TITLE-22 WHITE PAPER

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I. Terms of Endearment

In California, the legal term currently used to describe treated wastewater is "recycled water," defined as (Section 13050, Water Code):

> *(n) Recycled water means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.*

A "direct beneficial use" is further defined as (Title 22, Section 60301):

> *(d) Direct Beneficial Use. Direct beneficial use means the use of reclaimed water which has been transported from the point of production to the point of use without an intervening discharge to waters of the State.*

Controlled uses are described, but not defined. These are discussed later on in this paper. Generally, up until recently, "reclaimed wastewater," and "reclaimed water" were the terms used. In 1995, SB1722 amended the Water Code to substitute "recycled water" for "reclaimed water." Subsequently, AB1247 substituted the term "recycled water" for "reclaimed water" and the term "recycling" for "reclamation" throughout the Water Code, the Fish and Game Code, the Government Code, the Health and Safety Code, the Public Utilities Code, and the Streets and Highway Code.

Thus, the regulations governing treatment and use of recycled water are now called "water recycling criteria." Formerly, these were "reclaimed wastewater criteria, or "water reclamation criteria." The permits or orders under which producers and users of recycled water operate are now called "water recycling requirements" or "water reuse requirements." Formerly, these were "water reclamation requirements." "Wastewater agencies" with "water reclamation facilities" are now referred to as "water recycling agencies" with "water recycling facilities." Table 1 summarizes these changes.

Table 1. Terms

Old	New
Reclaimed wastewater	Recycled water
Reclaimed water	Recycled water
Water reclamation	Water recycling
Water reclamation facility	Water recycling facility
Wastewater agency	Recycled water agency
Reclaimed wastewater criteria	Water recycling criteria
Water reclamation criteria	Water recycling criteria
Water reclamation requirements	Water recycling requirements
Water reclamation requirements	Water reuse requirements

Although there has been an effort to amend all of the policies and regulations within the state to reflect these changes, some regulations and many permits still use the old terms. Common verbal references are also quite mixed. Generally, though, it seems to be politically and now legally unacceptable to use any words that might directly associate the water with its source, which is municipal or domestic sewage. Recycled water is also considered to be generated from operations other than municipal and domestic wastewater treatment, including agricultural operations, as from animals, and industrial operations, as from production, manufacturing, or processing (Section 13050, Water Code). To further confuse the picture, the existing Title 22 regulations still define recycled water as coming **only** from domestic wastewater (Section 60301(a), Title 22), this now also being incompatible with the regulations elsewhere.

So it seems that, just as the nationally accepted change from using “sludge” or “sewage sludge” to using “biosolids” was hoped to improve public relations and promote beneficial reuse of solids derived from sewage, “recycled water” could be intended for the same. On the other hand, the changes could also be perceived as bringing wastewater from this particular source under a larger regulatory umbrella. “Biosolids” as defined today are one of the most regulated substances in the United States.

II. Title 22 Regulations

California has twenty-nine titles in its Administrative Codes. Title 22 generally refers to Environmental Health regulations, under the purview of the Department of Health Services (DHS).

A. Development of the Title 22 Regulations

What are known as the "Title 22" standards for water reclamation were first established under Title 22, Division 4, Environmental Health, in the California Administrative Code in 1978. These standards addressed types of use which included new uses, treatment levels, and performance and design parameters. Prior to that time, there were the 1968 Title 17 Public Health regulations addressing categories of water uses and treatment levels. Over the years, issues under discussion and subsequent revisions have focused on treatment requirements for disinfection and filtration.

B. Current Status of the Regulations

The most recent version of the proposed Water Recycling Criteria are those from March 1997 (Appendix A). These have been submitted for final review to the Office of Regulations and are expected to be adopted soon (Jeff Stone, DHS, p.c., 6/16/98). The changes from the 1978 criteria can be summarized as follows (IRWD, 1997):

- Contains definitions for three levels of wastewater treatment
- Provides new lists of water uses for each level of treatment defined
- Expands monitoring requirements for using recycled water in unrestricted recreational impoundments
- Provides standards for use of recycled water in commercial cooling towers
- Contains specific definitions for use area requirements
- Provides standards for use of recycled water for dual-plumbed facilities
- Includes language changes for engineering reports, design/operational, and sampling requirements sections
- Represents newest acceptable treatment requirements

The latest version of the proposed groundwater recharge guidelines are also dated March 1997 (Appendix B). These guidelines are not near finalization. A new statewide subcommittee of the Recycled Water Committee is being formed to specifically address the issue of what constitutes "incidental groundwater recharge" (Jeff Stone, DHS, p.c., 6/16/98). This is discussed in more detail in Section IV.A.1. of this paper.

1. Water Recycling Criteria

There are three key definitions in the proposed criteria which relate to level of treatment. These are:

> *Section 60301.220* ***Disinfected Secondary-2.2 Recycled Water****--Recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a Most Probable Number (MPN) of 2.2 per 100 ml. utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed MPN of 23 per 100 ml. in more than one sample in any 30-day period.*
>
> *Section 60301.225* ***Disinfected Secondary-23 Recycled Water****--Recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed an MPN of 23 per 100 ml. utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 240 per 100 ml. in more than one sample in any 30-day period.*
>
> *Section 60301.230* ***Disinfected Tertiary-Recycled Water****--Filtered and disinfected wastewater that meets the following criteria:*
> *(a) the filtered wastewater has been disinfected by either:*
> *(1) a chlorine disinfection process that provides a CT (chlorine concentration times modal contact time) value of not less than 450 mg-minutes/liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or*
> *(2) a disinfection process that, then combined with the filtration process, has been demonstrated to reduce of plaque-forming units of F-specific bacteriophage MS2, or polio virus, per unit volume of water in the wastewater to one hundred thousandths (1/100,000) of the initial concentration in the filter influent throughout the range of qualities of wastewater that will occur during the recycling process. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.*

(b) the median concentration of total coliform bacteria measured in the disinfected effluent does not exceed a MPN 2.2 per 100 ml. utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed a MPN of 23 per 100 ml. in more than one sample in any 30-day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 ml.

Beneficial uses of recycled water have then been listed under the above treatment levels requirements (Table 2). Disinfected secondary-2.2 recycled water is generally considered suitable for irrigating areas that have restricted human access or contact, including some recreational impoundments, golf courses, landscaped freeway areas, ornamental nurseries and sod farms. Acceptable uses include irrigation of food crops, orchards and vineyards, where edible portions do not come into contact with the recycled water. Other uses are irrigating pasture for animals producing milk for human consumption, fodder and fiber crops, non-food bearing trees under certain conditions, and for certain types of impoundments, such as restricted recreational impoundments and publicly accessible impoundments at fish hatcheries. Disinfected secondary-23 recycled water is allowed for similar uses, excepting for food crops and restricted recreational and fish hatchery impoundments.

Tertiary recycled water has a wider range of acceptable uses, particularly those with unrestricted human access or contact, such as irrigation of food crops, parks and playgrounds, school yards and playgrounds, residential landscaping, and golf courses. It is allowed for use in unrestricted recreational impoundments with special (and new) monitoring requirements for pathogens. It is allowed for use in cooling and air conditioning systems with cooling towers, evaporative condensers or sprays with special equipment. It is allowed for several other uses, such as commercial laundries and flushing toilets and urinals, for which the other two treatment levels are not.

Table 2. Uses of Recycled Water

The proposed criteria contain Article 4, Section 60310, on use area requirements. These are detailed specifications on setbacks for irrigation activities and impoundments. No irrigation with disinfected tertiary recycled water can take place within 50 feet of any domestic water supply well, unless all of the following conditions are met: that a geological investigation shows an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface; that the well has a seal extending from the surface into the aquitard; that the well is housed; that the ground surface around the wellhead allows surface water to drain away from the well; and that the well owner approves of the elimination of the buffer zone requirement. No irrigation or impoundment of disinfected secondary-2.2 or disinfected secondary-23 recycled water can take place within 100 feet of any domestic water supply well. No irrigation or impoundment of undisinfected secondary recycled water can take place within 150 feet of any domestic water supply well.

Recycled water systems must be separate from potable water systems for irrigation and other uses. Standards are referenced for dual-plumbed recycled water systems in Article 5, Section 60313.

There are new contents identified for inclusion in engineering reports in Section 60314. The intended use area for recycled water must be identified in terms of the number, location, and types of facilities with dual-plumbed systems and how many people will be using them. Piping systems are to be described in relation to potable water systems, with inherent backflow prevention measures. Cross-connection prevention measures, and methods to test for success of

same, are to be described. Design and operational requirements are specified, as well as sampling and analysis procedures, in the final sections of the proposed criteria. These are similar to the existing criteria.

2. Groundwater Recharge Guidelines

The existing groundwater recharge regulations, in Article 5.1, Section 60320 of Title 22, identify the Department of Health Services' (DHS) role in making recommendations to the Regional Water Quality Control Boards (RWQCB) on proposals for new or expanded groundwater recharge projects. Factors to be considered for review by the DHS are: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; resident time; and distance to withdrawal. The DHS is to hold a public hearing and make recommendations on public health aspects to the RWQCB.

The proposed criteria define and categorize recharge projects, identify treatment requirements and performance standards, specify site requirements, describe monitoring program components, and describe elements to be included in engineering reports for these kinds of projects. A key section in these proposed criteria is Section 60320.01, Planned Groundwater Recharge Projects. This section distinguishes planned groundwater recharge projects from incidental recharge projects as follows (NOTE: the terminology here still reflects the old "reclaimed water" usage):

> *(a) This article shall apply only to planned groundwater recharge projects using reclaimed water. The creation or operation of recharge facilities to cause the infiltration or injection of reclaimed water into a groundwater basin is evidence of a planned groundwater recharge project.*
> *(b) A wastewater disposal project which is not designed for groundwater recharge, but which incidentally results in portions of the treated wastewater reaching groundwater or discharging to an ephemeral stream, is not covered by this article.*

The above, i.e., types of projects that are or are not covered under this, is discussed further in Section IV.A.1 of this paper as an implementation issue.

Groundwater recharge projects are to be identified as four types:

Project Category I--Surface spreading project that uses recycled water that has been treated to tertiary standards (oxidized, filtered and disinfected) with organics removal.

Project Category II--Surface spreading project that uses recycled water that has been treated to tertiary standards (oxidized, filtered and disinfected).

Project Category III--Surface spreading project that uses water that has been treated to secondary standards (oxidized and disinfected).

Project Category IV--Direct injection project that uses recycled water that has been treated to tertiary standards (oxidized, filtered and disinfected) and subjected to organics removal.

Oxidized wastewater is required for all project categories i.e., the water quality prior to recharge cannot exceed 10 milligrams per liter (mg/l) total organic carbon (TOC), 30 mg/l suspended solids (SS), and 30 mg/l biochemical oxygen demand (BOD). Filtered wastewater is required for project categories I, II, and IV. Disinfection for categories I, II, and IV requires the median number of total coliform organisms in the wastewater not to exceed 2.2 per 100 ml. The total coliforms present cannot exceed 23 per 100 ml in more than one sample within any 30-day period. For category III projects, the median number of total coliforms cannot exceed 23 per 100 ml and the total coliforms cannot exceed 240 per 100 ml in more than one sample within any 30-day period. Organics removal for project categories I and IV means granular activated carbon adsorption or reverse osmosis treatment, in which the TOC in the wastewater must be reduced to concentrations specified in the proposed criteria, dependent on the recycled water contribution to any affected domestic water supply well and the project category. See Table 3. The criteria include other water quality requirements.

Table 3. Maximum Allowable TOC after Organics Removal

Recycled Water Percent Contribution	Maximum TOC (mg/l) Cat. I--Surface Spreading	Cat. IV--Direct Injection
0-20	20	5
21-25	16	4
26-30	12	3
31-35	10	3
36-45	8	2
46-50	6	2

Source: Proposed Title 22, Article 5.1, Section 60320.03(d)

Section 60320.05 addresses Recharge Site Requirements. For project categories II and III, the maximum recycled water contribution to any domestic water supply well cannot exceed 20 percent of the total flow. For project categories I and IV, the maximum contribution cannot exceed 50 percent of the total flow. Surface spreading projects must meet minimum depth to groundwater requirements, based on project category and initial percolative capacity. These are shown in Table 4. No projects are allowed where the initial percolative capacity exceeds 0.3 in/min., where the initial percolative capacity is determined once by testing of the spreading area prior to the start of the project.

Table 4. Minimum Required Depth-to-Groundwater for Surface Spreading Groundwater Recharge Projects

Initial Percolative Capacity (in./min.)	Minimum Depth-to-Groundwater (ft.) Cat. I	Cat. II	Cat. III
<0.2	10	10	20
<0.3	20	20	50

Source: Proposed Title 22, Article 5.1, Section 60320.05(b)

There are minimum retention times and horizontal separation requirements described in this section. Recycled water must be retained underground for 6 months for project categories I and II and 12 months for categories III and IV prior to being withdrawn at a domestic water

supply well. The surface spreading project must occur at least 500 ft. from a domestic water supply well for categories I and II; it must be 1000 ft. from a well for category III. For direct injection project, category IV, the distance must be 2000 ft. from a well. Finally, this section describes monitoring well locations.

Section 60320.06 details the monitoring and compliance methods and frequencies, for both the recycled water quality prior to recharge and monitoring well water quality. Determinations of the maximum recycled water contribution, depth to groundwater, minimum retention time underground and horizontal separation are described here as well.

Section 60320.07 contains special contents for engineering report submissions for recharge project proposals. Section 60320.08 describes acceptable alternatives to recharge site requirements, which must be demonstrated by the project sponsor and reviewed by the DHS and RWQCB. A final Section 60320.09 in these proposed criteria offers an exception for recharge projects which are designated as research and demonstration projects.

III. Agency Responsibilities

The California state agencies with primary responsibility over recycled water are the Department of Health Services (DHS), which works with local (county) Departments of Health (DHs), and the State Water Resources Control Board (SWRCB), which works with nine Regional Water Quality Control Boards (RWQCBs). The relationship of these two agencies, as well as the roles of recycled water producers/suppliers and users, are shown in Table 5.

A. Department of Health Services

The DHS has had as its key responsibilities in water recycling: (1) the establishment of criteria to protect public health, (2) the advisement of the RWQCBs in the issuance of water reclamation requirements (now termed “water reuse requirements” or “water recycling

requirements"), and (3) abatement of serious threats to public health. Advisement rests at the state level with the DHS, but delegation of project review to local health agencies can occur. Additionally, through Title 17, the DHS has been in charge of cross-connection control.

B. Regional Water Quality Control Boards

Water reclamation requirements are established at the regional level, through the RWQCBs, who also have the exclusive authority to enforce them. Only in cases where there might be serious public health threats is the DHS to step in, for abatement of contamination.

C. Changes due to SB 1722

SB 1722, in the statutes of 1994, became effective in January of 1995 as codified in Section 13554.2 of the Water Code. Its overall purpose was to clarify the role of the DHS in its capacity of advisement to the RWQCBs in the issuance of water recycling requirements. The legislation made advisement more formal, such that the DHS is now required to review projects submitted to the agency and make a determination on them in form of "approval" or "disapproval." Previously, the DHS made "recommendations" to the RWQCBs as deemed necessary, based on its own review and on comments submitted through a public hearing process. SB 1722 also provided for the DHS to be reimbursed for such work.

A Memorandum of Agreement between the DHS and the SWRCB on the use of recycled water was finalized in early 1996 (Appendix C). Its purposes were to clarify the responsibilities of both agencies and better define the project review and approval process.

Some of the responsibilities of the DHS were shown as follows:

- Establishment of statewide reclamation criteria for the various uses of reclaimed water
- Advising RWQCBs in the drafting of water reclamation requirements (permits)
- Review and approval of certain proposed water reclamation projects

- Abatement of contamination resulting from use of reclaimed water where public health is seriously threatened
- Control of cross connections between potable and nonpotable water systems

The responsibilities of the SWRCB/RWQCBs in relation to recycled water were stated as:

- Approval of pollutant source control programs for wastewater collection systems
- Issuance and enforcement of water reclamation requirements to producers and users of reclaimed water
- Definition of beneficial uses of surface and ground water bodies through the establishment of water quality control plans
- Regulation of operators of wastewater and water reclamation treatment plants
- Water right determinations regarding water reclamation

Key features of the project review and approval process in the MOA were:

- All requests for water reclamation requirements through the RWQCBs are to be considered a request for review by the DHS
- That reviews will be expedited by the RWQCBs submitting all reports and information about a proposed project to the DHS as soon as they are received, instead of with the draft water reclamation requirements
- That the DHS will respond in 30 days to the RWQCBs after receiving proposals or draft requirements
- Issuance of water reclamation requirements by the RWQCBs constitutes project approval by the DHS
- That DHS make any interpretation of Title 22 criteria that are questioned

Of importance in the MOA are the descriptions of the authoritative relationship between the two agencies. It is stated in Section II B. of the MOA:

> *Water Code Section 13554.2(e) requires the Department to review and approve proposed water reclamation projects (within specified time frames) that are submitted to the Department by producers or distributors of reclaimed water for review.*

It is also stated in Section III. D. of the MOA:

> *The Department will identify in its recommendations to a RWQCB with respect to proposed water reclamation requirements any conditions upon which its approval of a proposed project is based. The RWQCB staff will incorporate any "conditions of approval" submitted as part of the Department's recommendations into the water reclamation requirements proposed for adoption by the RWQCB.*

The above language in the MOA should be compared to what is actually in the Water Code. DHS approval of a proposed use of recycled water is synonymous with its approval of the entire project. Section 13554.2(e) of the Water Code states:

> *The State Department of Health Services or local health agency shall complete its review of a proposed use of recycled water within a reasonable period of time. That department shall submit to the person or entity proposing the use of recycled water a written determination as to whether the proposal submitted is complete for purposes of review with 30 days from the date of receipt of the proposal and shall approve or disapprove the proposed use within 30 days from the date on which that department determines that the proposal is complete.*

To implement the MOA, both agencies have produced guidance documents. The DHS's Water Reclamation Program Guidance Manual is incorporated as Appendix D. The SWRCB's Final Draft Administrative Procedures Manual (APM)--Chapter on Recycling Requirements appears as Appendix E. Some of the elements of these documents are discussed further in Section IV of this paper. However, in terms of authorities, it seems clear that the DHS may approve a use of recycled water with or without conditions or disapprove it, but it is ultimately the RWQCB that decides on the project. It is specified in the SWRCB guidance that RWQCBs must incorporate conditions of approval if given by the DHS into its water recycling requirements. However, it is not clear if the DHS disapproves a use that the RWQCB must also disapprove the project.

D. Other Agencies

Water reuse project proposals are also subject to review or approval by regulatory agencies other than the DHS and RWQCBs (Appendix F). Examples cited are: food processing/packaging plants (U.S. Dept. of Agriculture/State F&D), food crop irrigation (State F&D), and health care facilities (State L&C/OSHPOD). Further, the California Environmental Quality Act (CEQA) review process can bring in several more federal, state and local agency

reviews and/or approvals for proposed projects, dependent upon specific sites to be used. The Southern California Association of Governments (SCAG), county and local Planning Departments, county Health Departments (for considerations other than recycled water public health issues), U.S. Fish and Wildlife Service, California Dept. of Fish and Game, South Coast Air Quality Management District, and Caltrans are examples of some of these in Southern California.

IV. Implementation Issues

There are numerous implementation issues relating to the changing Title 22 regulations and recycled water projects throughout the state. This paper cannot address all of them, but the following are highlighted.

A. Project Review

Defining and categorizing projects, determining their significance, preparing appropriate information, and actual project review procedures, are all in various stages of refinement by both the DHS and the SWRCB/RWQCBs.

1. Project Categorization

A new statewide subcommittee of the Recycled Water Committee is being formed to specifically address the issue of what constitutes "incidental groundwater recharge" (Jeff Stone, DHS, p.c., 6/16/98). In the latest version of the proposed groundwater recharge guidelines (Appendix B), Section 60320.01 on Planned Groundwater Recharge Projects distinguishes planned groundwater recharge from incidental recharge, as also shown in Section II.B.2 of this paper. The concern of the regulators is that very large projects, in which millions of gallons a day (mgd) of recycled water are discharged into surface waterways and ponds, are considered to be incidental recharge to groundwater when they should really be categorized as planned

recharge projects. An example is the City of Fresno's extensive ponds, which handle 50-70 mgd. It is a "gray area" that needs clarification, since projects of comparable nature and size have been categorized differently throughout the state.

The membership, or representation, of such a subcommittee, as well as its rules for decision-making, could greatly determine the outcome of this issue.

Another project categorization issue is that of regulation either as a "reuse" project or as a "disposal" project. Where projects seem to have characteristics of both, they are to be regulated as both. The San Francisco Bay RWQCB issued Order 96-011 on General Water Reuse Requirements for Municipal Wastewater and Water Agencies (Appendix G). Item 1.2.c. states:

> *Although the statewide criteria specified in Title 22 apply only to use of recycled water and not to the disposal of wastewater to land (e.g., to meet NPDES restrictions for receiving water discharge) those discharges to land may pose an identical degree of public exposure and risk. Therefore, wastewater agencies that apply wastewater to land through irrigation for the primary purpose of disposal, but operate in accordance with these requirements, may also apply to be regulated under this Order.*

This San Francisco Regional Order is considered to be a model for use statewide. More recently, the San Diego RWQCB adopted Order No. 97-03 on Waste Discharge and Water Recycling Requirements for the Production and Purveyance of Recycled Water for the City of San Diego (Appendix H). Water recycling facilities typically require Waste Discharge Requirements through the RWQCBs. These orders describe the levels of treatment required before recycled water leaves the facility. Title 22 regulations are part of these orders. These facilities are the "producers" of recycled water and, thus, are subject to Title 22. Then, "users" of the recycled water are to have the Water Recycling Requirements (or "water reclamation requirements) through individual or master permits. The incorporation of requirements in both types of orders and compatibility of all of the permitting requirements is the responsibility of the

RWQCBs. However, if this trend for the issuance of general Water Recycling Requirements specifically to water and wastewater agencies, or the combination of Waste Discharge and Water Recycling Requirements continues, there may have to be substantial changes made to all existing individual orders (permits), for the purpose of ensuring consistency in categorization, treatment levels, discharge limits and other aspects. This also seems to give the DHS review and approval powers over Waste Discharge Requirements, which it does not have now.

2. Engineering Reports

Engineering reports are required for submission to both the RWQCB and the DHS prior to implementation of recycled water projects. The timing of submissions and the content of the reports have been an ongoing issue. Full engineering reports are sometimes developed after "approval" of projects; this is allowed according to DHS project review procedures (Appendix D). The purpose of an engineering report at this point is to assess the project in terms of being able to determine compliance with Title 22 and to develop appropriate water recycling requirements. The purpose of an engineering report prior to actual project implementation, on the other hand, is to ensure that a project will be operationally sound in meeting the established requirements. Regarding content, the current Title 22, Article 7, Section 60323, states:

> *The report...shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency...The report shall contain a contingency plan which will assure that no untreated or inadequately-treated wastewater will be delivered to the use areas.*

Thus, the issue is problematic in several ways: What role does the engineering report play in project approval? How do both agencies, SWRCB/RWQCB and DHS/local DHs review these reports? How can the contents of project proposals, when consisting mostly of submission of engineering reports, be compared due to the great variety in types of projects and contents of

reports? Are two reviews required by both agencies, for the "proposal stage" engineering report and for the "implementation stage" engineering report? How "official" are the variations in requirements for engineering report contents, by region and by type of project (groundwater recharge projects have special items for such reports in the proposed groundwater recharge guidelines, for example)? How do these products relate to CEQA products, i.e., are they distinct or duplicative?

The DHS has attempted to address the question, "What is a proposal?" The project review procedures (Appendix D) state:

> *A proposal should be construed by staff as any type of formal or informal request for Department assistance, advice, review, or action with respect to a proposed reclamation project, modification of an existing reclamation project, or a proposed use of reclaimed water.*

Examples were cited as: requests to review reports or portions of reports (such as draft Environmental Impact Reports, health effects studies, or engineering reports), requests to attend meetings, or requests from a RWQCB to review or comment on a report submitted by an applicant for proposed water reclamation requirements.

The DHS also has produced "Guidelines for the Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water" in September, 1997 (Appendix I). These guidelines make introductory statements, such as:

> *Recycled water projects vary in complexity. Therefore, reports will vary in content, and the detail presented will depend on the scope of the proposed project and the number and nature of the agencies involved in the production, distribution, and use of the recycled water.*
>
> *The report should contain sufficient information...*
>
> These guidelines offer a list of contents. Under groundwater recharge it is stated:

An assessment of potential impacts the proposal will have on the underlying groundwater aquifers. The appropriate information shall be determined on a case by case basis.

The proposed groundwater recharge criteria (Appendix B) specify some contents of engineering reports for these types of projects. Section 60320.07 (d)(3) contains requirements for a hydrogeologic study on the groundwater basin and domestic groundwater sources to be impacted by the project. The items listed could constitute a major "environmental impact" study.

The SWRCB's administrative procedures (Appendix E) state:

Any person recycling or proposing to recycle water...must file with the Regional Board of that region a report containing such information as may be required by the Regional Board.

It is not specified if such report is an engineering report or includes an engineering report.

To address this issue, one of two things is necessary: either that engineering report contents be spelled out in great detail in the regulations for each kind of water recycling project, or that a scoping process be established (similar to that in CEQA) to ensure that both SWRCB/RWQCB and DHS/local DH make it clear to a project proposer what has to be submitted for a "proposal," "application," or "report."

B. Water Quality

There are several water quality issues related to recycled water uses, such as suitability for irrigation of different types of vegetation, appropriate quality for various human uses and industrial and commercial operations.

1. Human Health Parameters

The potential for human contact with recycled water determines the treatment levels and use area restrictions. There have been various interpretations of this, such that the DHS issued a clarification memorandum in January of 1998 (Appendix J). Golf courses were discussed as an

example, whereby those with restricted public access (i.e., fees paid to enter and use the facilities) are allowed secondary treated 23 recycled water and those which are central to residential developments (where residents not using the facilities may still transverse the course) require tertiary treated 2.2 recycled water. Some parameters are identified in this memorandum for the purpose of assisting the regulatory staff in making a "best professional judgement." They include:

- Is use area in a private/gated community?
- Is adequate posting provided along perimeter access routes?
- Are there buffer zones of some type adjacent to residential dwellings and property lines?
- Is there a comprehensive operations plan in effect?

Examination of all current requirements would be needed to determine the consistency or inconsistency of the "best professional judgements" made to date. As long as it is a judgement call, though, more water treatment could be required for most projects. However, the intent of this memorandum seems only to clarify the basis upon which judgements are made and not to promote one type of treatment over another.

2. Monitoring Requirements

The monitoring requirements for groundwater recharge projects are not specified as well as those for assessing the recycled water quality as produced. Most projects are worked out on a case-by-case basis, such that delays in project implementation could be significant due to determination of the number and locations of monitoring wells. The agency which has taken responsibility is the DHS, in its role of approving new projects. However, it should be noted here that the current Title 22 regulations on groundwater recharge projects do not specifically require the DHS to review monitoring programs. It is not mentioned in the proposed criteria, either.

The proposed groundwater recharge guidelines (Appendix B), under Section 60320.05(d), on Recharge Site Requirements, Monitoring Wells, do state:

> *Monitoring wells shall be provided to detect the influence of the recharge operation. As a minimum, monitoring wells shall be located at points one-quarter and one-half of the distance (plus or minus 10%) from the recharge area to the nearest domestic water supply well. The number and location of the proposed monitoring wells shall be described in the engineering report submitted pursuant to Section 60320.07.*

In the SWRCB's Administrative Procedures Manual Chapter on Recycling Requirements (Appendix E), there are presented some Model Water Recycling Requirements. In the section titled Ground Water Monitoring, it is indicated that there will be upgradient and downgradient monitoring wells. Prior to construction, plans and specifications for such wells are to be submitted to RWQCB staff for review and approval. Wells are to be sampled monthly and quarterly. It is left undefined what constitutents are to be sampled, units of measure, and the types of samples (composite or grab) to be taken. Thus, the SWRCB in its guidance has indicated that it has review and approval power.

Let's examine a case on how this has actually functioned. Chino Basin Municipal Water District (CBMWD) recently went through the process of obtaining approval for a small groundwater recharge project, 500 acre-ft./year to Ely Basin. It took over a year to finalize the groundwater monitoring plan to the satisfaction of DHS. Initially, a tracer study was to be required. This eventually was waived. The location of an acceptable second downgradient monitoring well was another issue. Further, the DHS wanted to hold up approval of the monitoring program until the CEQA process was closed out, the basis for this being that one of the CEQA mitigation measures was the development of a groundwater monitoring program. This project was recently approved (Mark Kinsey, CBMWD, p.c., 6/22/98). The DHS

considered this a good project, an example of how well the review and approval process works (Jeff Stone, DHS, p.c., 6/16/98).

Some correspondence from the DHS to CBMWD is included as Appendix M. It is clearly indicated in this correspondence that the DHS took full responsibility for reviewing and approving the groundwater monitoring plan, including well locations and number, construction plans, the types and frequencies of samples, and other aspects. It is further evidenced in this correspondence that the **proposed** groundwater recharge guidelines are being applied by the DHS to determine compliance of projects with Title 22 regulations. Stated in the 7/31/97 letter:

> *The basic elements of the proposed recharge project are in conformance with this Department's proposed regulations for Groundwater Recharge with Reclaimed Water which we are currently utilizing as guidance in our review process.*

C. The Chicken or the Egg?

Whether the water recycling standards are guidelines or regulations at this point is really the old argument, "Which came first, the chicken or the egg?" Neither the proposed water recycling criteria nor the proposed groundwater recharge guidelines discussed in this paper have been adopted and incorporated into the California Code of Regulations. However, it would be nearly impossible to propose, implement or operate a water recycling project in California without adhering to them.

For example, the San Diego RWQCB's Order No. 97-03 (Appendix H) has an Attachment No. 1, Rules and Regulations for Recycled Water Use Projects. The attachment indicates that the recycled water agency **must** establish and enforce these rules. Item 11 applies Article 4, Section 60310, Use Area Requirements of the **proposed** water recycling criteria

(Appendix A). These address setback requirements for irrigation activities and impoundments in relation to domestic water supply wells.

Another related issue is that of authority. The DHS produced a recent memorandum on "Recycled Water Background" (Appendix K). Under the section on the role of DHS, it is stated:

> *DHS has no authority to enforce the criteria or to conduct inspection of recycling facilities unless a serious public health threat exists.*

However, in March of 1998 the DHS approved the "San Diego County Environmental Health Services Recycled Water Plan Check and Inspection Manual (Appendix L). This manual states, on pages 1 and 3:

> *The purpose of this manual is to familiarize the Deparment of Environmental Health staff, purveyors and other interested parties with procedures for plan check and inspection of all recycled water use site projects within the County of San Diego and to establish a uniform framework for plan check and inspection.*
>
> *Inspection of recycled water projects is done to ensure that the recycled water use facilities are constructed according to approved plans...The health and safety reason relating to DEH involvement in recycled water issues is that recycled water is not potable, it is not safe for consumption and it is used in areas of potential public contact.*

Thus, **every** recycled water facility is considered to be an existing serious public health threat for which DEH seems not only to have inspection powers, but implied abatement and enforcement powers. Again, it should be noted that once a project is approved, the DHS is not supposed to have any more to do with the project. Any enforcement powers are related to public water supply only, such as cross connection control.

At the local level, elements of the proposed statewide standards are being forced into regulation and DHS has become quite involved. This could be seen in two ways: the eggs (local recycled water agencies and regulatory agencies) could be hatching the chickens (statewide regulations), or the chickens (regional and local regulatory agencies) are laying unfertilized (not

official) but somehow reproductive eggs (statewide regulations by precedent). On top of that, the chickens (SWRCB/RWQCBs and DHS/local DHs) are interbreeding. This isn't simple biology anymore; this is bioengineering!

D. Trends and Implications

The overall trend is the expanding authority of the DHS, based on its mandate to protect public health. Protecting public health generally and potable water supplies in particular are **not**, by any means, bad things. However, the treatment and other requirements already in place for reuse of wastewater have assured that water from this source is **not** a serious public health threat. If the DHS approaches all projects as potentially high risk in terms of public exposure and adverse health effects, water reuse projects are not going to be encouraged or facilitated. This approach then becomes incompatible with other state mandates to encourage and facilitate water reuse projects.

The relationship between the DHS and the SWRCB/RWQCBs apparently has not been clarified by recent statutory changes. The expanding authority of the DHS includes many of the functions of the RWQCBs, which the RWQCBs are allowing. The functions are not only related to the issuance of water recycling requirements; they also seem to be crossing the line into issuance of waste discharge requirements, which are not under the authority of the DHS. These agencies are going to have to put much more effort into establishing their roles and coordinating their functions, all while making them compatible with their current authorities. The regulated community, on the other hand, needs to be more aware of the authorities of both of these agencies, such that duplicative and unnecessary work to implement projects, as well as delays, are avoided.

Finally, of what importance is all this to the Santa Ana River Basin? If incidental groundwater recharge projects are recategorized as planned groundwater recharge projects, if water recycling and waste discharge requirements are combined, and if all projects are considered potentially serious public health risks, all current and proposed projects could be affected. Effects could include additional impact analyses, additional requirements, substantial changes to projects, substantial delays, and ultimately disapprovals. What could this mean for projects such as raising Prado Dam, recycled water discharges to tributaries and the river mainstem, putting in or taking out dams and levees, and diversions into wetlands? What could this mean for meeting the conditions of all of the existing legal judgements and agreements in the Santa Ana watershed?

This paper can only pose the questions at this time. It is an attempt to present the current situation regarding Title 22, which is not a pretty picture. The paper emphasizes the importance of related issues to both the regulators and the regulated, such that much discussion, further analyses, and resolution of problems might occur.

V. References

Irvine Ranch Water District (IRWD), 1997. Summary Paper on Water Reuse.

Mark Kinsey, Chino Basin Municipal Water District (CBMWD), p.c., 6/22/98.

Jeff Stone, Department of Health Services (DHS), p.c., 6/16/98.