

SECTION 3 RELEVANT REGULATIONS, POLICIES, & PRACTICES

There are a number of Federal, State, and local regulations that govern Public Works' sediment management operations. Additionally, a number of policies, practices, standards, and guidelines relevant to sediment management have been implemented by the Flood Control District and Public Works for environmental protection, structural safety, and other operational needs.

3.1 REGULATIONS

The Flood Control District's sediment management operations are subject to the following regulations:

- Clean Water Act Section 401 Water Quality Certification
- Clean Water Act Section 404 Permit
- California Fish and Game Code Section 1602 Streambed Alteration Agreement

Additionally, some projects may involve adherence to the requirements of the California Environmental Quality Act, South Coast Air Quality Management District regulations, and/or other Federal regulations. Further investigation will be needed as specific sediment management projects are planned to determine what regulations must be followed and which permits must be attained.

3.2 FLOOD CONTROL DISTRICT'S AND PUBLIC WORKS' CURRENT POLICIES

The policies developed by the Flood Control District and Public Works relevant to sediment management are described in this section.

3.2.1 LEVEL OF FLOOD PROTECTION

The Level of Flood and Drainage Protection Standards were published on March 31, 1986, and are contained in File No. 2-15.321. Per the standards, facilities such as dams, debris basins, open channels, and closed conduits shall be designed for the Capital Flood. The Capital Flood is based on a rainfall with a probability of occurrence of once in 50 years (2 percent chance in any year). Furthermore, per the standards, all dams that fall under the control of the State of California laws defining dams shall be constructed to safely pass the probable maximum flood. The probable maximum flood is determined from the probable maximum precipitation, as defined by the National Weather Service.

3.2.2 DAM CLEANOUT POLICY

The Dam Cleanout Policy sets the following criteria for dam cleanouts based on the flood and debris control functions of dams and on dam safety:

- Reservoirs that are used for flood control are to be cleaned out so that the reservoir has the required flood control storage capacity plus the capacity for two design debris events. A Design Debris Event is defined as the quantity of sediment that would be produced by the specific watershed given all the following two conditions had been met: (1) the watershed had been burned four years before, and (2) the watershed was fully saturated when it experienced 24 hours of the type of rain that would be experienced during a 50-year rain event.
- For reservoirs with dams that have loading limits, the criteria for cleanouts are based on dam-by-dam evaluation of the loading limits.

3.2.3 DEBRIS BASIN DESIGN CRITERIA

Debris basin design criteria are detailed in a memorandum dated November 5, 1982, and filed as File No. 2-20.61. According to this policy, debris basins shall be sized based on the tributary area and its potential to produce sediment. Design details are contained in Public Works' Sedimentation Manual.

3.2.4 STANDARD PLANS FOR DEBRIS BASIN OUTLET WORKS

The current Standard Plans for Debris Basin Outlet Works are identified as the County of Los Angeles Department of Public Works Standard Plan 3097-0. They were approved on March 3, 2005. The revisions were made to facilitate maintenance activities and to comply with confined space requirements.

3.2.5 STANDARDS FOR DRAINAGE FACILITIES FOR THE SANTA CLARA RIVER AND MAJOR TRIBUTARIES

On January 15, 1991, Public Works published standards for the design of flood risk management facilities for the Santa Clara River and its major and nonmajor tributary streams. The standards were adopted to maintain environmental balance in the Santa Clara River Basin. The standards address the need to design flood risk management facilities that balance sediment supply and transport to the beaches and proper operation of channels, pipes, etc. The standards touch upon the use and design of debris basins in the Santa Clara River Basin.

3.2.6 PUBLIC WORKS' HYDROLOGY AND SEDIMENTATION MANUALS

Public Works' Hydrology and Sedimentation Manuals describe the techniques to be used for the design of debris basins, storm drains, retention and detention basins, channel projects, and other structures. The current versions of the Hydrology and Sedimentation Manuals are dated January 2006 and March 2006, respectively. Both manuals are available through Public Works' website (<http://dpw.lacounty.gov/>).

3.3 FLOOD CONTROL DISTRICT'S AND PUBLIC WORKS' CURRENT PRACTICES

To effectively maintain Flood Control District facilities, Public Works and the Flood Control District have established certain practices related to sediment management. This section describes the Flood Control District's and Public Works' current practices.

3.3.1 DEBRIS BASINS CLEANOUT CRITERIA GUIDELINES

On April 1, 1985, Public Works' guidelines for debris basin cleanouts were established. The guidelines indicate the cleanout of debris basins should be initiated as follows:

- (a) For debris basins in unburned watersheds, upon the debris basin being 25 percent full.
- (b) For debris basins in burned watersheds, upon the debris basin being 5 percent full. When the fire recovery period reaches 5 years, cleanout initiation is gradually phased toward the unburned watershed criteria.
- (c) For specified debris basins with limited storage capacity, upon the debris basin being 5 percent full.

The guidelines did not define a burned watershed. However, consistent with relevant permits and certifications, a burned watershed is taken to mean a watershed that has had more than 20 percent of its area burned within the previous 5 years.

Flood Maintenance Division (FMD) crews routinely visit debris basins to check debris levels. Any increasing debris levels are reported to the engineering staff. When debris levels approach the prescribed cleanout threshold, planning for a debris basin cleanout is started.

3.3.2 DEBRIS BASIN CLEANOUT OPERATIONS

Unless otherwise stated, the following tasks are performed by FMD staff and crews once a debris basin has met the cleanout criteria previously mentioned (see Section 3.3.1). If the cleanout is not covered under existing permits, necessary permits are requested. Once the cleanout is approved, the debris basin is dewatered, if necessary, with either active or passive measures. The cleanout schedule and sediment destination are determined based on a variety of factors, including stream inflows, how wet the material is, storm season, bird-nesting season, resource availability, the proximity and availability of SPSs and private facilities used for the disposal of sediment, haul route requirements (refer to Section 3.3.5), etc.

When necessary, a water diversion plan is submitted to the appropriate regulatory agency. In some cases, Water Resources Division (WRD) holds a community meeting about the planned debris basin cleanout. Best Management Practices (BMPs) are employed during cleanout operations. Logistical support and rental equipment such as water meters, sweepers, rock shakers, excavators, loaders, bulldozers, and dump trucks are arranged. If necessary, Geotechnical and Materials Engineering Division is requested to perform sediment and/or water sampling. Existing cut plans or construction plan elevations are referenced to perform the cleanout. In some cases, Survey/Mapping & Property Management Division is requested to place cut stakes in the debris basin. Pre- and post-cleanout documentation is prepared and includes photos, sediment amount removed, and the placement location. For debris basins in burned watersheds, the five percent threshold for a cleanout could be attained quickly, initiating an emergency cleanout. During an emergency cleanout, portions of the routine cleanout operation described above could be eliminated based on public safety needs.

If FMD does not have enough resources and the cleanout is to be performed by a contractor, plans are prepared and advertised. Under this circumstance, FMD still contacts the regulatory agencies, handles the regulatory documentation, but the rest of the tasks are performed by the contractor under the supervision of a Construction Division Inspector.

3.3.3 SEDIMENT FLUSHING

Sediment flushing is a method that allows water flow to transport silts and other light sediment accumulated in the reservoir behind a dam through the dam itself. In the past, the Flood Control District has referred to this method as flow assisted sediment transport (abbreviated as FAST). Sediment flushing at a reservoir can be started at a reservoir that has a low water level or does not have any water (because it is not used to hold water or it has been drained). While this method is able to address the silts and other light sediment, it is not able to address heavier sediment. Heavier sediment still continues to accumulate in the reservoir, even when sediment flushing is employed.

The Flood Control District employs sediment flushing at Devil's Gate Reservoir. Devil's Gate Dam was built for the management of floods and debris flows; its purpose is not to capture and conserve stormwater (groundwater recharge opportunities downstream of the dam are extremely limited). Typically, the reservoir does not hold water. Sediment flushing at Devil's Gate Reservoir is conducted during small storms and during the early stages of larger storms by leaving the lowest gate (sluice gate) open to pass silts and other light sediment through the dam. This is possible because the small flows associated with small storms and the early stages of larger storms are insufficient to move heavy debris downstream; therefore, the operation of the dam is not threatened. However, as storm flows increase, large amounts of heavy debris begin to move towards the sluice gate. This can clog the sluiceway and limit the ability to operate the sluice gate. To prevent impacts to the sluiceway and sluice gate, the gate is closed as higher flows enter the reservoir, creating a pool of water in front of the dam called a buffer pool. The buffer pool slows the storm flows through the reservoir, which causes heavier debris to settle farther upstream in the reservoir away from the dam face. Once storm flows have subsided the sluice gate is opened again to drain the reservoir and to allow passage of sediment with the lower flows.

After large fires, such as the Station Fire of 2009, the amount of sediment and burned vegetative matter delivered to a reservoir can immediately block the dam's outlets, rendering sediment flushing ineffective.

3.3.4 RESERVOIR CLEANOUT OPERATIONS

Given the amount of sediment accumulated in the reservoir behind a dam and the impact that accumulation has on the operation of the dam and the dam's ability to fulfill its purposes, WRD considers different options for cleaning out the reservoir and consults with the Regulatory Division of the Army Corps of Engineers, the California Regional Water Quality Control Board, and the California Department of Fish and Game while planning a reservoir cleanout project. These agencies are involved due to regulations. Reservoir cleanouts typically require a Clean Water Act Section 404 Permit from the Regulatory Division of the Army Corps of Engineers, a Clean Water Act Section 401 Water Quality Certification from the California Regional Water Quality Control Board, and a Streambed Alteration Agreement from the California Department of Fish and Game per Section 1602 of the State Fish and Game Code. Cleanout operations that have significant environmental impact are also subject to environmental review under the California Environmental Quality Act, which includes public involvement.

Reservoir cleanouts that employ sluicing are performed by FMD. Sluicing is a sediment removal method that employs water flow to remove smaller-particle sediment (i.e., sands and silts) from a reservoir. Sluicing involves draining a reservoir to expose the accumulated sediment to incoming water flows so that the water can resuspend the sediment and carry it through the dam's sluice gate or valves. Typically, the sediment-laden water is captured in a reservoir or other facility downstream that is more accessible for sediment removal operations than the reservoir from which sediment was sluiced. The impacts of sediment-laden flows to downstream habitat and to downstream spreading facilities are concerns.

Reservoir cleanouts that require mechanical excavation are performed by contractors. For this type of projects, WRD prepares a Project Concept Report for Public Works Administration approval. The Project Concept Reports include the proposed quantity of sediment to be removed, method of excavation and transport, destination of sediment removed, access routes, and optimal haul routes. When the project concept calls for access through or the construction of any structures on land not owned by the Flood Control District, authorization is obtained from the landowner(s).

3.3.5 HAUL ROUTES

During debris basin and reservoir cleanout operations, trucks are commonly utilized to move sediment from the facility being cleaned and the placement site(s). For operational control, specific haul routes are determined prior to starting the transport of sediment. Some jurisdictions require permits to haul sediment through their streets. In those cases, any necessary jurisdictional permits for the truck traffic are obtained by FMD prior to the start of hauling operations. When permits are not required, FMD or Program Development Division's City Services Group may work with the jurisdictions whose streets may be used during the transportation of sediment to determine an optimal haul route while taking school zones, construction zones, and efficiency into account. Information fliers may be distributed by FMD to the residents along the haul route. Information about the planned cleanout activities and haul routes to be used is posted on Public Works' website by the Public Relations Group.

3.3.6 PLACEMENT LOCATIONS

As discussed in Section 2, potential placement locations for sediment removed from Flood Control District facilities include sediment placement sites, landfills, and pits.

3.3.7 OPERATIONS AT SEDIMENT PLACEMENT SITES

Sediment placement at an SPS occurs when debris basins and reservoirs are cleaned out. Sediment is placed at SPSs according to interim grading and drainage plans developed to provide proper drainage, stability, safety, and

efficiency while working toward the ultimate fill plan. During sediment placement at an SPS, operations are supervised by FMD unless the work is performed under contract, in which case the work is inspected by Construction Division.

3.3.8 DEVELOPMENT OF ULTIMATE FILL PLANS FOR SEDIMENT PLACEMENT SITES

The ultimate fill plan is typically developed by Design Division with input from FMD and WRD. The plan identifies drainage improvements such as bench drains, underground drains, debris control structures, landscaping, and other appurtenances. The fill plan may be revised as the site evolves and needs change.

3.3.9 REMOVAL OF MATERIAL FROM SEDIMENT PLACEMENT SITES

Public Works has allowed local agencies and contractors in need of fill for development, road construction, landfill closures, or other projects to take sediment from an SPS under the oversight of Land Development Division Permit Inspectors or an FMD Construction Superintendent. In these situations, Land Development Division would issue a permit for the sediment removal. Upon completion of the removal work, a final evaluation of the SPS would be undertaken by FMD staff to verify that drainage was satisfactory. Over the years, approximately 10 percent of the sediment volume placed in the SPSs has been removed.