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LAWRENCE S. BAZEL

August 15, 1991

By Hand

Rebecca Tuden (W-3-1)
Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105

Subject: Guidance For Modifying Water Quality
Standards And Protecting Effluent-Dependent
Ecosystems

Dear Ms. Tuden:

On behalf of the City of Las Vegas, I am providing the following comments in response to the May 31, 1991 draft of Guidance For Modifying Water Quality Standards And Protecting Effluent-Dependent Ecosystems. We appreciate the opportunity to comment, and are pleased that Region 9 recognizes that dischargers into ephemeral, effluent-dependent streams face extraordinary difficulties.

Many of these difficulties arise because of the imposition on effluent-dependent streams of EPA water-quality criteria ("Gold Book" criteria), particularly those recommended for attaining the designated use of "aquatic life". We therefore begin with a fundamental question: What is meant by the attainment of the designated use of aquatic life?

1. EPA should clarify what constitutes attainment of the designated use of aquatic life.

Consider an extreme example, a small stream in which a natural trickle of flow is overwhelmed by a discharge of raw sewage. The predominant organisms in this stream, as we know from the days preceding the Clean Water Act, may be sewage "fungus" (Sphaerotilus), sludgeworms (Tubifex), and perhaps fecal coliforms. These organisms may be aquatic and alive, but has the stream attained the designated use of

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aquatic life? We think not, and therefore conclude that the presence of living aquatic organisms is not sufficient for attainment of the designated use of aquatic life.

What should the standard of attainment be? The possibilities include (1) the presence of fish, and (2) the presence of "fishable" fish, those that can be caught with a hook and line and are eaten by people -- in other words, a sport fishery. We leave this decision to EPA.

However, we note that this decision has important consequences. Southwestern effluent-dependent streams sometimes have minnows present, but rarely if ever support a sport fishery. If the mere presence of fish is the standard of attainment, then many effluent-dominated streams have already attained the designated use. But if a sport fishery is required they have not attained the designated use, and may not ever be able to attain it.

The draft guidance may imply that Southwestern effluent-dependent streams are not in attainment, but the issue does not appear to have been fully considered. We request that EPA clarify its standard of attainment.

2. EPA should help avoid confusion between attainment of uses and attainment of criteria. Water-quality standards consist of two parts: designated beneficial uses (e.g. aquatic life) and criteria that protect those designated uses (e.g. numerical limits on dissolved oxygen, unionized ammonia, or heavy metals). Uses and criteria, although conceptually distinct, are often confused in practice. We are concerned that EPA may not be using sufficient care in distinguishing attainment of designated uses with attainment of Gold Book criteria. The draft guidance intermixes two techniques for modifying water-quality standards -- use-attainability analyses and site-specific criteria -- and may be obscuring the conditions to which each applies.

Logically, a use-attainability analysis is the appropriate method for demonstrating that a use cannot be attained in a particular segment. It should be prepared, for example, when no fish exist in a stream segment and an interested party would like to establish that no fish can exist there regardless of the degree of wastewater treatment.

Site-specific standards, in comparison, are appropriate when a designated use is being attained, but the

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interested party believes that less-stringent criteria would continue to support that designated use. Site-specific standards should be prepared, for example, when a healthy and extensive sport fishery proliferates despite concentrations of unionized ammonia substantially higher than the Gold Book recommendations.

In summary, the technique to be used depends on whether the stream segment has attained its designated uses, particularly the designated use of aquatic life. If Southwestern streams have attained the designated use of aquatic life, then there is no purpose in preparing use-attainability analyses, because they could not possibly show that the use is unattainable. We request that EPA clarify the applicability of use-attainability analyses and site-specific criteria.

3. EPA should explain how interested parties can establish that natural conditions prevent attainment. If EPA concludes that a sport fishery is necessary for attainment with the designated use of aquatic life, the following question will arise: Would sport fisheries be established if these Southwestern streams complied with the applicable Gold Book criteria? Here there may be some disagreement between EPA and many of the Southwestern dischargers.

There are good reasons to believe that achieving the Gold Book criteria would not commonly produce sport fisheries. Perhaps the most persuasive reason is that many Southwestern streams appear either to be meeting the Gold Book criteria or nearly meeting them, but lack any evident sport fishery. Considering the safety factors built into the criteria, and the fact that sensitive species are often absent, nearly meeting the criteria should be good enough to establish at least a rough fishery, if a fishery were possible at all.

Southwestern dischargers, including the City of Las Vegas, believe that the lack of a sport fishery in effluent-dependent streams can be attributed to factors other than chemical quality. The ecology of Las Vegas Wash, for example, is plainly affected by the high velocities of the water, by the heavily eroding stream bottom, by the high concentrations of mud in the water, and by recurring flash floods that rip out roads and large areas of riparian vegetation. The ecology may also be affected by high salt concentrations, especially from surfacing groundwater, that undiluted would undoubtedly be toxic to many freshwater

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organisms. In short, many Southwestern dischargers believe that no sport fishery would exist in their receiving waters even if they were discharging Perrier water.

EPA, however, may believe that sport fisheries would exist in Southwestern streams if only the streams complied with the Gold Book criteria. To our knowledge, EPA has no evidence to support this hypothesis; we would be interested in knowing if any exists. Perhaps EPA believes only that it should assume that sport fisheries would exist until interested parties prove the contrary. If so, it may be setting the standard of proof impossibly high.

In wetter climates, scientists can determine whether a stream segment can maintain a sport fishery by finding a similar stream that does not receive effluent -- that is, a control. The control may be the same stream upriver of the discharge. In the arid Southwest, which is a land of bone-dry washes interrupted by the Colorado River and a few streaks of treated wastewater, there are few if any adequate controls. Therefore, the ability to prove that natural conditions prevent attainment, and that increased treatment would not produce a sport fishery, is greatly diminished, and all parties are forced to rely on expert opinion.

However, our understanding is that EPA has not been quick to accept expert opinion, and that dischargers have been frustrated by their inability to obtain EPA approval of use-attainability analyses. If EPA is to accomplish its goal of streamlining the process, it must provide clear guidance on the type and amount of expert opinion that a party must provide to obtain agency approval of a use-attainability analysis.

4. EPA should endorse the use of other methods for modifying water-quality standards -- particularly those for removing a designated use because natural conditions prevent attainment. The draft guidance concentrates on four methods of modifying water-quality standards, none of which applies directly to the situation, described above, in which a sport fishery cannot exist because of natural conditions. As the draft guidance mentions in a footnote, EPA regulations also allow a designated use to be removed because of "Natural, ephemeral, intermittent or low flow conditions", and because of "Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like" (40 CFR 131.10(g)(2) and (5)). We request that EPA endorse the use

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of these provisions and provide clear guidance on the scientific showing needed for each of them.

5. EPA should confirm that dischargers will not be required to provide treatment for treatment's sake. We believe that there is a tendency to focus too much on ambient chemistry, and not enough on ambient ecology. The result is that dischargers may be forced to build expensive treatment works that merely change the chemistry of the receiving water without improving the ambient biota. Yet Congress long ago rejected the idea that the Clean Water Act is meant to require treatment for treatment's sake.

If Southwestern dischargers are correct, and the designated use of aquatic life cannot be attained in their receiving waters under any circumstances, then increased treatment cannot attain that designated use. At best it will change the chemistry of the receiving waters. But the Clean Water Act does not require treatment that modifies the chemistry of the receiving water unless it is necessary to attain or protect a beneficial use. Any treatment required in these circumstances would be treatment for treatment's sake. We request that EPA confirm that it does not approve of treatment that is not necessary to attain or protect the designated uses.

Note that we are not suggesting a cost-benefit analysis, in which benefits are weighed against costs. In these situations there is no significant benefit to be weighed.

6. EPA should confirm that Gold Book criteria for aquatic life do not apply to streams in which aquatic life has been shown to be unattainable. The Gold Book recommends criteria to protect only a few uses: drinking-water supply (which may also cover swimming), fish consumption, and aquatic life. Southwestern effluent-dependent streams are rarely, if ever, used for drinking-water supply, and they tend not to be swimmable. Under ordinary conditions, they are too shallow for swimming; in flood, they are too deadly. (In Las Vegas Wash, the high water velocity makes it too dangerous for swimming year round.) Nor are they commonly used for fishing. Therefore, if Southwestern effluent-dominated streams are not designated for aquatic life, there will be few if any Gold Book criteria that apply.

Remaining uses needing protection in waters not designated for aquatic life may include maintenance of

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streamflow, aesthetics, and non-contact recreation. Because EPA apparently does not recommend criteria to protect these uses, will have to be determined for each of these stream segments individually. We request that EPA confirm this understanding.

7. EPA should not impose Gold Book numbers on streams that are attaining their designated uses but not attaining Gold Book numbers. Suppose EPA were to conclude that the designated use of aquatic life were attained merely by the presence of fish, rather than the presence of a sport fishery. In this case, no more treatment should be required of those who discharge into streams where fish can be found, because these streams have already attained their designated uses.

If the criteria established for these streams are not being attained, then site-specific criteria should be established. After all, if existing water quality actually attains a designated use, then existing water quality must be sufficient to attain that designated use. Any criteria that are being violated must not be necessary for supporting that use, and therefore are inappropriately stringent.

We request that EPA clarify its position on this issue.

8. EPA should expand its section on site-specific criteria and endorse the use of field data. The draft guidance provides only a short paragraph and a footnote on site-specific criteria, and does not add anything to existing guidance and regulations. Much more needs to be said.

Treated wastewater from the City of Las Vegas is discharged into Las Vegas Wash, which flows into Lake Mead, the nation's largest reservoir. Where the wash flows into the lake, the concentration of unionized ammonia rises above Gold Book recommendations. Despite these concentrations, fish are far more plentiful, plumper, more successful at spawning, and just as healthy as fish in a control part of the lake. There does not seem to be any serious argument that the unionized ammonia, which during the study averaged about four times the recommended Gold Book maximum, is harming the fish or zooplankton.

We have therefore been attempting to obtain a site-specific criterion for unionized ammonia, but EPA has been very discouraging. We believe that it may be impossible to

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obtain site-specific criteria that are significantly different from existing or Gold Book criteria.

Despite having cleared the study plan with EPA before proceeding, we have so far been unable to obtain EPA recognition of the extensive field data showing no harmful effect at concentrations of unionized ammonia far higher than the Gold Book limit. Although the regulations specifically provide that water-quality criteria may be "based on . . . Other scientifically defensible methods" (40 CFR § 131.11(b)(1)), EPA appears not to recognize any methods other than the three methods set out in its 1983 guidance document, the Water Quality Standards Handbook.

Furthermore, EPA should take a hard look at the methods included in the Water Quality Standards Handbook and ask itself whether they are scientifically defensible. We have had a great deal of difficulty attempting to use EPA's methods, and EPA itself has found their results invalid or unbelievable.

One of the Region 9 staff, for example, identified large decreases in pH in bioassays using four species of fish. In some cases, the pH fell by more than one unit within 24 hours. Because the concentration of unionized ammonia depends heavily on pH, these decreases in pH prevented an accurate determination of the unionized ammonia to which the test organisms were being exposed. EPA concluded that these bioassays were invalid, and we had to agree. The bioassay laboratories believe that the pH decreases were caused by acid excretions from the fish, and because there was too much fish biomass for the volume of water. However, EPA protocols specify the maximum biomass of fish per volume, and all our bioassays were well within the limit. Because of this defect in EPA's bioassay protocol, we unnecessarily spent more than \$100,000.

Preliminary data were submitted to EPA before the pH decreases and other difficulties were noted. These data, which included bioassays of eight species performed by two laboratories, showed a statistically significant protective effect of Lake Mead water. Another of the Region 9 staff, without noting the pH shift, rejected the preliminary conclusions with the simple comment that he was not impressed by the data. His argument was that one set of data would not pass a scientific peer review; we should, he said, go back and run the tests again and again until we were certain of the results. Because EPA guidance documents do not require

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more than one set of tests, this argument is in reality a rejection of the guidance documents. Moreover, it was a new requirement imposed after EPA had cleared the study plan, and after the field work was fully completed.

Because of experiences such as these, Southwestern dischargers may feel that EPA will block any attempt to obtain site-specific criteria. We therefore request that EPA identify those cases in which it has approved site-specific criteria that are significantly different from the Gold Book criteria, and explain why those cases were successful. Of course, we are particularly interested in modifications to the criteria for unionized ammonia.

The three methods set out in the Water Quality Standards Handbook are all indirect methods of determining site-specific effects, and two are quick and dirty. We believe that the best way of determining site-specific effects is to study them directly, by collecting field data on ambient chemistry and biota at the site. We therefore request that EPA endorse the use of field data and of direct studies of ambient chemistry and biota, and explain what a discharger must do to convince EPA that site-specific criteria are appropriate when the local biota are flourishing despite higher-than-Gold-Book concentrations.

9. EPA does not need to define the waterbodies to which the guidance will apply. Southwestern effluent-dependent streams generally appear to be different from ordinary perennial streams in two key ways: (1) they are not capable of sustaining a sport fishery, and (2) they cannot adequately be matched up with control streams. If, as we suggest above, EPA explains how to establish that a stream segment is not capable of sustaining a sport fishery, then interested parties will define the applicability of the guidance by applying it to candidate waters. No other advance definition or limitation appears necessary or appropriate.

10. EPA should list Las Vegas Wash as a candidate for application of the guidance. We request that Las Vegas Wash be included in any listing of candidate streams.

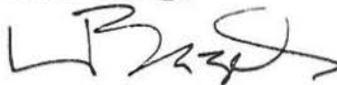
11. EPA should work directly with Southwestern dischargers to resolve issues. Before issuing another draft, we believe that EPA should meet and work directly with us and other Southwestern dischargers to resolve issues identified this letter, and in general to discuss the processes of

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removing designated uses and obtaining site-specific
criteria.

Sincerely,



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