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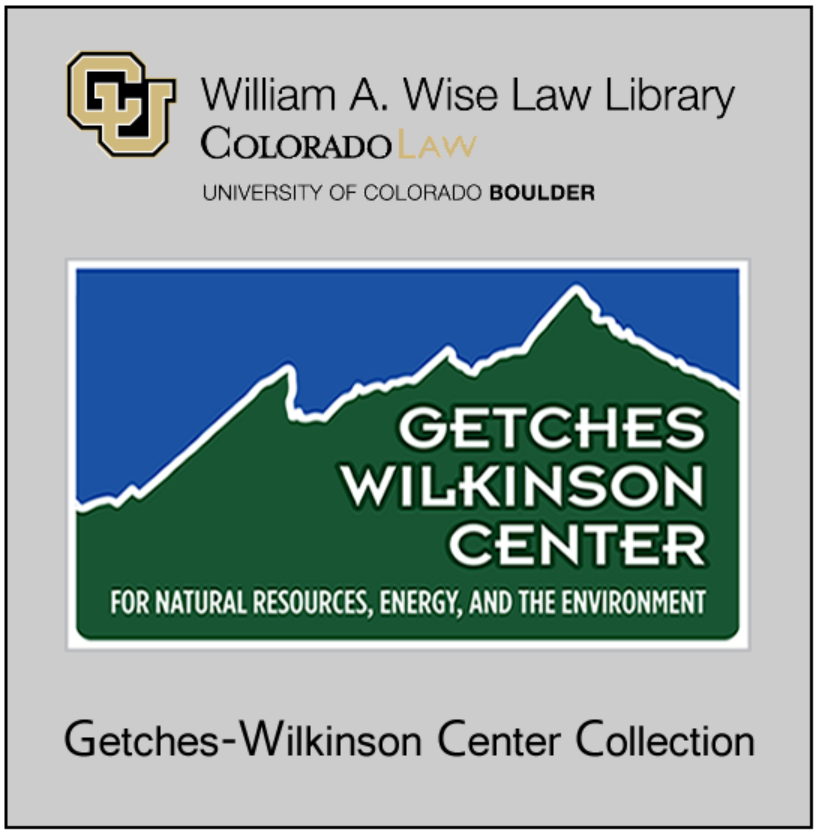

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THE NEED FOR A REGIONAL DRAINAGE DISTRICT IN WATER QUALITY REGULATION

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I. INTRODUCTION

A. Summary

Policy-makers at the federal and state levels are exploring alternative cost-effective approaches for water quality regulation, particularly options for controlling non-point sources. While questions abound over the appropriate means for controlling non-point sources, there is good reason to focus on regulatory options for controlling irrigation return flows because they can be addressed through farm-level water management and technological improvements. Whatever the regulatory approach or management level, an essential aspect of any program to regulate agricultural return flows is assigning responsibility for pollution control to the polluters. This need for accountability can be satisfied with the designation of an intermediate, regional entity -- a regional drainage district -- to coordinate the operation of the program and the activities of individual farmers to meet requirements of the regulatory agency. A regional entity also would be well-positioned to identify and respond to needs for regional services or activities to accomplish water quality objectives.

B. References

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II. Water Quality Regulation and Irrigation Return Flows

A. Overview of the Problem

1. Twenty years of water quality regulation under the CWA have resulted in some significant improvements in surface water quality, primarily through regulation of municipal and industrial point source discharges. These gains have not come cheaply; EPA estimates that the total costs of water pollution control by 1990 were $42.4 billion (in 1986 dollars annualized at 7 percent)(cited in Frederick,p.1). Yet, there are still a great many surface water bodies in the United States that do not support designated uses. Because non-point sources are the principal contributors of nutrients and toxics, there is increasing concern that additional investments in technology-based point-source controls will not produce commensurate gains in water quality.

2. Policy-makers at the federal and state levels are exploring alternative cost-effective approaches for water quality regulation, particularly options for controlling non-point sources. By nature, non-point sources are diffuse and variable, emanating from a large number of independent sources and land-use activities, and thus tend to be difficult to control. Agricultural runoff is the single largest contributor to non-point source pollution, including nutrient loadings, siltation, sediments, pesticides, toxics and salinity. Options for controlling many of these different types of agricultural runoff are limited, requiring changes in land use patterns and practices.

3. However, irrigation return flows, which transport pesticides, toxic trace elements, salts and other constituents are one subset of agricultural runoff more conducive to regulation. Unlike other types of agricultural activity, irrigation often involves the use of surface, and subsurface, drains and ditches to collect and convey drainage (i.e., surface and subsurface return flows) to a point of disposal or recycling. Second, irrigation return flows are a direct function of water application and water use efficiency both of which can be measured. Thus, irrigation return flows can be addressed through farm-level water management and technological

improvements. In short, while questions abound over the appropriate means for controlling non-point sources generally, there is good reason to focus on regulatory options and management measures for controlling irrigation return flows.

B. **Regulatory Options**

1. In policy debates, and academic literature, attention is being given to the appropriate control mechanisms for irrigation return flows. The tendency is to follow the same approach used for point sources; namely uniform technology standards in the form of Best Management Practices (BMPs). However, there is growing interest in incentive-based approaches, such as effluent fees, input pricing, tradable discharge permits, that have the potential to be more cost-effective than BMPs in controlling irrigation return flows because they allow cost-sharing and flexibility through decentralized decision-making.

2. A second issue of debate is the appropriate level of management for non-point source regulation; i.e., site-specific management plans or basin-wide water quality plans.

C. **The Role of a Regional Entity in Regulating Irrigation Return Flows**

1. Whatever the regulatory approach or management level, an essential aspect of any program to regulate agricultural return flows is assigning responsibility for pollution control to the polluters.

2. In establishing this accountability, a regulatory system has to make sense from the perspective of the regulated community as well as the regulators. It has to balance the need for centralized authority at the state or regional level to ensure compliance with the efficacy of decentralized, site-specific planning and management.

(a) From the perspective of the regulator, the system should be efficient, with managable administrative requirements to ensure compliance with water quality standards or other environmental

objectives. In the case of irrigated agriculture, the regulatory agencies are better off with as few regulated entities to administer and monitor as possible. The traditional approach of issuing individual discharge permits to farmers is a daunting regulatory prospect. Similarly, verifying BMPs on individual farms poses a significant burden.

(b) The regulated agricultural community will be more likely to comply with a program that ensures maximum flexibility to take account of farm-level environmental and economic conditions in achieving pollution control objectives. Farmers also have come to enjoy a tradition of independence and autonomy relative to other regulated industries, and are more likely to accept regulatory approaches which work through existing or familiar institutions that they control (i.e., water districts).

(c) The design of the regulatory approach also should take into account the nature of the pollution problem to be solved. For example, irrigation return flows are not confined to the boundaries of a given farm or water district. In some cases, farms without drains or other collection systems contribute to the regional water table or to subsurface drainage on neighboring farms (through lateral migration). In other cases, the effective management of return flows may depend on regional collection and control of return flows. In these situations, the regulatory system should accommodate the regional nature of pollution problems due to the non-exclusive nature of drainage flows and high groundwater tables.

3. In this context, a key component in any program to control irrigation return flows is the creation or designation of an intermediate, regional entity as an accountable "link" to coordinate the operation of the program and the activities of individual farmers with the requirements of the regulatory agency. A regional entity also would be well-positioned to identify and respond to needs for regional services or activities to accomplish program goal.

III. AGRICULTURAL DRAINAGE IN THE GRASSLANDS SUBBASIN

A. **Drainage Related Problems in the Grasslands**

1. Drainage from irrigated agriculture poses one of the most significant environmental problems in the San Joaquin Valley today. On the westside, toxic trace elements (notably selenium, boron, arsenic, molybdenum) and salts occur naturally in the soils, and are mobilized and transported in the subsurface drainage water as a result of irrigation.

2. The Grasslands region of the San Joaquin River Basin faces formidable drainage problems. In the past, drainage management practices in this 92,000 acre area largely consisted of agricultural districts and individual farmers relying on discharge to the San Joaquin River via various man-made and natural channels as the preferred method of drainage management.

3. This practice has resulted in severe degradation not only to local riparian and river habitats, but also to the extensive and valuable regional wetlands.

B. **Solution to the Problem is Known**

1. The solution to this problem lies in improved irrigation management at the individual farm level, combined with limited operational changes at the water district level. The efficacy of this approach has been acknowledged by a broad range of interests and experts, and is the cornerstone of the recommendations which emerged from the eight-year, $50 million Federal-State San Joaquin Valley Drainage Program (SJVDP) and the California Technical Committee which preceded it. Some improvement has already occurred concurrent with curtailed water deliveries during the recent drought.

2. Specific drainage management practices have been identified which can control drainage generation at the source, including measures to: improve management of irrigation systems (e.g.,irrigation scheduling); improve present irrigation practices (e.g., shortening of furrows, use of tailwater return systems) and adopting new irrigation methods. These measures assume the use of existing technology and represent the lowest cost drainage

management method available to growers.

C. **Regulatory Context**

1. California has adopted numerical water quality standards which are not being met in Central Valley streams because of the discharges of subsurface drainage water from agricultural operations. Under state law (unlike federal law), the State Water Resources Control Board has the authority to regulate irrigated agriculture under a permit system.

2. The state has adopted an implementation plan for achieving water quality objectives which includes three basic enforcement options: voluntary measures, regional mangement practices, discharge permits. However, the current voluntary program lacks a meaningful mechanism for assessing compliance by individual farmers or water districts, sidesteps the issue of enforcement, and appears unlikely to be successful in meeting water quality standards.

3. At the federal level, the 1987 Clean Water Act amendments require states to target critical areas for non-point source control and are encouraged to adopt appropriate BMPs to address those problems (section 319).

4. Water districts have general authority to provide drainage services but lack the incentive and clear legal mandate to play a decisive role.

5. The regulatory tools and institutions for reducing agricultural drainage pollution in the Grasslands are in place. EDF is investigating the feasibility of using a system of tradable discharge permits. The allowable pollution load would be assigned to a regional drainage district, which in turn would have authority over existing water districts that coordinate and finance water and drainage management programs and facilities at the farm- and district-levels.

IV. DEFINITION OF A REGIONAL DRAINAGE DISTRICT

A. Authorities

1. At a minimum, a regional drainage district should have powers and capabilities necessary to: operate and manage drainage facilities and discharges at a regional level; regulate and enforce drainage management practices as the entity "accountable" to state or local regulatory agencies; oversee a system of exchanges among holders of discharge allowances (districts or farmers), and perhaps act as a "market maker" (a broker) of pollution allowances; monitor and evaluate irrigation practices, drainage management and disposal in the region; provide technical and/or financial assistance to farmers in defining and meeting drainage management objectives; coordinate activities and management with water delivery schedules and constraints of the Bureau of Reclamation, and the requirements of other agencies; levy fees or assessments to enforce regional objectives or to construct and operate regional drainage facilities; impose sanctions (including restrictions on water use, tiered water pricing, effluent fees); contract with other local, state or federal entities.

B. **Relationship to Existing Entities**

1. There are 14 water districts and other types of agencies that supply water to farmers within the Grasslands subbasin. In addition, there are six drainage districts, which provide drainage services to their members. Several of the agencies both supply water to and provide drainage for their members.

2. Each of these existing agencies would be members of the regional drainage district and would receive allowances that would quantify their respective legal entitlements to discharge pollutants regulated by state and Federal law.

V. ROLE OF THE REGIONAL DRAINAGE DISTRICT IN WATER QUALITY MANAGEMENT

A. **Purpose**

1. The state, through the regional water quality authority, has authority to set loading objectives consistent with water quality standards. The regional drainage district would be responsible to the state agency for compliance with the aggregate pollution

discharge limits for the Grasslands subbasin. In turn, the regional drainage district would allocate pollution allowance to each of its member agencies and would have authority to monitor and enforce (i.e., impose sanctions) the loading limitations established by the allowances.

B. **Membership**

1. The regional drainage district would be comprised of existing water and drainage entities and individual farmers within the Grasslands subbasin.

C. **Implementation**

1. Each member agency would be responsible for complying with the pollution limits set forth in its allowance. The means of achieving required loading reductions would be determined by the member agency in conjunction with member farmers. For example, the required reduction could be met by reductions in applied water, changes in crop patterns, treatment, or acquisition of additional allowances from other participating agencies (i.e., members could transfer allowances to other agencies to enable the latter to increase their discharges above levels originally assigned to them).

VI. **CONCLUSION**

1. The success of a tradable permit system, or any regulatory approach, requires unambiguous lines of authority regarding the legal status of the regulatory instruments, regional-level reporting and enforcement responsibility, and farm-level accountability.

2. In the Grasslands, this need for accountability is best satisfied at the regional level through a regional entity (e.g., Regional Drainage District, independent third party, a joint powers authority, or a local authority) with authority to oversee, facilitate, and help enforce a regulatory system (including tradable discharge permits) among water districts, taking into

account the role and jurisdiction of existing agencies in the Grasslands region.

(a) The regional drainage district satisfies regulatory concerns over ease of administration and minimizes the "information burden" associated with mandating specific technological controls and management practices for individual dischargers. This should increase the effectiveness of the state's water quality enforcement because a single regional entity would be accountable to the regulatory agency rather than 20 separate entities under the current system. Member districts would have the incentive to pass responsibility for pollution control on to their individual farmers.

(b) The concerns of the regulated community about flexibility and autonomy are satisfied by leaving intact the existing relationships between water districts and member farmers who control the districts and have information to determine the most appropriate pollution control measures.

(c) The regional drainage district enables a watershed or basin-wide approach consistent with environmental and operational boundaries of the pollution problem.

(d) The proposed regional drainage district provides a template for the formation, authorization and incorporation of a regional entity to serve as a blueprint for other agricultural regions.

3. While water quality and water supplies typically are managed separately -- through different institutions, according to different legal and administrative procedures-- issues of quality and supply are intimately related. In the water quality arena, a regional entity with authority and accountability for controlling irrigation return flows could make explicit the potential for addressing agriculture-induced water quality problems through water (supply) application and management.