical definitions in the regulations on the difference between natural precipitation events[78] and the controlled application of water by man.[79] It grounded this distinction in its interpretation of the legislative history of the FWPCA.[80] "[W]hen discharges from irrigation ditches result from the controlled application of water by any person, that pollution is considered a point source and subject to the program proposed. . . ."[81] The person from whose property the pollutant enters a stream has some control, which if exercised, could reduce or prevent the discharge.[82] Clearly, "discharge" as it appears in the FWPCA requires either some action or negligent inaction.[83]

(2) Basis in Prior Law

Congress relied heavily on the Refuse Act of 1899[84] when establishing the FWPCA NPDES permit program. The significance of

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76. *Id.* at §§ 1312, 1316, 1317, 1342, 1344.

77. LEGISLATIVE HISTORY, *supra* note 15, at 178, 356.

78. One wonders about this definition when considered in the light of weather modification projects. Is polluted runoff into a ditch and then in a stream from a man-caused precipitation event a point source discharge of pollutants? Although the element of causation may be established, "control" may not be.

79. 41 Fed. Reg. 7,964 (1976).

80. *Id.*

81. *Id.*

82. *See, e.g.*, United States v. Georgetown Univ., 331 F. Supp. 69 (D.D.C. 1971).

83. In United States v. Pennsylvania Indus. Corp., 411 U.S. 655, 658 n.6 (1973), the Court refused to distinguish between "discharge" and "deposit" in the 1899 Refuse Act (see notes 84-91 *infra* and accompanying text): "We find no support for such a distinction in either the Act itself or its legislative history." The concept of control over discharges is not unique to this case. In a letter and legal memorandum from Holland & Hart to the EPA (Mar. 11, 1976) (copy on file at the EPA Public Information Reference Unit, Washington, D.C.) commenting on the 1976 proposed regulations interpreting the FWPCA, over 30 federal court cases were cited to support the same conclusion under the Refuse Act; four cases supporting were decided under the FWPCA. No cases were found contra.

84. The Refuse Act is the common name applied to Section 13 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 407 (1970) [hereinafter cited as Refuse Act]. After the enactment of the FWPCA, § 407 reads in full:

> TERMINATION OF DISCHARGE PERMIT PROGRAM
> No permits for discharges into navigable waters to be issued under this section after Oct. 18, 1972, and the discharge permit program to be carried out instead under section 1342 of this title, with applications under this section pending on Oct. 18, 1972, to be deemed applications for permits under section 1342, see section 1342 of this title.

such reliance lies in the existence of a well-established body of law interpreting certain provisions of the Refuse Act. The Refuse Act has been read by the courts as imposing a "flat ban on the unauthorized deposit of foreign substances into navigable waters, regardless of the effect on navigation" unless a permit had been issued.[85] "Refuse" has been held to include "all foreign substances and pollutants,"[86] and the exception in the Refuse Act excluded only "sewage" from permit requirements.[87]

During the legislation of the FWPCA, the Committee on Public Works in the United States Senate made the following statement about the relationship between the FWPCA and the Refuse Act: "The Refuse Act *as now restated* in the Committee bill establishes that the discharge of pollutants into navigable waters of the United States is prohibited."[88] The committee's statement shows that the FWPCA was, in part, a restatement of existing law. During the Senate debate on the FWPCA, Senator Muskie, probably the main sponsor of the legislation, clarified the legislative action being taken:

> The permit authority is now being exercised without benefit of the pending legislation under the Refuse Act of 1899, and it does not require this legislation. What we try to do in this legislation is to codify that permit authority in a way to restore permit balance between Federal and State. This legislation envisages a State role in permits to control effluent discharge. This is not found in the Act of 1899.[89]

Senator Muskie's statement shows that the FWPCA was not entirely new, but was intended to be an improved version of existing law. Permits were required under the Refuse Act and would continue to be required under the FWPCA.

The Report from the House Committee on Public Works is also specific on the evolution of the FWPCA from the Refuse Act:

> By the use of the term 'discharge of pollutants' this provision covers any addition of any pollutant to navigable waters from any point source and any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft. Thus, unlike the Refuse Act, this provision does not exempt from its coverage municipal waste treatment works. Furthermore, any discharge from a point source, other than a vessel or floating craft, in the contiguous zone or the ocean is clearly covered under this provision.[90]

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85. United States v. Pennsylvania Indus. Chemical Corp., 411 U.S. 655, 671 (1973).
86. United States v. Standard Oil Co., 384 U.S. 224, 230 (1966).
87. United States v. Republic Steel Corp., 362 U.S. 482 (1960).
88. LEGISLATIVE HISTORY, *supra* note 15, at 1489 (emphasis added).
89. *Id.* at 1365.
90. *Id.* at 812.

The analysis shows that the "discharges" to be regulated by the FWPCA are the same as those covered by the Refuse Act, with the specific addition of discharges from municipal waste treatment works by the FWPCA. Further evidence of Congress' intent to make the scope of the FWPCA the same as the Refuse Act is found in section 402(a)(4): "all permits for discharges" issued under the Refuse Act were "deemed" to be permits issued pursuant to the FWPCA, and those applications for permits that were pending under the Refuse Act were "deemed" to be applications for permits under the FWPCA.[91]

B. Development of Regulations Interpreting the FWPCA

(1) Initial Regulations - 1973

The EPA first issued regulations interpreting the FWPCA in 1973,[92] and therein concluded that certain types of agricultural activities should be exempted from the NPDES permit program.[93] The permit requirement applied to "discharges of irrigation return flow (such as tailwater, tile drainage, surfaced groundwater flow, or bypass water)"[94] only if (1) there was a point source of discharge, and (2) the return flow was from more than 3000 contiguous acres or 3000 non-contiguous acres which used the same drainage system.[95] The exemption for smaller irrigation units was the EPA's way of dealing with the administrative problem of issuing many thousands of individual permits to individual irrigators. The exemption seemed reasonable since the land serviced by 1100 irrigation organizations, each of which provided water to 3000 or more acres, comprised eighty percent of all land irrigation by such organizations.[96] The EPA balanced the problem of regulating thousands of small irrigation operations which accounted for a minor portion of the total problem with the administrative difficulty and expense of processing applications and monitoring compliance.

The National Resources Defense Council, Inc. (NRDC) challenged the EPA exercise of discretion to exempt certain point source discharges from the NPDES program in *NRDC v. Train*.[97] The court rejected the regulations that excluded "discharges" as well as nondischarges from the NPDES program. The court held that "the [EPA] Administrator *cannot lawfully exempt point*

91. 33 U.S.C. § 1342(a)(4) (Supp. IV, 1974). *See also* note 84, *supra*.
92. 38 Fed. Reg. 18,000 (1973) (codified in 40 C.F.R. §§ 124, 125).
93. *Id.*
94. 38 Fed. Reg. 18,001 (1973). The definition given for "irrigation return flow" is one that is generally accepted in water law and in scientific literature. *See* Part I of the comment.
95. 38 Fed. Reg. 18,001 (1973). "The basis for the exclusions is that the pollution problems caused by the excluded categories of point sources are minor in relation to the administrative problem of processing vast numbers of agricultural discharge application forms." *Id.* at 18,000.
96. *Id.* at 18,001.
97. 396 F. Supp. 1393 (D.D.C. 1975).

sources discharging pollutants from regulations under NPDES,"[98] and based its decision on the legislative history of the FWPCA as well as judicial decisions interpreting the Refuse Act.[99] The court's opinion does not show that the court meant to include all "point sources" and exclude all "non-point sources" from NPDES. The holding does not prevent the EPA from exempting "point sources" *not* discharging pollutants. Neither does it support the fiction adopted by the EPA of labeling point sources not discharging pollutants as "non-point sources." The court's statements support this analysis:

> Thus, all non-point sources are excluded from the effluent limitations and the NPDES program.
>
> . . .
>
> In the court's view the only issue to be determined is whether FWPCA allows the Administrator the latitude to exempt entire classes of point sources [implicitly, whether or not they are emitting a "discharge"] from the NPDES permit requirements. The court holds that it does not.
>
> . . .
>
> The judicial decisions interpreting FWPCA and the Rivers and Harbors Act [of which the Refuse Act is a part] and the legislative history of the FWPCA support [the] . . . contentions that all discharges by point sources were intended to be covered by permit.[100]

The court clearly recognized the importance of the connection between the Refuse Act and current law, and the importance of the terms "discharge" and "discharge of pollutants."[101]

(2) New Regulations - 1976

The trial court's decision in *NRDC v. Train*[102] resulted in an

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98. *Id.* at 1402 (emphasis added).

99. The court relied heavily on United States v. Pennsylvania Indus. Corp., 411 U.S. 655 (1973), which involved Section 13 of the Rivers & Harbors Act of 1899 (commonly known as the Refuse Act). *See* text accompanying notes 84-91 *supra.*

100. 396 F. Supp. 1393, 1395-1396 (D.D.C. 1975) (bracketed material supplied).

101. *See* text accompanying notes 68-70, 84-91 *supra.* The EPA has appealed the district court's decision. No. 75-2067 (D.C. Cir. 1975). In its appeal (now pending) the EPA contends that the language of section 402 does not require the federal permit program to comprehensively cover all point sources. The NRDC brief points out that the EPA offers no basis for refuting the district court's finding, and notes that it is impossible to meet the section 301 requirement that "any discharge without a permit . . . is unlawful" without a comprehensive permit program under section 402. The NRDC position that the FWPCA NPDES permit program applies to all point source discharges is the same as the position taken by five different federal courts: NRDC, Inc. v. Train, 510 F.2d 692 (D.D.C. 1974); Col. PIRG v. Train, 507 F.2d 743 (10th Cir. 1974) (*rev'd on other grounds*, 96 S. Ct. 1938 (1976)); Scenic Hudson Preservation Conference v. Callaway, 370 F. Supp. 162 (S.D.N.Y. 1973), *aff'd*, 499 F.2d 127 (2d Cir. 1974); Save Our Sound Fisheries Assoc. v. Callaway, 387 F. Supp. 292 (D.R.I. 1974); United States v. Holland, 373 F. Supp. 665 (M.D. Fla. 1974); *see generally* 7 ENVT'L L. REV. 65,382-65,383 (1976).

102. 396 F. Supp. 1393 (D.D.C. 1975).

order that the EPA extend the NPDES program regulations to include all discharges of pollution from point sources.[103] The EPA responded by issuing proposed regulations in February, 1976.[104] The proposed regulations classified water pollution from most agricultural activities except irrigation as non-point in nature, and thus not subject to any permit requirements.[105] Discharges of pollutants from discrete covenances which result from the controlled application of water (*i.e.*, irrigation), were classified as point sources.[106] The EPA, however, decided that the lack of pollution control technology in this area required a different type of permit program using "general" permits instead of permits to individual dischargers.[107] Since this program is still in the proposal stage[108] its impact cannot be determined at this time.

The new regulations make a substantial and critical change in the technical definitions used to determine permit requirements. "Agricultural point source" has been defined to include "any discernible, confined and discrete conveyance from which any irrigation return flow is discharged into navigable waters."[109] The term "irrigation return flow" has been defined as polluted *surface* waters which result "from the controlled application of water by any person to land used primarily for crops, forage growth, or nursery operations."[110] The term "surface water" has been defined to mean "water that flows exclusively across the surface of land from the point of application to the point of discharge."[111] Water that percolates into the ground and appears later, bypass water, and tile drainage are no longer included in the EPA definition of irrigation return flow.

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103. *Id.* at 1396.

104. 41 Fed. Reg. 7,963 (1976). The EPA solicited public comment concerning its new regulations, specifically requesting comments on the technical definitions of "agricultural point sources," "irrigation return flow," and "surface water." *Id.* at 7,965. Over 120 written statements were received, but the final regulations were issued *without change* on July 12, 1976. 41 Fed. Reg. 28.496 (1976) (to be codified in 40 C.F.R. 124.84, 125.53).

105. 41 Fed. Reg. 7,963 (1976).

106. *Id.* The explicit assumption of the existence of "control" is particularly important. See text accompanying notes 78-83 *supra.*

107. 41 Fed. Reg. 7,963 (1976).

108. A general permit program to regulate discharges from storm sewer and agricultural point sources was proposed by the EPA on February 4, 1977. 42 Fed. Reg. 6,846 (1977). The program does not impose numerical limits on dischargers or require applications from individual owners or operators of the covered point sources. The program appears to combine the use of general permits for a defined area with state planning under section 208 of the FWPCA, and outlines conditions to be followed by all persons operating point sources. A general permit can be revoked for individual operators, groups of operators or for the entire general permit program area when section 208 requirements are violated and when the EPA finds that the point sources involved are a "significant source of pollution." 7 ENVIR. REP. (BNA) 1549, 1568-1575 (1977). Analysis of the scope and effect of the proposed general permit program is beyond the bounds of this comment.

109. 41 Fed. Reg. 28,496 (1976) (to be codified in 40 C.F.R. §§ 124.84, 125.53).

110. *Id.*

111. *Id.*

C. *Evaluation of the New Regulations*

The decision in *NRDC v. Train*[112] required the EPA to include all point sources discharging pollutants in its permit program; it did not say that EPA had to issue a permit to each individual farmer,[113] or that EPA needed to redefine "point source," or that a "point source" became a "nonpoint source" because it was not discharging pollutants. Yet the redefinitions occurred. Even the 1100 organizations that would have been required to get permits under the 1973 regulations no longer have to do so under the 1976 regulations if they apply water efficiently so there is no "surface runoff," *i.e.*, water "flowing exclusively across the surface from the point of application to the point of discharge."[114] Under properly managed irrigation there is almost no surface water runoff. But there is, almost inevitably under most irrigation practices, water

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112. 396 F. Supp. 1393 (D.D.C. 1975).

113. The EPA had previously recognized this fact when it promulgated the original regulations. *See* note 158 *infra* and accompanying text. The legislative history of the FWPCA also supports this position. During the House debate an amendment was proposed by Congressman Roncalio to exempt agricultural irrigation water from NPDES permit requirements. The amendment was rejected after the following exchange:

> Mr. WALDIE. I suggest not only to the Members from California but to Representatives of other States that have massive irrigation waste drains that are dumped into navigable waters, if you do not require that as a point-source pollution and require a permit, you will jeopardize those waters.
>
> This residue that is dumped into the San Joaquin River is desperately polluting the river and the bay, and if a permit is not required to dump it, you will have no control over the quality of water that you are dumping into rivers and lakes from these sources.
>
> Mr. RONCALIO. . . . I appreciate the gentleman's concern, but if you are going to impose upon the small agricultural farmers of Wyoming, Montana, Idaho, and Colorado, Federal permits on top of the other Federal inspections, and agents prevalent today, we are presenting small irrigation farmers a matter with which they cannot cope.
>
> Mr. WALDIE. That was not the question I asked. The permit is not for the individual farmer who dumps it into the drain but the question I asked is at the end of that drain with hundreds of thousands of farmers dumping into it, does the drain itself require permit to dump that into the water?
>
> Mr. RONCALIO. Most discharge as the result of irrigation damage is a most difficult thing to handle and is a nonpoint source discharge, but is percolation.
>
> Mr. WALDIE. I understand the gentleman's amendment. What he says is that these hundreds of thousands of farmers that will be dumping their residue into a pipe and that pipe transports it out of the basin and dumps it into a waterway, you no longer will require a permit for the waterway dumping of that material? I think that is desperately dangerous to every one of our States.
>
> Mr. WIGGINS. Mr. Chairman, I wish to associate myself with the remarks of the gentleman from California (Mr. Waldie).
>
> This is potentially a very dangerous amendment and at least it is entitled to the careful and mature consideration of a legislative committee. It should not be enacted too hastily on the floor at this time.
>
> I would urge that this amendment be voted down and that the legislative committee give careful consideration to the problem of irrigation runoff as a source of pollution.

LEGISLATIVE HISTORY, *supra* note 15, at 653.

114. 41 Fed. Reg. 28,496 (1976) (to be codified in 40 C.F.R. §§ 125, 124).

that percolates into the ground and reappears elsewhere, either through drainage titles or because of natural drainage.[115] This water is very likely to be more polluted than the surface runoff water.[116] The EPA has, in effect, redefined the problem so that the part most difficult to solve simply vanishes.[117] The reason for making such

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115. *See* SOURCE BOOK, *supra* note 8, at 2, 3.

116. *See* Part I of this comment.

117. Even the Department of Interior—whose Bureau of Reclamation is the developer of the irrigated West—suggested the EPA be less blatant in redefining commonly understood and widely accepted terms:

> Although we understand the reasons for so limiting the definition, we submit that the term 'irrigation return flow' is already well established in water law as including both returning irrigation water that is flowing on the surface to a nearby stream and that seeping underground toward the stream. We suggest that in legal actions and in public use some other wording would be preferable. . . .

Letter from Deputy Assistant Sec. of Interior to EPA (Apr. 26, 1976) (copy on file at the EPA Public Information Reference Unit, Washington, D.C.). Other commentators included the South Dakota Department of Environmental Protection (hereinafter cited as SDDEP):

> We are extremely disappointed that subsurface drainage is excluded from NPDES requirements. We understand that EPA's proposal implies that voluntarism shall be utilized to obtain compliance from irrigators with effluent and ambient water quality standards. At the same time, we are aware that a long policy of voluntary compliance with soil erosion control measures has not resulted in the widespread adoption of these measures by soil disturbers, many of which would be irrigators. If only half of the irrigators adopted irrigation management practices (about half of the land in South Dakota has adequate erosion control measures applied to it), the adverse effect on water quality will be significant in those areas where salinity content of irrigation water and/or irrigated soils are at levels which impair present and prospective beneficial uses of the waters receiving the return flows.
>
> We view subsurface drainage systems to be a severe contributor of pollution in regards to salinity, and believe such drainage systems precisely fit the definition of a point source. Furthermore, subsurface drainage systems also precisely fit into your rationale for including irrigation surface drainage as a point source; i.e., 'Once the application of water is controlled by man, as in irrigated operations, and is channelled into ditches, pipes, and drains, the prohibition of discharges of pollutants by any person without a permit under Section 301 of the FWPCA becomes applicable.'
>
> Our particular comments are directed mainly towards the definition of 'irrigation return flow' and 'surface water.' A more complete definition of 'return flow' is proposed:
>
> > The term 'irrigation return flow' means any water containing pollutants which result from the controlled application of water by any person to land used primarily for crop or forage growth, forestry or nursery operations, including but not limited to surface runoff, bypass water, deep percolation losses, tail water runoff and seepage.
>
> . . . .
>
> EPA's proposed definition also discriminates against certain types of irrigation activities. Sprinkler irrigation, for example, may not have 'irrigation return flow' of 'surface water' whereas gravity irrigation may have 'irrigation return flow' of 'surface water.' This discrimination may encourage the use of sprinkler irrigation which, in fact, will have irrigation return flow, but not be under an NPDES permit because of the proposed narrow definition.
>
> . . . .
>
> We also feel strongly that degradation and impacts on water quality of irrigation return flow discharges can be significantly reduced by the application of proper management techniques. We view NPDES permits issued to the responsible operators of irrigation projects which have irrigation return flow discharges, as defined by our proposed definition of irrigation return flow, as an

a change is not expressed anywhere in the public record, nor does it appear to be justified when viewed in light of the purpose and scope of the FWPCA.[118]

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effective mechanism for requiring implementation of an irrigation management services system designed to minimize impacts on water quality of receiving streams. We, therefore, propose that NPDES permits issued for irrigation return flow discharges contain the following conditions:

1) A requirement that the permittee, within a reasonable time period after permit issuance, submit a plan to the permit-issuing authority, outlining an irrigation management services system designed to minimize impacts of the discharge on the water quality of the receiving stream. The plan should include interim compliance dates and a final date for the adoption and implementation of the management system by the individual irrigators.
2) Monitoring requirements sufficient to establish pollution loads of discharges.

In addition, it also proposed [sic] that for large irrigation projects which are in the planning stage, for example Bureau of Reclamation projects in the Missouri River Basin, that the regulations require that the planning agency develop during the planning process an irrigation management services system designed to minimize the impacts of their discharges on water quality in the receiving waters. The implementation of an approved management services system would then become an NPDES permit condition upon permit issuance.

. . . .

We do not wish to invite salinity problems in South Dakota. But EPA's proposed rules make that outcome more probable or make the reduction of salinity more costly and unmanageable.

Letter from A. Lockner, SDDEP, to EPA (Mar. 29, 1976) (copy on file at the EPA Public Information Reference Unit, Washington, D.C.). The EPA responded to this and other comments by saying: "These comments were carefully considered, but it has been determined not to *expand* the definition of point source at this time." 41 Fed. Reg. 28,493 (1976) (emphasis added).

118. The EPA has replied to the analysis of the regulations given in the text in a letter from Office of Enforcement, EPA, to J. Davidson (Jan. 24, 1977) (copy on file in S.D.L. REV. Office). The letter is quoted in material part below:

The 1973 decision to exclude most irrigation return flow from the NPDES permit program was based on two fundamental reasons. First, EPA was faced with issuing approximately 70,000 NPDES permits to industrial and municipal facilities. Since there are approximately 300,000 to 500,000 irrigators in the country, the additional administrative burden of issuing individual permits to irrigators seemed overwhelming.

Second, it was clear that the program for developing nationally-applicable effluent guidelines was inappropriate to the geographical variations inherent in irrigation activities. These effluent guidelines, translated into effluent limitations in individual permits, are the key to pollution control for municipal and industrial point sources under the Federal Water Pollution Control Act.

Given these elements of administrative infeasibility and technical limitations, the 1973 amendments excluded the vast majority of irrigators from the NPDES permit program. The few permits issued to large irrigators with 3000 or more contiguous acres of land under the 1973 regulations contained only monitoring requirements. Many of these permits are still tied up in adjudicatory hearings contesting the provisions of the permits.

. . . .

In developing the definition to include irrigation return flow conveyances under the category of agricultural activities, EPA initiated a number of discussions with Federal and State agencies and with potentially affected owners and operators of irrigation return flow conveyances. In addition, EPA began a detailed investigation of the Federal Water Pollution Control Act (FWPCA) and its in-

A point source does not become a non-point source because it discharges subsurface drainage instead of surface drainage. A ditch is always a ditch no matter what comes out of it. The purpose

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tent as discussed in the legislative history. Also, EPA sought guidance from the language of the decision in the *NRDC v. Train* case.

This experience, dating from 1973 and intensified in 1976, revealed a number of important aspects for developing the regulations for agricultural activities. First, the administrative burden of issuing permits, although decreased, is still substantial in that approximately 30,000 permits to minor municipal and industrial dischargers have yet to be issued. Second, ongoing research has shown that nationally uniform effluent limitations guidelines would not be as effective as locally devised best management practices (BMPs) to control pollutant discharges from irrigation return flow conveyances. More importantly, while regional effluent limitations may be appropriate at some future time to control surface runoff, any effluent limitations applied to subsurface drainage and percolation are entirely impractical given the innumerable and unpredictable discharge points.

Third, EPA's office of General Counsel issued an opinion that BMPs could not be directly imposed through NPDES permits without some section 208 plan, section 401 state certification, or National Environmental Policy Act nexus. This opinion generally limits EPA's options to control pollution from such sources as irrigated agriculture within the NPDES permit program.

Fourth, although the FWPCA comprehensively defines 'point source' to mean 'any discernible, confined and discret conveyance, including . . . any pipe, ditch [or] channel" it is clear from the *NRDC* decision that not 'every farm ditch, water bar or culvert on a logging road is properly meant to be a point source under the Act.' *NRDC v. Train*, 7 ERC 1881 at 1887. Indeed EPA was charged with the responsibility to distinguish between point and nonpoint sources to lessen the administrative burden of issuing permits.

Fifth, in distinguishing between point and nonpoint sources EPA found specific legislative guidance sorely lacking. The reason for choosing irrigation return flow conveyances as subject to the permit program lies mainly in the legislative history surrounding an amendment submitted by Congressman Teno Roncalio of Wyoming. That amendment, which would have excluded irrigation return flow discharges from the permit program, was defeated by voice vote indicating that Congress was aware and probably intended that irrigation return flow discharges be subject to the NPDES program. However, nothing in the FWPCA or its legislative history addressed the issue of surface versus subsurface flow.

Sixth, it is clear that regulation of irrigated agriculture is an extremely complex problem incorporating innumerable variations in crops, soils, climate, geography and institutional arrangements including water rights.

Given these aspects of developing the regulations for irrigated activities, it was decided that the legal definition of irrigation return flow could and should be different from the technical definition. Thus subsurface return flow has been deleted from the July 1976 regulations. As stated in the preamble to those regulations, however, 'it may be necessary to re-examine, expand or contract the definition of agricultural point source' in response to further developments in the law and technology.

In the meantime, the definition of agricultural point source for the purposes of the NPDES program has indeed been expanded. Although subsurface return flow has been excluded from the permit program at this time, *all* irrigators rather than the few largest irrigators will be subject to the permit process. As stated before, this means approximately 300,000 to 500,000 individual owners and operators will be affected as opposed to less than 100 individuals under the 1973 regulations.

Finally, despite the exclusion of subsurface irrigation waters from the NPDES program, it is not the intent of EPA to ignore this source of pollution. However, it is clear that the 208 planning

of the FWPCA is to control water pollution, so the necessary distinction is between discharges and non-discharges of pollutants. The discharges to be regulated by the NPDES permit program are those which originate from point sources. If irrigation return flow is defined to include all water not consumptively used in irrigation, then it will be difficult to determine which water comes from a "point source" of "surface water" rather than from subsurface water. Even if a method existed to distinguish the permit-requiring water from the nonpermit-requiring water, the only legally justifiable exclusion is water which does not contain man-caused pollution.[119] The subsurface drainage portion of irrigation return flow most certainly does contain pollutants and most certainly does, therefore, come within the ambit of the FWPCA.[120] Since problems do not go away "by definition," the next step is to analyze where

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process, with the option of using BMPs to control water pollution, is by far the more appropriate method to deal with irrigated agriculture. Under the 208 process, utilizing local expertise and cooperative efforts to solve local problems, the goals of the FWPCA will be more effectively achieved.

The only clear reference in the 1700 pages of legislative history of the FWPCA to irrigation caused pollution is the Roncalio amendment discussed in note 113 *supra*. The rejection of the amendment shows a clear congressional intent to include discrete conveyances of irrigation return flow in the permit program. The "300,000 to 500,000" permit threat mentioned in the EPA letter is misleading and in conflict with EPA's own previous concept of who would be required to obtain permits before discharging irrigation return flow. *See* notes 96 *supra*, 158 *infra* and accompanying text. It also conflicts with the approach taken by the EPA proposed general permit program. *See* note 108 *supra*.

119. The EPA is, of course, subject to pressures other than legal. Other federal agencies may seek to weaken environmental regulations. For example, through the Office of Management and Budget (OMB) "quality of life" review, environmental regulations are subject to detailed and time-consuming evaluations by other federal agencies. Theoretically the review applies to other than the EPA, but the EPA seems to suffer the brunt because of the considerable impact many EPA regulations have on the economy. *BNA Special Report: OMB Plays Critical Part in Environmental Policy Making, Faces Little External Review*, 7 ENVIR. REP. (BNA) 693 (1976). The EPA transition paper to the Carter administration recommends abolishing the OMB review, but the EPA has not waited for an Administration decision on the matter. On January 25, 1977, the EPA unilaterally terminated the OMB "quality of life" interagency review of EPA regulations. The EPA believes it can create a valid regulation without submitting it to OMB. The OMB has made no public comment on the decision, so the fate of the review is uncertain at this time. 7 ENVIR. REP. (BNA) 1288, 1443 (1977).

There are also examples of more direct attempts to influence EPA regulations. The United States Department of Agriculture in a letter to EPA (Mar. 31, 1976) (copy on file at EPA Public Information Reference Unit, Washington, D.C.), took the position that "water pollution from most agricultural activities is nonpoint in nature and not subject to NPDES permit requirements." The USDA also pointed out that no practical end-of-pipe treatment for the primary pollutant associated with irrigation return flow—salinity—"has been demonstrated to be economically feasible." *Id.* The determination of whether or not a law passed by Congress is "economically feasible" certainly should not lie in the agency charged with enforcing that law. This should be the province of Congress, which should be the body to which interested federal agencies provide their data on economic feasibility. Perhaps if the EPA really believes the FWPCA is unworkable in its present form it might find that literal and strict attempts at enforcement would do more to get the law changed than covert attempts to gut its substantive provisions.

120. *See* text accompanying notes 8-60 *supra*.

the responsibility lies for controlling and abating irrigation-caused water pollution.

III. RESPONSIBILITY

A. *Introduction*

The responsibility for abating irrigation-caused water pollution is not easily assigned. The Bureau of Reclamation of the United States Department of Interior[121] is the builder of most of the large-scale irrigation projects in the United States. The Bureau plans, develops and constructs the dams, reservoirs, pumping and distribution systems, and other physical structures necessary to serve its projects. Since the facilities necessary are usually large, complex and costly, the federal government provides the management and the funding required to get the projects built. The Government may or may not own the physical facilities and land that they are built upon, but it usually does own the storage dams and reservoirs. Executive Order 11752[122] states that federal facilities must comply with federal, state and local standards in order to prevent, abate and control environmental pollution. The same Executive Order, however, appears to exempt federal facilities from state procedural requirements with respect to pollution abatement and control.[123] The split of jurisdiction between federal agencies and the extent of the congressional delegation of power to the states under pollution control legislation have also been explored by the United States Supreme Court in three recent decisions.[124] The analysis in the following paragraphs will discuss these responsibility problems in more detail.

121. Hereinafter referred to as the "Bureau."

122. 38 Fed. Reg. 34,793 (1973).

123. *Id.* The Executive Order reads in pertinent part:

> SECTION 1. *Policy.* It is the purpose of this order to assure that the Federal Government, in the design, construction, management, operation, and maintenance of its facilities, shall provide leadership in the nationwide effort to protect and enhance the quality of our air, water, and land resources through compliance with applicable standards for the prevention, control and abatement of environmental pollution in full cooperation with State and local governments. Compliance by Federal facilities with Federal, State, interstate, and local substantive standards and substantive limitations, to the same extent that any person is subject to such standards and limitations, will accomplish the objective of providing Federal leadership and cooperation in the prevention of environmental pollution. In light of the principle of Federal supremacy embodied in the Constitution, this order is not intended, nor should it be interpreted, to require Federal facilities to comply with State or local administrative procedures with respect to pollution abatement and control.

The Executive Order defined "federal agencies" to mean "the departments, agencies, establishments, and instrumentalities of the executive branch," and "facilities" to mean "the buildings, installations, structures, land, public works, equipment, aircraft, vessels, and other vehicles and property, owned by, or constructed or manufactured for the purpose of leasing to, the Federal Government."

124. Train v. Col. Public Interest Research Group, Inc. (PIRG), 96 S. Ct. 1938 (1976); Hancock v. Train, 96 S. Ct. 2006 (1976); EPA v. California State Water Resources Control Bd., 96 S. Ct. 2022 (1976).

B. *Reclamation Law and Water Pollution Law*

(1) Reclamation Law

An examination of the origin and development of federal reclamation law is necessary to show how responsibility for water projects has split between federal and state governments. The basic authority for the irrigation projects constructed by the Bureau is the Reclamation Act of 1902.[125] The Reclamation Act was passed in response to a perceived failure of the 1862 Homestead Act[126] to advance the family farm ideal.[127] The Homestead Act offered 160 acres of land free to anyone who could live on it for five years, but by the late 1800's, most of the remaining available land was in the arid and semi-arid western United States. Profitable farming on only 160 acres without water for irrigation was nearly impossible in many areas.

The Reclamation Act was intended to cure the defects in the Homestead Act. Congress set up a fund, financed by the sale of land in the western states, as a source of loans to farmers for the irrigation of their land.[128] The loans were to allow successful family farming in the dry regions of the West. To prevent the advantages of the Act from benefiting the large landowners, Congress required water rights to be sold to irrigate only 160 acres of land,[129] that the water rights be appurtenant to the land to be irrigated,[130] and that the irrigator be a resident on his irrigated land.[131]

Congress recognized that water in many of the reclamation states was governed by the law of appropriation, not the law of riparian rights,[132] and that the states feared federal takeover of their water. Although the original "states rights" version of the Act was defeated, the full national government control envisaged by President Roosevelt was not adopted either.[133] The compromise result was section 8, which reads, in material part, as follows:

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125. Act of June 17, 1902, ch. 1093, 32 Stat. 388 (codified in scattered sections of 43 U.S.C.).

126. Act of May 20, 1862, ch. 75, 12 Stat. 392 (codified in scattered sections of 43 U.S.C.).

127. The analysis in this part borrows from an unpublished paper by W. Neufeld (1974) (copy on file in S.D. L. REV. Office).

128. 43 U.S.C. § 391 (1970).

129. *Id.* at § 431.

130. *Id.* at § 372.

131. *Id.* at § 431.

132. Under the riparian doctrine, the right to use water is dependent upon its location upon or alongside the landowner's property. Riparian land, then, is that land adjoining water. The appropriation doctrine provides for the acquisition of water rights by riparians and non-riparians alike on a "first-come, first served" basis. South Dakota has a hybrid system combining both doctrines. Garton, *South Dakota's System of Water Management and Its Relation to Land Use and Economic Development*, 21 S.D. L. REV. 1 (1976).

133. United States v. California, 403 F. Supp. 874 (E.D. Cal. 1975) contains a detailed discussion of the legislative history and case law development of the Reclamation Act.

> Nothing in . . . [this Act] shall be construed as affecting or intended to affect or to in any way interfere with the laws of any state or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of such sections, shall proceed in conformity with such laws, and nothing . . . [herein] shall in any way affect any right of any State or of the Federal Government or of any landowner, appropriator, or user of water in, to, or from any interstate stream or the waters thereof.[134]

Section 8 is Congress' express recognition that notwithstanding the national scope and importance of reclamation, state law has important functions.[135] Section 8 is also a reaffirmation that states are free to apply their own rules of water law, and the federal government cannot enforce any particular rule upon any state: "While the Congressional history of the 1902 Act indicates broad federal purpose and authority in the operation and control of federal reclamation projects, the comity inherent in a federal system would not permit an overbroad usurpation of state sovereignty."[136] In other cases construing section 8, however, the United States Supreme Court has used language indicating that state laws inconsistent with the decisions of the Secretary of Interior in distributing reclamation water have no effect on any reclamation projects: "Where the Government, as here, has . . . undertaken a comprehensive project for the improvement of a great river and for the orderly and beneficial distribution of water, there is no room for inconsistent state laws."[137] Such a position leaves section 8 with little meaning except in the case of water rights condemnation.[138] There is, however, an interpretation of section 8 that allows it to retain some meaning and still be consistent with the interpretations by the Supreme Court: section 8 may be "nothing more than a deference to state regulation in the *absence* of federal policy."[139] State law was compatible with the operation of reclamation projects in 1902 because there were no overriding federal policies to the contrary.[140] But since 1902, an expansion of the use of the federal reclamation laws as a vehicle for federal policy is shown by the addition of municipal and industrial uses, recreation, power and na-

134. 43 U.S.C. § 383 (1970).

135. For example, the Supreme Court has held that section 8 requires the federal government to look to state law to define property interests for which compensation must be made in eminent domain proceedings. Ivanhoe Irrigation District v. McCracken, 357 U.S. 275 (1958); Fresno v. California, 372 U.S. 627 (1963).

136. United States v. California, 403 F. Supp. 874, 889 (E.D. Cal. 1975). The court there relied heavily on California Oregon Power v. Beaver Portland Cement, 295 U.S. 142 (1935).

137. Arizona v. California, 373 U.S. 546, 587 (1963).

138. *See* Sax, *Problems of Federalism in Reclamation Law*, 37 U. COL. L. REV. 49, 83 (1964) [hereinafter cited as Sax].

139. Sax, *Federal Reclamation Law*, in 2 WATERS & WATER RIGHTS 111, 281 (R. Clark ed. 1967) (emphasis added).

140. Sax, *supra* note 138, at 66.

tional defense to the originally stated single purpose of "irrigation."[141] Where federal policy has expanded by means of the reclamation law, state power must necessarily contract.

(2) Water Pollution Law

Recent federal statutes indicate congressional intent to give the states first priority in controlling environmental quality and particularly water pollution.[142] State action in the water quality area is expressly required by the federal environmental laws. Section 101 of the FWPCA declares the congressional goals and policy sought to be promoted by the Act:

> (b) It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this chapter. It is further the policy of the Congress to support and aid research relating to the prevention, reduction, and elimination of pollution, and to provide Federal technical services and financial aid to State and interstate agencies and municipalities in connection with the prevention, reduction, and elimination of pollution.[143]

There are other sections in the FWPCA which also support the finding of state control and responsibility:

> Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any property or facility, or (2) engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants shall comply with Federal, State, interstate, and local requirements respecting control and abatement of pollution to the same extent that any person is subject to such requirements, including the payment of reasonable service charges.[144]

In addition, the enactment of section 402 of the FWPCA[145] seems especially important in this analysis. Congress specifically provided that states could develop and administer their own NPDES permit programs which would then be substituted for the EPA-administered program upon EPA approval.[146] There is nothing in this delegation of power to the states which exempts federal facili-

141. *See* Sax, *supra* note 138, at 69-84.
142. Federal Water Pollution Control Act Amendments of 1972 (FWPCA), 33 U.S.C. §§ 1251-1376 (Supp. IV, 1974); National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-4347 (1970); Environmental Quality Improvement Act of 1970 (EQIA), 42 U.S.C. §§ 4371-4374 (Supp. IV, 1974).
143. 33 U.S.C. § 1251(b) (Supp. IV, 1974).
144. *Id.* at § 1323.
145. *Id.* at § 1342.
146. *Id.* at § 1342(b).

ties from control. The result is not only a conflict between federal and state jurisdiction, but also a conflict between the federal policy embodied in the reclamation law and that in the environmental laws.

(3) Conflict Between Reclamation Law and Water Pollution Law

If the acceptable interpretation of section 8 of the Reclamation Act is to allow the states to prevail only where federal policy is absent, then the congressional enactment of environmental laws would appear to preclude any state control of reclamation projects. But the voiced congressional intent and the express statutory provisions lead to the opposite conclusion. Any state attempt to control the operation of federal reclamation projects under environmental laws is sanctioned by a declared national policy; the states must exercise control in order to fulfill their statutory duties under federal law.

Irrigation projects frequently result in decreased water quality of stream flow.[147] A decrease in water quality within the waters of a state would probably be within the jurisdiction of the state water quality control board. Where the state has an EPA-approved NPDES permit program the Bureau could be classified as a point-source discharger of pollutants in violation of state effluent limitations and thus be required to get a permit.[148]

The structure of federal reclamation projects, however, may allow the Bureau to escape state control. Under present reclamation law the lands and the distribution and drainage works of an irrigation project belong to the irrigation districts formed by the irrigators.[149] All that is left under federal government ownership are the dams and reservoirs, and probably pumping plants and the main delivery canals.[150] The FWPCA can be made to operate on

147. *See* Part I of this comment *supra*.

148. A potentially important case is EDF, Inc. v. Stamm, No. C-75-1419-SAW (N.D. Ca. 1976) 6 ENVIR. L. REP. 20621 (1976). The district court has issued an injunction preventing any Bureau construction on the San Felipe Division of the Central Valley Project in California. The court also prohibited the signing of contracts for delivery of water from the project. The injunction requires the Bureau to submit a supplemental Environmental Impact Statement on the way it intends to divert the water from the Sacramento-San Joaquin Delta. The Bureau is required to submit the statement before the court will allow construction to continue. By forcing consideration of the project's effect on water quality the issue of whether the Bureau must abide by state and EPA water quality standards may also be confronted.

149. 43 U.S.C. §§ 421, 421(c) (Supp. V, 1974).

150. This change came about fairly recently by the congressional enactment of Pub. L. 92-487 in 1972. The purpose of the law was to amend the existing reclamation distribution loan system, principally to (1) include irrigation drainage works and municipal and industrial water supply works within the provisions of the Act, and (2) to delete the requirement for the transfer of title of lands to the United States for the duration of the loan. S. REP. No. 92-1244, 92 Cong., 2d Sess. *reprinted in* [1972] U.S. CODE CONG. & AD. NEWS, 3597. Whatever the reason for the change, it has the effect

municipal corporations, the form in which the irrigation districts may be organized,[151] but this control over the non-Bureau portion is of limited value. The quality of water provided by the Bureau under contract to the irrigation districts determines whether or not these users will be able to meet discharge standards after their own use of the water; the water quality is hardly likely to remain constant let alone improve after it leaves the Bureau's direct control. The Bureau also regulates streamflow by manipulating the amount of water in the reservoirs. This too has an effect on all downstream uses which would be beyond the users' power to control.

(4) Applying Water Pollution Law to Reclamation Projects

Section 102 of the FWPCA[152] says that in the planning of dams and reservoirs consideration shall be given to storage for the regulation of streamflow, but such storage and water releases are not to substitute for adequate treatment of the water at its source. This section also says that the need for streamflow-regulation storage for the purposes of navigation, saltwater intrusion, recreation, esthetics, and fish and wildlife, but excluding water quality control, shall be determined by the federal agency planning the dam.[153] The need for water quality control by streamflow regulation, which is essentially a process of adding large amounts of high quality water to a small amount of low quality water, is to be determined by the Administrator of the EPA.[154] Section 102 seems to give the federal government—via the EPA—the authority to make streamflow decisions. But this section refers only to the planning of dams and not to their operation. The operational requirements are embodied in the authority of section 313.[155] From the existence of both sections 102 and 313, one may reasonably conclude that Congress intended to give the EPA planning authority over streamflow for water quality purposes, and the states the authority under section 313 to decide when these control capabilities should actually be

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of removing the Bureau from the responsibility of ownership on irrigation projects for which land has not already been acquired.

The Reclamation Act, 43 U.S.C. § 421(h) (Supp. V, 1975), requires that all works financed by loans from the reclamation funds under federal reclamation law "shall be subject to the procedural and substantive requirements of . . . the Federal Water Pollution Control Act as amended . . . ." This section was also added to reclamation law by Congress in 1972 as part of Pub. L. 92-487. This section makes it clear that the irrigation projects are subject to the FWPCA, but when coupled with the rest of the 1972 changes to the reclamation law, may have the effect of shifting responsibility for assuring that the projects meet pollution control requirements to the project owners: the irrigators. *See* text accompanying notes 210-211 *infra*.

151. 33 U.S.C. §§ 1311, 1312, 1316, 1317, 1342 (Supp. IV, 1974).

152. *Id.* at § 1252.

153. *Id.*

154. *Id.* EPA Planning Region VIII (which includes South Dakota) has adopted a policy of requiring "best available management technology" to minimize water pollution including the use of dilution or order to meet water quality standards. Letter from J. Green, EPA Region VIII Administrator to M. Weeks (Mar. 24, 1975) (copy on file at S.D. L. Rev. Office).

155. *See* text accompanying note 144 *supra*.

used. This interpretation is supported by the wording of section 313: "Each department . . . of the Federal Government . . . shall comply with Federal, State, interstate, and local requirements respecting control and abatement of pollution. . . ."[156] The use of the term "requirements" is broader than the listed specifications that must be met to qualify a state permit program under section 402.[157] That is, section 313 orders the federal government to meet state *requirements*, not merely state water quality or effluent standards. This indicates Congress anticipated that state controls may go well beyond the mere issuance of water quality standards and discharge permits.

The EPA position on who must apply for NPDES permits for discharging irrigation return flow was stated in 1973 when the initial regulations interpreting the FWPCA were issued:

> It is the individual or organization who actually has control of or responsibility for the discharge of irrigation return flow who must apply for the permit. . . . [Where] water is supplied by an organization but the discharge of return flow . . . is controlled by an individual . . . , it is the individual who must apply. . . . [W]here an irrigation organization . . . controls the irrigation return flow . . . the organization must apply for a permit.[158]

Judging from this language, the EPA does not even contemplate holding the Bureau responsible. The EPA position would allow the Bureau to escape regulation by permit for all its irrigation-connected activities except possibly those directly related to streamflow below its dams and reservoirs.

C. *Case Law and Federal Facilities*

(1) EPA Authority

Three recent decisions by the United States Supreme Court seem to seriously undercut the authority of the EPA and the states to regulate pollution from federal facilities. In *Train v. Colorado PIRG, Inc.*,[159] Colorado organizations and residents claimed potential harm could be caused by effluent discharges from two nuclear power plants. The Atomic Energy Act of 1954[160] gave the Atomic Energy Commission (AEC)[161] broad regulatory authority over what

156. 33 U.S.C. § 1323 (Supp. IV, 1974).
157. *See Id.* at § 1342(b).
158. 38 Fed. Reg. 18,001-18,002 (1973).
159. 96 S. Ct. 1938 (1976).
160. Act of Aug. 30, 1954, ch. 1073, 68 Stat. 919 (codified in scattered sections of 42 U.S.C.).
161. Under the Energy Reorganization Act of 1974, 42 U.S.C. §§ 5801-5891 (Supp. V, 1975), the NRC received the licensing and regulatory responsibilities of the former Atomic Energy Commission (AEC), which the Energy Research and Development Administration assumed the AEC's research and development functions. This comment will refer to the NRC throughout, rather than to the AEC, although the NRC was not yet in existence when the FWPCA was passed.

it called "source materials,"[162] "special nuclear materials,"[163] and "byproduct materials."[164] The FWPCA empowered the EPA (and the states acting under EPA-approved programs) to regulate, via the NPDES permit program, discharges of all pollutants specifically including "radioactive materials."[165] The EPA disclaimed authority under the FWPCA to set standards of its own, and expressly excluded the NRC-regulated nuclear materials from its regulations, citing the legislative history of the FWPCA.[166] The United States Court of Appeals for the Tenth Circuit held that the FWPCA expressly required EPA to regulate discharge of radioactive materials into the nation's waters.[167] The court said the legislative history of the FWPCA was "conflicting and inconclusive,"[168] and relied primarily on the plain meaning of the FWPCA definition of "pollutant," which included, without qualification, the term "radioactive materials."[169]

A unanimous Supreme Court reversed the lower court, and held that Congress did not intend the FWPCA to transfer regulatory authority of nuclear materials in nuclear power plant effluents from the NRC to the EPA.[170] The Court said that the lower court erred in excluding reference to the legislative history of the FWPCA which, the Court said, "speaks with force"[171] to the question whether NRC-regulated materials are pollutants subject to the FWPCA.

In its opinion the Court examined legislative history carefully and almost exclusively. The Court did acknowledge that the history was conflicting,[172] but decided that the balance was against the plaintiff's position. The Court gave no reason why it relied so heavily on the legislative history when the FWPCA itself seems to speak so unequivocally about pollution from radioactive materials. For example, section 301 states: "(f) Notwithstanding any other provisions of this chapter it shall be unlawful to discharge any radiological, chemical or biological warfare agent or high-level radioactive waste into the navigable waters."[173] The Court said, however, that the section 301 prohibition was not inconsistent with its holding because the opening phrase "notwithstanding any other

162. These are the raw nuclear materials essential to the production of fissionable ("special") nuclear materials. 42 U.S.C. § 2014(z) (1970).
163. These are substances capable of sustaining a chain reaction and thus usable as nuclear fuel. 42 U.S.C. § 2014(aa) (1970).
164. These are materials yielded in or made radioactive incident to production or use of special nuclear materials. 42 U.S.C. § 2014(e) (1970).
165. 33 U.S.C. § 1362(6) (Supp. IV, 1974).
166. 40 C.F.R. § 125.1(y) (1976).
167. Colorado PIRG, Inc. v. Train, 507 F.2d 743 (10th Cir. 1974) *rev'g* 373 F. Supp. 991 (D. Col. 1974).
168. 507 F.2d at 748.
169. 33 U.S.C. § 1362(6) (Supp. IV, 1974).
170. Train v. Colorado PIRG, 96 S. Ct. 1938 (1976).
171. *Id.* at 1943.
172. *Id.* at 1943, 1944.
173. 33 U.S.C. § 1311(f) (Supp. IV, 1974).

provision of this chapter" must be assessed against the background of legislative history.[174]

(2) State Authority

The second part of the jurisdictional conflict involves the relationship between states and federal facilities. Resolving a split of authority among circuits, the Supreme Court exempted federal facilities from state pollution control permit requirements. In *Hancock v. Train*[175] the Court held that the Clean Air Act[176] does not mandate federal compliance with state air permit programs. In *EPA v. California*[177] the Court held that the FWPCA[178] likewise does not require compliance by federal installations with state water permit requirements. The "fundamental principle" governing both decisions is that federal installations are subject to state regulation only when and to the extent that congressional authorization is "clear and unambiguous."[179] The specific statutory provisions at issue, section 118 of the Clean Air Act and section 313 of the FWPCA, call in identical language for federal compliance with "requirements respecting control and abatement of . . . pollution to the same extent that any person is subject to such requirements."[180]

The federal agencies are still requied to obtain discharge permits under the NPDES permit program, but they are now to do so from the EPA rather than from the states.[181] The Court said the EPA authority to issue permits to federal and non-federal dischargers comes from section 402, not from section 313, as does the requirement that the federal discharger secure a permit.[182] Section 402[183] provides that upon approving a state permit program EPA shall suspend issuance of NPDES permits for those point sources subject to such an approved program.[184] The EPA took the position

174. 96 S. Ct. 1938, 1942-1943 (1976). The House Report's explicit statement of intent to exclude NRC-regulated materials is quite forceful, and heavily relied on by the Court in reaching its decision. *Id.* at 1946-1948. Paradoxically, however, the strength of this argument raises questions. Why did not the House expressly include an exception in the Act for NRC-regulated materials as it did for two other exclusions, one dealing with oil drilling, which is regulated by an agency other than EPA: "This term [pollutant] does not mean (A) 'sewage from vessels' within the meaning of Section 1322 of this title; or (B) water, gas or other material which is injected into a well to facilitate production of oil or gas . . . ." 33 U.S.C. § 1362(6) (Supp. IV, 1974). Since the FWPCA specifically expresses these two exclusions, Congress logically would have specifically excluded NRC-regulated materials if it had meant to exclude them.

175. 96 S. Ct. 2006 (1976).

176. 42 U.S.C. § 1857(f) (1970).

177. 96 S. Ct. 2022 (1976).

178. 33 U.S.C. §§ 1231-1376 (Supp. IV, 1974).

179. 96 S. Ct. 2022, 2028 (1976).

180. 33 U.S.C. § 1323 (Supp. IV, 1974).

181. *See* 96 S. Ct. 2022, 2034-2035 (1976).

182. *Id.* at 2032, 2033.

183. 33 U.S.C. § 1342(c)(1) (Supp. IV, 1974).

184. Twenty-eight states, not including South Dakota, now have permit issuing authority. 7 ENVIR. REP. (BNA) 1273 (1977).

that it had the *sole* authority to issue permits to federal facilities.[185] The Supreme Court agreed. Since section 313 was the only section of the FWPCA expressly obliging federal facilities to comply with general measures and state "requirements" to abate water pollution, and since that section did not expressly provide that federal dischargers must obtain NPDES permits, there was no clear and unambiguous congressional intent shown.[186] The Court also said section 313 and the rest of the FWPCA did not expressly state that obtaining a *state* permit under NPDES is a "*requirement* respecting control or abatement of pollution."[187] EPA's position was that the FWPCA required federal facility compliance only in the applicable effluent limitations and compliance schedules promulgated by a state under its EPA-approved plan.[188] California pointed out that the distinction between "permits" and "effluent limitations" ignores the fact that the mechanism by which such limitations are formulated and applied to individual dischargers is by the permit system established in section 402.[189] The state concluded that if it was unable to subject federal installations to its own NPDES program, then it would be without effective means to formulate and apply the conditions which EPA must make part of the permit for each individual source.[190] The Court did not agree, finding instead that "it was evident that Congress contemplated that EPA was capable of carrying out this function as well":

> The presence of EPA as a permit-issuing authority means that although federal dischargers are not securing state NPDES permits they are nevertheless being subjected to the administrative authority of a federal agency which is required to make a State's more 'stringent limitation[s] including those necessary to meet water quality standards, treatment standards or schedules of compliance' part of the conditions of the permits it must issue. We recognize that there may be some problems of coordination between EPA and the state pollution control agency . . . [but] we believe that these possible problems of coordination in the administration of water quality standards fail to provide an adequate basis for finding a clear congressional intention to subject federal dischargers to the degree of control inherent to state permit requirements. . . .[191]

(3) Present Status

The EPA has made it explicit that it will issue permits to federal dischargers, and that state programs for issuing permits do not

185. 96 S. Ct. 2022, 2027 (1976).
186. *See id.* at 2032, 2033.
187. *Id.*
188. *Id.* at 2028-2029.
189. *Id.* at 2029.
190. *Id.*
191. *Id.* at 2032.

cover federal agencies and instrumentalities.[192] It has deemed it necessary to reiterate its program policies in light of the two Supreme Court decisions discussed above.[193] The EPA has also accepted the burden of monitoring the compliance of federal facilities with the law.[194] It appears a bit uncertain, however, about its authority to enforce that compliance: "It is questionable whether EPA has the authority to initiate judicial actions against Federal facilities under . . . section 309 of the FWPCA, unless those facilities are operated by an entity such as TVA, a Federal corporation."[195] Consequently, EPA adopted what it calls the "escalation approach."[196] If compliance or satisfactory progress toward compliance cannot be achieved at the local level, the matter is referred to the EPA Office of Federal Activity for further action. If no interagency resolution is achieved at that level, the Office of Management and Budget (OMB) makes the final decision.[197]

Under the FWPCA the remaining enforcement mechanism available to the states for federal facility compliance with discharge standards or compliance schedules is a citizen suit under section 505.[198] The cost of such suits, in terms of time, money and manpower limits their utility. The courts, too, have interpreted the section 505 right to sue quite restrictively. In *Massachusetts v.*

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192. 38 Fed. Reg. 13528 (1973) (codified in 40 C.F.R. §§ 125.2(a)(2), (b) (1976)).

193. In a memorandum from the Director, Office of Federal Activities to Assistant Administrators and Regional Administrators the EPA interpreted the decisions as judicial affirmation of the position of the Executive Branch as set forth in Executive Order 11752 (*See* note 123 *supra*). (The memo was dated Nov. 24, 1976, and appears in 7 ENVIR. REP. (BNA) 1174 (1976) [hereinafter cited as EPA letter]. Since this Executive Order has not been rescinded, it could be used to force federal facilities to develop their own regulations for meeting the "substantive standards and limitations" of water pollution. If the Executive Order is to have any meaning at all, it must have some effect. To give it effect, it must have some enforcement mechanism. Theoretically, a citizen suit could be brought under section 505 of the FWPCA (33 U.S.C. § 1365 (Supp. IV, 1974)) demanding the polluting agency to comply with the Executive Order, or else exempt itself under section 5 of that Order:

> The heads of Federal agencies, in consultation with the [EPA] Administrator, may from time to time, identify facilities or uses thereof which are exempted from applicable standards specified . . . in the interest of national security or in extraordinary cases in which it is in the paramount interest of the United States. 38 Fed. Reg. 34,793, 34,796 (1973).

194. "All Federal facilities considered to be major sources [of pollution] were covered by NPDES permits at the end of 1974." EPA ENFORCEMENT: A PROGRESS REPORT DEC. 74-DEC. 75 92 (1976).

195. EPA letter, *supra* note 193, at 1176.

196. *Id.*

197. *Id.* Both the EPA letter and the Executive Order discussed in notes 122, 123 and 193 *supra* allow the parent agency to exempt its facilities from compliance with the FWPCA. Final authority rests with OMB.

Another recent federal case that spoke to the federal-state jurisdiction conflict was United States v. California, 403 F. Supp. 874 (E.D. Ca. 1975). The district court held that, although the Bureau must apply to the state for water-appropriation permits for its projects, the state role is ministerial, and it must issue the permit without conditions whenever unappropriated waters are available.

198. 33 U.S.C. § 1365 (Supp. IV, 1974).

United States Veteran's Administration[199] a federal installation was charged with violation of the timetable contained in its NPDES permit. The plaintiff state had failed to wait the sixty days required by section 505 after giving notice of intent to file suit before actually bringing the suit. The United States Court of Appeals for the First Circuit affirmed the lower court's dismissal for lack of jurisdiction. The appellate court also said that the state could not bring the action under federal question jurisdiction because of sovereign immunity. The court based its reasoning on a reading of the FWPCA and its legislative history, and concluded that Congress consented only to suits brought under the exact wording of section 505, and did not extend this waiver to non-statutory common law nuisance suits.[200]

In sum, any compliance of a federal facility with the requirements of the FWPCA probably will be voluntary rather then mandatory.[201] If a Bureau irrigation project is found to be a federal facility and is determined to be a point-source discharger of pollutants into navigable waters, thus requiring a permit under the NPDES program, there is no existing legal authority that would give the EPA power to force the Bureau to get a permit. The decisions in *Hancock v. Train*,[202] and *EPA v. California*,[203] which put the sole responsibility of regulation on the EPA, coupled with the decision in *Colorado PIRG*,[204] which denied EPA authority over pollutant materials under control of another federal agency, leave federal facilities without legal restraint on their water pollution activities.[205]

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199. 541 F.2d 119 (1st Cir. 1976).

200. *Id.* The EPA also wants to restrict FWPCA actions to the D.C. District Court. 7 ENVIR. REP. (BNA) 1271 (1977).

201. *But see* note 193 *supra.*

202. 96 S. Ct. 2006 (1976).

203. 96 S. Ct. 2022 (1976).

204. 96 S. Ct. 1938 (1976).

205. There are avenues of relief available to a party whose land is injured by irrigation waters. The Public Works for Water, Pollution Control and Power Development and AEC Appropriation Act, 1973 (87 Stat. 318, Pub. L. 93-97 (1973)) authorizes payment of reclamation funds for "damages caused to owners of lands or other private property of any kind by reason of the operation of the United States, its officers or employees, in the survey, construction, operation, or maintenance of irrigation works." If the claimant is to recover damages, he must show that some activity of the Bureau through one of its irrigation districts was the "direct cause" of the damage complained of. Obviously, the proof will be difficult. Other possibilities for redress include the Federal Tort Claims Act (28 U.S.C. §§ 1346(b), 2671-2680) and the Tucker Act (28 U.S.C. §§ 1346(a)(2), 1491), but at least one writer has concluded that the remedies available to the landowner whose property has been damaged by seeping irrigation waters are "plainly inadequate." Meshorer, *Once-Released Irrigation Waters: Liability and Litigation*, 36 MONT. L. REV. 14, 27 (1975). *See also* Davis, *Ground Water Pollution: Case Law Theories for Relief*, 39 Mo. L. REV. 117 (1974). Several possibilities exist for litigation in the irrigation area. For example, "landowner" may include an owner of water rights which have been damaged by pollution. His land may also be damaged by salinization from the use of polluted, *i.e.*, saline, waters. He may be subject to diminished stream-flow and water quality because of upstream irrigation projects.

IV. Conclusions

Irrigation is not going to be stopped just because it causes severe problems. The problems, however, are not going to go away if ignored. What is needed is some form of control, some method by which the degradation of water quality and the resulting degradation of land productivity can be brought to a halt. The problem with enforcing even existing law is that it must provide solutions that are basin-wide in scope. The individual applicator of the irrigation water has no control whatsoever over the quality of water he receives. He must take whatever the upstream user delivers to him. Even with the most efficient management practice, the water that leaves his fields via drainage ditches as return flow will be somewhat degraded in quality. If his particular use happens to be one that causes the water to exceed effluent limitations, he is the polluter, even though his use may add only a fraction to the total pollutant load of the water. He cannot be the one to bear the entire cost of alleviating the problem.

The Bureau of Reclamation is the only party having sufficient control and sufficient resources to manipulate basin-wide water quality problems. It designs, builds and provides overall management services for the irrigation projects. It does the cost-benefit analysis. It controls the dams which provide the reservoirs with water for irrigation. It has the expertise, and it should bear the responsibility. Yet the recent Supreme Court decisions in *Hancock v. Train*,[206] *Train v. Colorado PIRG*,[207] and *EPA v. California*[208] effectively put the Bureau out of reach of the states. The EPA doubts its own authority to do anything other than "jawbone" another federal agency into compliance with its regulations.[209] And the Bureau may have provided its own escape route from responsibility by the recent revisions to the reclamation law allowing it to build irrigation projects on land it does not own.[210] For projects for which it already owns the land, the revised law allows the Bureau to "reconvey" title to the land by renegotiating the contracts with the landowners.[211] If the Bureau can be successfully resisted in contract negotiation, however, it seems that it might thus retain some responsibility associated with its ownership.

All this leaves the local irrigation district in a precarious position. By contract with the Bureau, they are responsible for meeting all pollution control requirements. Yet they are without the resources or the capability to do so. Since each irrigation district

206. 96 S. Ct. 2006 (1976).
207. 96 S. Ct. 1938 (1976).
208. 96 S. Ct. 2022 (1976).
209. *See* note 194 *supra*.
210. *See* note 150 *supra*.
211. *Id.*

and each irrigator contributes only partially to the problem, they are in no position to provide an overall solution. They must meet water quality standards and effluent limitations or be in violation of the law, but they have no recourse against upper polluters or against the Bureau. Their only respite under the FWPCA is the definition in the EPA regulations of "irrigation return flow." If they can so manage their irrigation operations to eliminate "surface" flow from point of application to point of discharge into navigable waters, they are no longer discharging pollutants within the exact wording of the law.

Problems do not go away by definition. No solutions can be achieved by changing the meaning of the words used to define the problem. Perhaps the FWPCA does not deal with the problem of irrigation-caused water pollution in an explicit manner because the legislation's authors were more concerned with industrial pollution. Perhaps the EPA found the law unworkable in its present form. Whatever the reason, the EPA is charged with enforcing the law, not at its administrative convenience, but for the purpose of reducing and eventually eliminating water pollution. The nation's water users, be they irrigators or municipalities needing drinking water, are not going to be pleased, and cannot long live with the results from continually declining water quality.

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