

## Suspension of Recreational Beneficial Uses in Engineered Channels during Unsafe Wet Weather Conditions

### Abstract

**Complexity:** Simple

**Region:** 9

**Type of Action:** Temporary suspension of recreational use

**131.10(g) Factors:** 2, 4

The Los Angeles Region has many rivers and streams that have been straightened, concrete-lined, or both to move floodwaters from urban areas to the ocean. These channels transport large volumes of water that might not be of adequate quality to support Clean Water Act (CWA) section 101(a) uses (i.e., “fishable/swimmable”). The water quality goals set forth in the Los Angeles Region’s Basin Plan specify that all waters in the state should be “fishable/swimmable.”

Under certain conditions recreational uses are inappropriate for these channels. During high flow flood conditions, it is not safe to swim in the waters; during summer dry periods, the flow is insufficient for swimming. The Los Angeles Region has opted to issue a suspension of recreational use during periods of high flow. Through a revision to its water quality control plan, the Los Angeles Region established that during high flow events, when it is not safe to be in the modified channels, these waterbodies do not have to meet bacteria criteria. The suspension of recreational uses applies under the rainfall conditions that trigger the Region’s swift-water protocols (i.e., rescue squads are on alert if someone should happen to enter the water). With this use attainability analysis (UAA), EPA approved the revision to the *Water Quality Control Plan for the Los Angeles Region*.

### Background

Currently, all waterbodies in the Los Angeles Region include use designations for water contact recreation (REC-1) and, in most cases, for non-contact water recreation (REC-2). There are no seasonal restrictions on recreational uses in Los Angeles. The uses apply at all times, regardless of weather conditions or any other condition that might make recreational activities unsafe or infeasible.



Figure 1. High-flow conditions in Ballona Creek (DeShazo, 2005).

Current conditions physically prevent full attainment of the recreational beneficial uses during high-flow or high-velocity conditions. Many waterbodies in the Los Angeles Region have been straightened, concrete-lined, or both to reduce the occurrence of flooding in urbanized areas by moving stormwater from those areas to the ocean (or an alternative outfall). These channels transport large amounts of water that might not be of adequate quality to support Clean Water Act (CWA) section 101(a) uses. This condition does not meet the water quality goals set forth in California’s Basin Plan, which specifies that all waters in the state should be designated for recreational use and should be “fishable/swimmable.”

Designating recreational uses for highly modified channels in the Los Angeles Region is complicated by the fact that under certain conditions recreational uses are not appropriate for

some waterbodies. Channel modifications can create life-threatening conditions during and immediately following storm events. The steep-sided slopes of the channels also make them very difficult to exit when the water is slowing swiftly. During high-flow conditions, it is not safe to swim in the channels.

### **Approach**

The Los Angeles Regional Water Quality Control Board (RWQCB) opted to issue a temporary suspension of the designated use (recreation) during and immediately after defined storm events (periods of high-flow). By suspending recreational uses during high-flow conditions, the RWQCB acknowledges the danger of recreating in the channels during wet weather conditions. Through a revision to its water quality control plan, the Region indicated that during high-flow events (when it is unsafe to be in the channels) waterbodies do not have to meet bacteria criteria. The aquatic life standards for these channels have not been revised, although subcategories of aquatic life uses might be developed in the future. This approach—using revisions to the basin plan to further specify designated uses—is a flexible means to establish water quality goals.

The high-flow suspension applies only to water contact recreation activities regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological criteria set to protect those activities. The suspension of uses is applied when there is rainfall greater than or equal to ½ inch and remains in effect during the 24 hours following the rain event, which is consistent with the Los Angeles County Level 1 Alert threshold.

The inherent danger of recreating in engineered channels during and immediately after storm events is widely recognized and has already been addressed by Los Angeles and Ventura counties through county policies. Los Angeles County's Multi-Agency Swift Water Rescue Committee has set protocols for locking access gates to flood control channels and preparing for possible swift-water rescues in the channels during defined storm events. In Ventura County, access gates to such channels are always locked, which prevents people from engaging in recreational activities in the channels during swift-water conditions.

The RWQCB's suspension would apply to inland, flowing, engineered channels where it is possible to restrict access during the defined conditions. Water quality criteria set to protect other recreational uses associated with the fishable goals, as expressed in CWA section 101(a)(2) and regulated under the REC-1 use and other REC-2 uses (e.g., uses involving the aesthetic aspects of water) still remain in effect.

Downstream REC uses must continue to be protected. Suspension of portions of the REC-1 and REC-2 uses during swift-water conditions reflects the current conditions in certain engineered channels; it does not relieve or diminish obligations to reduce bacteria loading at the beaches.

The RWQCB remains committed to reevaluating the attainability of the REC-1 and REC-2 uses in the future, supporting efforts to reclaim engineered channels as natural watercourses, and supporting the beneficial reuse of stormwater. Within 3 years of the amendment's effective date, the RWQCB will reconsider the continued appropriateness of the suspension of recreational uses in engineered channels during and immediately following the defined storm events.

**Data Collection and Analysis**

To support the suspension of the recreational uses, the RWQCB conducted a use attainability analysis (UAA) for each waterbody where the suspension would apply. The RWQCB used two of the 40 CFR 131.10(g) factors as the basis for the UAA:

**Factor 2:** Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.

**Factor 4:** Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use.

RWQCB staff evaluated whether to conduct waterbody-by-waterbody UAAs or a categorical UAA covering all waterbodies meeting certain criteria. For this situation, the staff proposed a regional approach because all waterbodies subject to the suspension of recreational uses had similar features. The waterbodies to which the suspension would apply (during the defined conditions) include inland waterbodies, flowing waterbodies, engineered channels, and waterbodies where access can be restricted or prohibited (through fencing or signs).<sup>1</sup>

The staff first identified all inland, flowing waterbodies listed in Table 2-1 of the Basin Plan for which the REC uses were qualified due to restricted or prohibited access. They then circulated the list internally to confirm that each of the waterbodies met the criteria for inclusion in the proposed amendment. Where necessary, the staff followed up with field surveys of the candidate waterbodies to confirm physical characteristics and access restrictions. They specifically noted GPS coordinates, channel flow, the geometry and construction materials of the channel bottom and sides, and the presence of restricted access in terms of gates and signage.

The staff evaluated several possible triggers for the suspension of REC uses in engineered channels with restricted or prohibited access. These included (1) flow and velocity (e.g., swift water conditions); (2) depth (e.g., outside low flow channel); and (3) rainfall (e.g., total daily rainfall).

On the basis of their evaluation, the staff concluded that rainfall is the most appropriate trigger for the temporary suspension of recreational uses. The RWQCB outlined three reasons for this decision. First, the Los Angeles County, California, Multi-Agency Swift Water Rescue Committee uses rainfall prediction as the basis for routinely locking access gates to county flood control channels and putting swift-water rescue personnel on alert. Written guidance outlines protocols to prepare for and provide swift-water rescues for county personnel and other involved agencies. Under the “Water Rescue Pre-Deployment Section,” three storm levels are defined based on storm warnings with an 80 percent prediction of specified levels of rain over 24 hours. The three alert levels are as follows:

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<sup>1</sup> Although not adequate alone to trigger a suspension of recreational uses, restricted or prohibited access to the channels is proposed as a requirement for the suspension to ensure that people cannot access a waterbody during the defined wet weather period.

- Level 1: 1 inch of rain if unsaturated ground or ½ inch if saturated ground
- Level 2: 1½ inches of rain if unsaturated ground or 1 inch if saturated ground
- Level 3: rainfall/saturation levels exceeding those listed for Level 2; generalized flash floods, urban flooding, or mud and debris flows; urban flooding with possible life hazards.

At the Level 1 Alert threshold, Los Angeles county personnel routinely lock all access gates to flood control channels for at least 24 hours after the storm event.

Second, there are numerous rain gauges throughout Los Angeles and Ventura counties that can provide precipitation data. Flow is not used because velocity and depth data are not available for all candidate channels.

Third, rainfall is an adequate proxy for high flows and high velocities that result in unsafe conditions, given the reliance on rainfall prediction by the Multi-Agency Swift Water Rescue Committee. To confirm this, the staff used 5 years of data (water years 1998–2002) to match days above the Level 1 Alert rainfall thresholds of ½ inch or 1 inch with corresponding flow, velocity, and depth data in several local channels and compared these data with swift water rescue data from the same channels, as well as other agencies' protocols for evaluating when conditions in the channels are unsafe. The staff specifically relied on a protocol used by the U.S. Geological Survey (USGS) and Orange County, in which in-stream conditions are evaluated using the following calculation to determine whether it is safe for monitoring personnel to be in a stream or channel: peak depth (in feet) multiplied by peak velocity (in feet per second). If the result is greater than or equal to 10, conditions are considered unsafe.

The results of the analysis show that 63 percent of unsafe days followed days with more than ½ inch of rainfall. Therefore, using days with greater than ½ inch of rainfall and the 24 hours following the event provides protection by suspending recreational use during 63 percent of unsafe days. This trigger appears appropriate and justifiable because, on average, 82 percent of the days on which the preceding day's rainfall was greater than ½ inch were considered unsafe.

On the basis of the data analysis described above, the staff proposed to use the Level 1 Alert threshold (rainfall greater than or equal to ½ inch as measured at the closest rain gage with saturated conditions) as the trigger for suspending the REC uses assigned to a particular engineered channel. This fits with Los Angeles's policy to keep all access gates locked for at least 24 hours following the specified rain event.

In the UAA the RWQCB showed that recreation is not an existing use because the channels were modified before 1965 and the swift water conditions existed before this the present. In addition, the study showed that the use would not be attained through effluent limits or best management practices (BMPs) because the physical characteristics of the waterbody, rather than the water quality, preclude the use.

### **Conclusion**

Following this UAA, EPA approved the revision to the *Water Quality Control Plan for the Los Angeles Region*.

**References**

DeShazo, R. 2005. Summary: Basin Plan Amendment to Suspend the Recreational Beneficial Uses in Engineered Channels during Unsafe Wet Weather Conditions (Los Angeles Region). Presented at the Designated Use Co-Regulator Workshop, San Francisco, July 2005.