

## CHAPTER 6

### WATER RESOURCES

Issues related to surface water and groundwater resources related to proposed Bulk Material Processing Center (BMPC) use permit amendment and related actions (Project) are discussed in this chapter. As discussed in Chapter 3, the proposed Project components associated with the BMPC would be constructed on the final landfill cover. The reader is referenced to Chapter 5 for a discussion of the geologic environment of the West Contra Costa Sanitary Landfill (WCCSL) site.

#### A. SETTING

This section provides an overview of the water resource setting of the WCCSL. Pursuant to Section 15150 of the California Environmental Quality Act (CEQA) Guidelines, the Environmental Impact Report (EIR) for closure of the Hazardous Waste Management Facility (State Clearinghouse No. 95063005) and the Initial Study/Mitigated Negative Declaration for the WCCSL Solid Waste Facilities Permit and Landfill Closure and Postclosure Maintenance Plans (State Clearinghouse No. 96052032) are incorporated by reference.<sup>23, 33</sup> Pertinent information is summarized below.

##### 1. Watershed and Drainage Characteristics

The WCCSL is on lands adjacent to San Pablo Bay (Figure 6-1). The following surface water bodies are at or within 1 mile of the site:

- Lagoon Area B, a lagoon along the southern perimeter of the WCCSL Class II landfill. Lagoon Area B contains trapped bay water, surface runoff, and groundwater that recharges the area. The lagoon is enclosed by dikes, and water levels are controlled by rainfall and evaporation.
- Lagoon Area C, a saltwater lagoon along the western perimeter of the Class II landfill. Open to San Pablo Bay, the lagoon is generally flooded except at low tide, when some tidal flats are exposed.
- San Pablo Creek, a perennial tidally influenced estuarine stream immediately east of the facility. Fresh water in the creek is tidally mixed with salt water from San Pablo Bay in a zone that extends over 1,000 feet upstream of the WCCSL site.

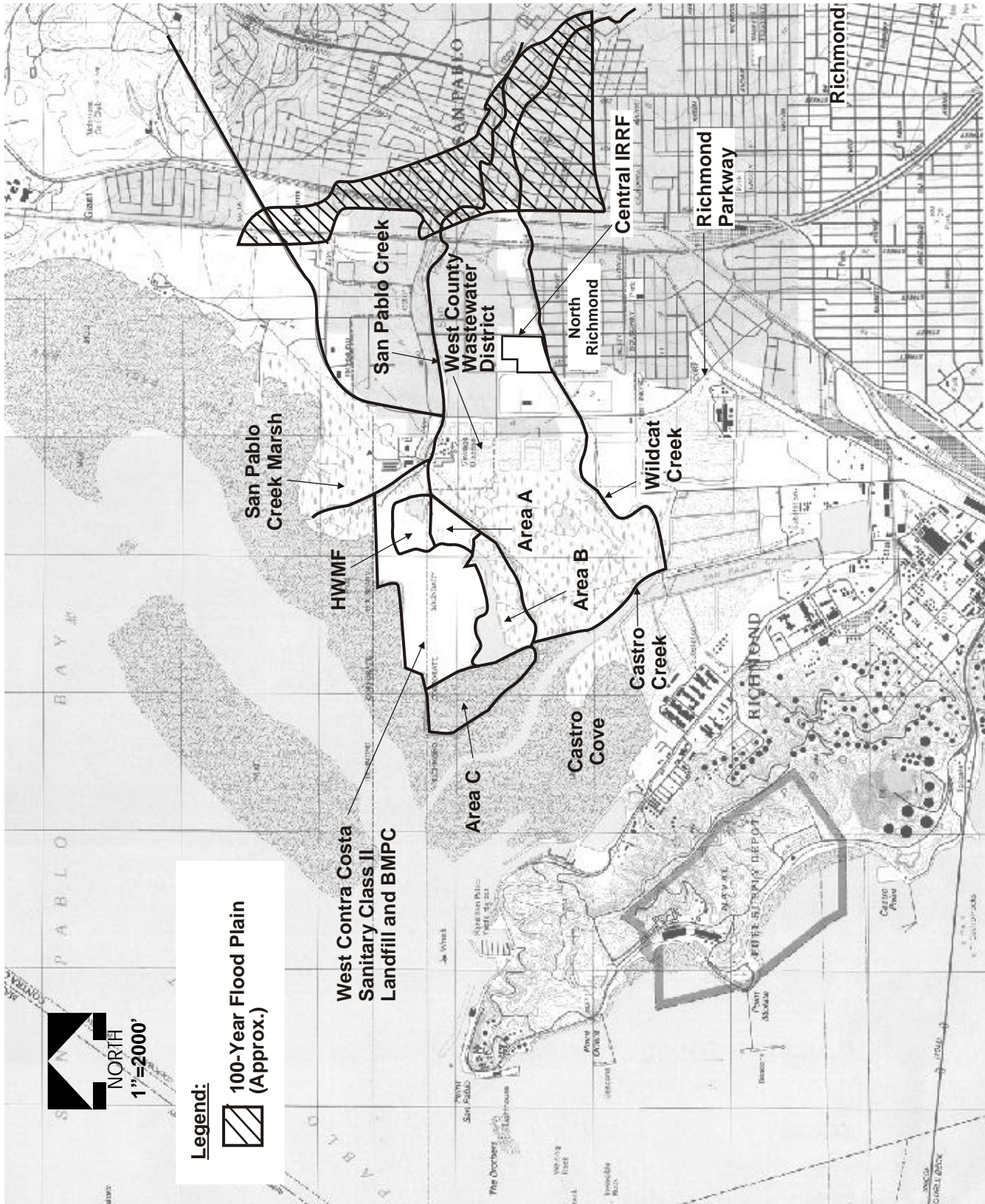


Figure 6-1 Surface Water Features

Source: Draft EIR on HWMF Closure, reference 33

- Wildcat Creek, a perennial tidally influenced estuarine stream, enters Wildcat Marsh about 0.8 miles south of the facility.
- Castro Creek, an estuarine stream about 0.75 miles southwest of the facility. The brackish water creek flows northwest to San Pablo Bay in the general area of Lagoon Area C.
- San Pablo Bay immediately to the west and north of the facility.
- Many small tributaries that drain and feed the brackish marshlands northeast and south of the facility.

Figure 6-1 shows the limits of the 100-year floodplain. The 100-year flood flows in San Pablo Creek near the WCCSL would be totally contained in the channel.<sup>33</sup>

## 2. Stratigraphy

The WCCSL overlies Bay Mud sediments in the Richmond Basin, which is bounded by the San Pablo and Hayward Faults. Bay Mud is composed primarily of inter-fingering alluvial fan/stream channel and estuarine deposits. Locally, the Bay Mud is divided into Old and Young Bay Mud. The Young Bay Mud generally occurs between the surface and depths of about 50 to 70 feet below mean sea level (msl). It is distinguished from the underlying and Old Bay Mud deposits by its higher clay content and lower strength. The Old Bay Mud occurs at depths ranging from 50 to 70 feet below msl to a depth of about 100 feet. Below the Old Bay Mud, sand layers up to 20 feet thick occur. Bedrock is estimated at a depth of about 300 feet beneath the WCCSL site.<sup>29</sup>

## 3. Groundwater Occurrence

Groundwater beneath the landfill has been classified into four water-bearing zones (WBZs):

- Surficial WBZ—uppermost zone, occurring between +20 and -10 feet msl. Within the landfill, much of the surficial zone flows through refuse and fill.
- Shallow WBZ—underlies the surficial WBZ between -10 and -30 feet msl. Contains mostly naturally occurring Bay Mud sediments, but also some waste fill in the areas that have exhibited the largest settlement.
- Medium WBZ—underlies the shallow zone and extends from -30 to -60 feet msl. Contains only naturally occurring Bay Mud sediments which are composed mostly of clay and silty clay, with occasional sand lenses or layers.

- Deep WBZ—underlies the medium zone and extends from -60 to -135 feet msl. Consists of mostly clays and silts, with occasional sand lenses or layers.

According to Regional Water Quality Control Board (RWQCB) Order No. R2-2002-0066, the surficial, shallow, and medium WBZs and the uppermost portion of the deep WBZ beneath the WCCSL contain brackish to saline water and typically exhibit extremely low yields and, therefore, have not been used as a source of drinking water.<sup>29</sup> Groundwater in the lower portion of the deep WBZ (sand units between -113 and -132 feet msl) has total dissolved solids (TDS) and yield values sufficient to qualify as a potential drinking water source, though there is no current use of the site's groundwater, nor any anticipated plans for its use.

#### 4. Leachate Collection and Removal System

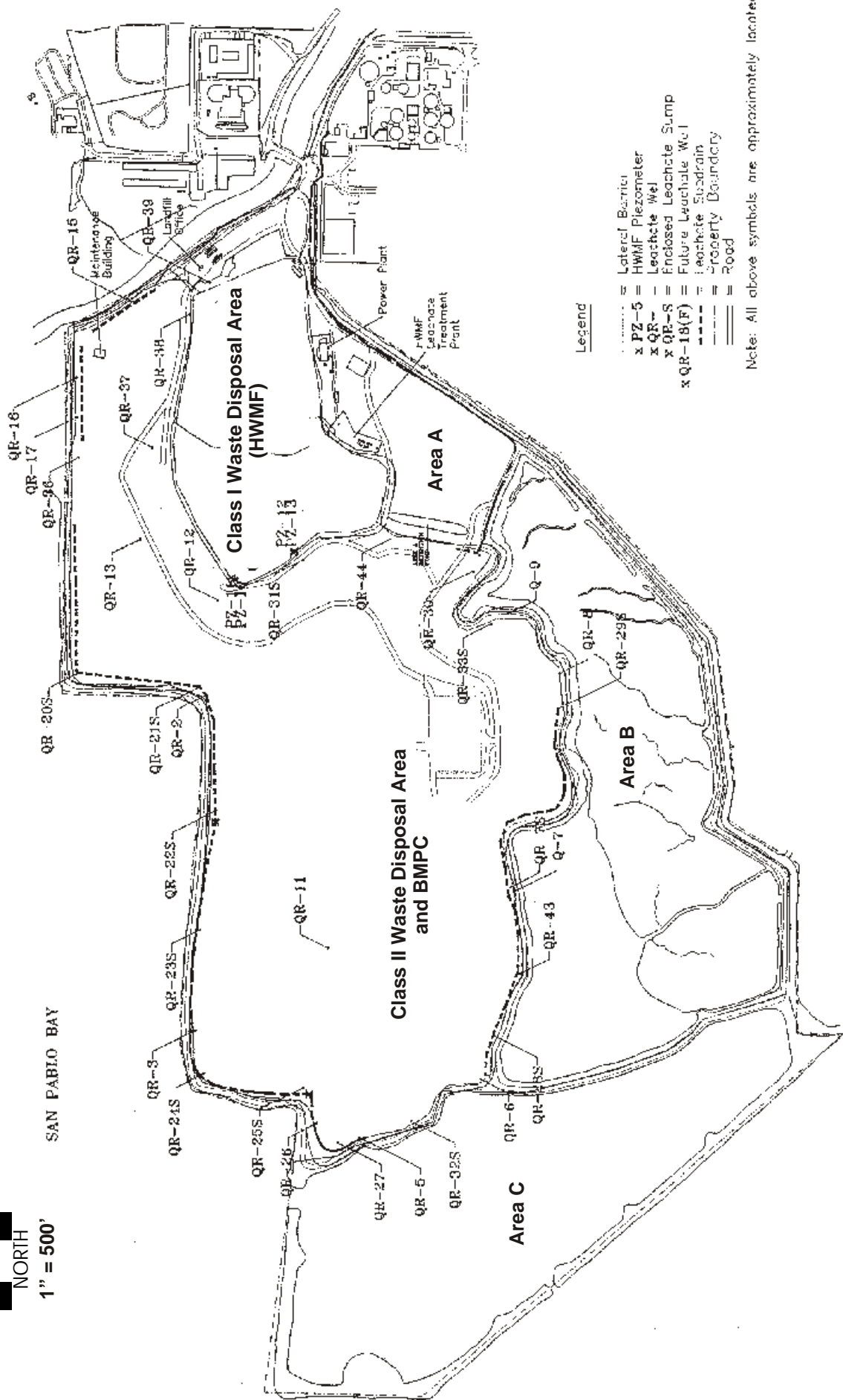
Figure 6-2 shows the components of the leachate collection and removal system (LCRS). Components include the leachate containment barrier, leachate wells, subdrains, enclosed leachate sumps, the leachate header pipelines, and the computerized control system. These components comprise a system to monitor, collect, contain, and remove leachate collected within the landfill. Leachate migrates to the leachate sumps and French drains where it is collected through vertical pipes and pumped via the leachate header pipelines to the storage mixing tank located near the landfill gas power plant in Area A. Leachate is then pumped to the West County Wastewater District (WCWD) treatment plant where the leachate is either treated or bypassed to the City of Richmond treatment plant.

No bottom liner was installed beneath the landfill, consistent with landfill practices at the time of filling. The underlying Bay Mud, composed primarily of clay and clayey silt of low permeability, prevents the downward vertical migration of leachate.<sup>29</sup>

A low-permeability Bay Mud/soil-cement-bentonite barrier wall surrounds the entire WCCSL site to prevent horizontal migration of leachate.<sup>29</sup> The barrier wall has hydraulic conductivities of  $1 \times 10^{-6}$  centimeters per second (cm/s) or less, a minimum thickness of 3 feet, and is keyed into the underlying Bay Mud a minimum of 5 feet.

The LCRS is designed to create an inward hydraulic gradient, wherein the groundwater levels outside the barrier are higher than inside; however, this gradient has not been established because the Applicant has been unable to pump high volumes of leachate to the WCWD treatment plant due to concerns over elevated levels of chloride salts because it could affect use of treated wastewater from WCWD by Chevron for use in their cooling towers. Currently, it is estimated that about 150 million gallons of leachate have accumulated within the landfill.<sup>29</sup> However, with construction of a separate Class II leachate line to the WCWD sludge lagoons scheduled to be completed by late 2003, leachate flows will then be routed directly to the City's

**NORTH**  
1" = 500'



- Legend**
- - - - - Lateral Barrier
  - x PZ-5 HWMF Piezometer
  - x QR- Leachate Well
  - x QR-S Enclosed Leachate Sump
  - x QR-19(F) Future Leachate Well
  - - - - - Leachate Subdrain
  - ==== Property Boundary
  - ==== Road

Note: All above symbols are approximately located.

**Figure 6-2 Leachate Collection and Removal System**

Wastewater Treatment Plant. This will enable greater quantities of leachate to be extracted from the Class II landfill (approximately 100,000 gallons per day) and the inward gradient to be created.<sup>29,39</sup> It is expected that the total volume of leachate generated at the landfill will be reduced when final closure is completed.

Leachate routed to the City's treatment plant must meet the requirements of City Ordinance No. 3-00 which regulates pollutant limitations and permits for discharges to the wastewater treatment system. An agreement was executed between the West County Landfill, Inc. (Applicant) and the City on April 24, 2001, regarding acceptance of the Class II landfill leachate.<sup>46</sup>

## **5. Leachate Monitoring**

Leachate is analyzed on a monthly and quarterly basis and compared to water quality parameters, pursuant to the requirements of RWQCB Order No. R2-2002-0066.<sup>29</sup> A total of 30 leachate wells located within the interior of the landfill are used to monitor landfill leachate elevations. A subset of the leachate wells is used to monitor chemical concentrations and determine whether landfill waste materials are leaching and impacting groundwater. Additionally, 39 groundwater monitoring wells are located at the landfill perimeter and in interior areas to monitor the surficial, shallow, and medium water-bearing zones.<sup>29</sup>

## **6. Site Contamination and Water Quality**

Groundwater beneath the landfill contains volatile and semi-volatile chlorinated solvents, benzene, toluene, xylene, and petroleum hydrocarbons as gas and diesel. Levels of metals are generally low. According to RWQCB Order No. R2-2002-0066, contaminants consisting of tetrahydrofuran (THF), tert-butyl alcohols (TBA), and low levels of volatile organic solvents have been detected recently outside the landfill beyond the barrier walls.<sup>29</sup> Contamination is generally limited to the surficial and shallow groundwater zones along the southeastern portion of the site. According to the Applicant, the installation of the barrier wall involved an alignment that went through original waste and wells outside of the wall were installed in the waste.<sup>39</sup> Thus, the contamination may be pre-existing prior to barrier wall installation and residual in nature. Order No. R2-2002-0066 provides the regulatory mechanism for addressing this issue.<sup>36</sup>

Order No. R2-2002-0066 requires the Applicant to comply with the following provisions relative to groundwater contamination:

1. February 1, 2003—submittal of a technical report which proposes a work plan to define groundwater contamination originating from the Class II landfill and extending beyond the leachate barrier wall. This report was submitted to the RWQCB on January 30, 2003, and is entitled "Groundwater Investigation Workplan Corrective Action Groundwater Monitoring Program."

2. June 1, 2003—submittal of a technical report which documents the results of the investigation specified in Item 3.
3. September 1, 2003—submittal of a technical report including a workplan and schedule for actions necessary to establish an inward hydraulic gradient at the Class II landfill.
4. September 1, 2004—submittal of a technical report documenting the implementation of actions necessary to establish an inward hydraulic gradient.
5. September 1, 2004—submittal of a technical report which evaluates and proposes remedial methods for addressing groundwater pollution beyond the leachate barrier wall.

A San Pablo Creek surface water monitoring program was conducted between 1987 and 1996 that involved quarterly sampling of the creek water and sediments at five locations upstream and downstream of the WCCSL. In October 1996, the RWQCB authorized the elimination of the creek monitoring program because of the barrier wall in that area and because the ongoing well monitoring program would provide an early indication of any contaminants that could be moving toward the creek.

The Applicant has monitored the Area B pond since 1990 to develop background information on water quality. These data are contained in Appendix L of the Report of Disposal Site Information (RDSI) and show that the pond is highly saline due to evaporation, but does not contain significant contaminants.<sup>1</sup> The water level in the pond fluctuates during the year, responding to seasonal rainfall accumulation and evaporation. Area B normally has no discharge to the Bay.

A special water quality study was conducted by the Applicant during the Phase I composting demonstration project from 1993 to 1995. This study characterized the substances that could be released during rainfall runoff from the composting area if sludge were to be used as an additive or if sludge composting was anticipated as currently proposed. Laboratory analyses of samples collected are included in Appendix G of the Report of Composting Site Information (RCSI). No significant contaminants were identified.<sup>14</sup>

## **7. Drainage Management**

In accordance with the provisions of General Permit No. CAS000001 for Water Quality Order No. 91-13-DWQ and updated by No. 97-03-DWQ National Pollutant Discharge Elimination System (NPDES), the Applicant has prepared and implemented a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP (December 1996) is included in Appendix N of the RDSI.<sup>1</sup> The Applicant's policy is to fully comply with the requirements of NPDES Order No. 91-13-DWQ and updated by No. 97-03-DWQ. The Applicant has certified that all non-

storm water discharges to storm water conveyance systems have been eliminated. NPDES Permit No. 2 07S005532 was issued to the WCCSL in October 1992.

Rip-rapped surfaces protect the outside edges of the landfill that are adjacent to the Bay or the diked pond. A blanket of concrete rubble rip-rap has been placed around the external surfaces of the landfill where water wave action must be controlled to prevent erosion of the landfill edge. The riprap is maintained annually with additional materials placed where severe wave action or settlement has moved some of the previously placed materials.

The general concept of the WCCSL surface drainage plan is shown on Figure 3-6, the final grading plan. The drainage plan for the WCCSL will accommodate the 100-year storm event. The WCCSL is managed to prevent the infiltration of surface water into the waste materials and to maximize and control the amount of surface water that runs off via overland flow. The interior area of the site has been graded to handle all runoff from the adjacent slopes and to minimize erosion. Facilities include temporary and permanent berms, bench drains, down drains, etc. Storm water runoff from the Class I Hazardous Waste Management Facility (HWMF) and the composting area is directed into separate retention basins in Area A (Figure 6-3). If necessary, excess storm water may be directed to Area B after testing. Storm water runoff from other areas of the Class II landfill may discharge via rip-rapped outlets into San Pablo Creek, San Pablo Bay, Area A, or Area B. Silt retention areas and grassy slopes are used to filter out silt and debris prior to discharge into Area B and San Pablo Bay.

The SWPPP requires an ongoing surface water monitoring program at selected locations within the WCCSL. The objectives of this program are to:

- Ensure that all storm water discharges are in compliance with the Discharge Prohibitions, Effluent Limitations and Receiving Water Limitations specified in the General Industrial Activities Storm Water Permit (general permit) – Water Quality Order Numbers 91-13-DWQ and 92-12-DWQ (NPDES CAS000001).
- Ensure that practices at the facility to control pollutants in storm water discharges are evaluated and revised to meet changing conditions.
- Aid in the implementation of the SWPPP required by Section “A” of the general permit.
- Measure the effectiveness of best management practices in removing pollutants in storm water discharge.

The SWPPP also requires site inspections and a preventive storm water control maintenance program. In the event that the monitoring program detects a release of contaminants, the Applicant would notify the RWQCB and be required to develop and implement an evaluation monitoring program and a corrective action program under RWQCB review and oversight pursuant to State regulations.





**Figure 6-3 Retention Basin.** This retention basin receives storm water runoff from the closed Class I hazardous waste disposal site and the composting area.

## **B. REGULATORY AND PLANNING FRAMEWORK**

The regulatory and planning framework for the proposed Project relative to water resources exists at the state and local levels. The broader regulatory context related to development and approval of the Project is discussed in Chapter 3, Section C6.

### **1. State and Regional**

The State Water Resources Control Board (SWRCB) and RWQCB are the state agencies responsible for the management and protection of the State of California's water resources. Relevant regulations are discussed briefly below.

**a. California Code of Regulations.** The primary state regulatory programs governing municipal solid waste landfills were formerly split between Title 14 California Code of Regulations (14 CCR, California Integrated Waste Management Board [CIWMB]) and 23 CCR (SWRCB). The primary water quality protection regulations, including groundwater requirements, were (and still are) in 23 CCR, with the RWQCB having jurisdiction over the WCCSL.

In recognition of the overlapping regulatory programs for solid wastes, California Assembly Bill 1220 (AB 1220, California Statutes of 1993) mandated regulatory reforms by consolidation of the solid waste regulatory requirements of the CIWMB and the SWRCB. Those regulations were finalized in 1997 and they are codified in 27 CCR "Environmental Protection" Division 2 "Solid Wastes." Titles 14 (CIWMB) and 23 CCR (SWRCB) remain in effect and they govern a wider range of subjects than the consolidated 27 CCR Division 2 regulations, which address exclusively nonhazardous solid waste issues.

**b. Basin Plan.** The Porter-Cologne Water Quality Control Act requires the SWRCB or individual RWQCBs adopt water quality control plans, often referred to as basin plans, for the protection of water quality. The RWQCB (San Francisco Bay Region) adopted a revised Basin Plan on June 21, 1995.<sup>17</sup> The Basin Plan defines beneficial uses and water quality objectives for waters of the state, including surface waters and groundwaters. Beneficial uses of local water resources, as specified in RWQCB Order No. R2-2002-0066, include the following:

Groundwater beneath the Class II landfill:

- Domestic and municipal supply (deeper than -100 feet msl)
- Agricultural supply (deeper than -100 feet msl)
- Industrial process and service supply (deeper than -100 feet msl)
- Discharge to San Pablo Bay and wetlands surrounding the site.

San Pablo Creek in the vicinity of the landfill:

- Wildlife and estuarine habitat
- Non-contact water recreation
- Fish migration and spawning
- Preservation of rare and endangered species
- Shellfish harvesting.

San Pablo Bay in the vicinity of the landfill:

- Industrial service supply
- Navigation
- Contact and non-contact recreation
- Commercial and sport fishing
- Wildlife and estuarine habitat
- Preservation of rare and endangered species
- Fish migration and spawning
- Shellfish harvesting.

c. **RWQCB Order No. R2-2002-0066.** Order No. R2-2002-0066 represents updated Waste Discharge Requirements (WDRs) for the WCCSL Class II landfill. This Order was adopted by the RWQCB on June 19, 2002. The purpose of the Order was to update WDRs for the WCCSL to include general provisions and tasks necessary to (1) complete final landfill closure; (2) modify the dischargers named; (3) evaluate and implement upgrades to the leachate collection and removal system; (4) evaluate the extent of groundwater contamination detected outside the landfill footprint and implement remedial measures necessary; (5) conduct studies necessary to evaluate stability of landfill materials; and (6) bring the landfill into compliance with the appropriate portions of 27 CCR.

Selected specifications in Order No. R2-2002-0066 that relate to protection of surface and groundwater resources at the WCCSL site include the following:

- The site shall be protected from any washout or erosion of wastes or cover material and from inundation that could occur as a result of a 100-year, 24-hour precipitation event, or as the result of flooding with a return frequency of 100 years.
- Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes during the life of the site.
- The existing containment, drainage, and monitoring systems at the facility shall be maintained as long as leachate is present and poses a threat to water quality.

- The dischargers shall assure that the structures, which control leachate, surface drainage, erosion and gas are constructed and maintained to withstand conditions generated during the maximum probable earthquake.
- The final cap system shall be graded and maintained to promote lateral runoff and prevent ponding and infiltration of water.
- The dischargers shall analyze the samples from any groundwater or leachate wells as outlined in the Discharge Monitoring Program.
- The dischargers shall install any reasonable additional groundwater and leachate monitoring devices required to fulfill the terms of any future Discharge Monitoring Program issued by the Executive Officer.
- The dischargers shall maintain all devices or designed features installed in accordance with this Order, such that they continue to operate as intended without interruption.
- The RWQCB shall be notified immediately of any failure occurring in the waste management unit. Any failure that threatens the integrity of containment features or the landfill shall be promptly corrected after approval of the method and schedule by the Executive Officer.
- The dischargers shall maintain the facility so as to prevent a statistically significant increase in water quality parameters at points of compliance as provided in 27 CCR §20420.

**d. RWQCB Order No. 96-098.** Order No. 96-098 addresses waivers of WDRs for composting operations. Composting facilities which compost green waste, agricultural waste, food processing waste, or paper wastes are waived from needing to obtain WDRs, though a Report of Waste Discharge (ROWD) must still be submitted.

Co-composting with sewage sludge (biosolids), such as proposed by the Applicant, is not exempt from needing WDRs. The Applicant would need to address biosolids in their ROWD with proposed environmental controls and the RWQCB would determine the need for WDRs. Similarly, the land application (spreading) of biosolids would need to be included in the ROWD and RWQCB would determine whether the existing landfill WDRs (Order no. R2-2002-0066) would need to be revised.<sup>57</sup>

**e. Storm Water Control Plans.** As discussed earlier in this chapter, the Applicant has prepared an SWPPP for the existing WCCSL facility in accordance with the provisions of General Permit No. CAS000001 for Water Quality Order No. 91-13-DWQ, as updated by No. 97-03-DWQ NPDES. Because proposed Project activities exceed 5 acres in size, the Applicant must submit a Notice of Intent to the SWRCB, prepare and submit a revised SWPPP

acceptable to the RWQCB Executive Officer, and implement Best Management Practices for control of storm water.

## 2. County/City

The Contra Costa County (County) General Plan, the City General Plan and North Richmond Shoreline Specific Plan all contain water resource goals, policies, and implementation measures relative to water resources.<sup>5,7,12</sup> Those measures which are relevant to the WCCSL site are included in the HWMF EIR.<sup>33</sup>

In summary, the goals, policies, and implementation measures of the County and City General Plans relate to conservation, enhancement, and management of water resources to assure their beneficial uses are met. Policies and implementation measures address facility sitings in areas of high percolation rates; control of peak drainage flows; management of grading, filling, and construction activity near watercourses; regulation of development that is potentially destructive to the natural quality of the creeks; groundwater monitoring for large-scale commercial and industrial facilities; rejection of any development proposals which would deplete groundwater supply; and review of project applications to determine their conformance with the General Plan policies.

The local mechanism of complying with these measures is through the use permit process. As discussed in Chapter 3, the existing BMPC at the WCCSL is subject to County Land Use Permit (LUP) 2054-92, as amended by LUP 2043-94, and City Conditional Use Permit (CUP) 92-53. Both permits required the Applicant to submit a Final Development and Improvements Plan (FDIP) for the BMPC for County and City approval. Such a document was submitted for approval by these jurisdictions.<sup>3</sup>

The use permits are specific regarding the content of the FDIP. One of the required sections is the BMPC Drainage, Erosion, and Sediment Control Plan. This plan addresses drainage system capacity requirements and drainage and erosion control, including control devices and the surface water monitoring program. Both use permits would need to be revised and amended to reflect the proposed Project. The Applicant will likely be required to update the Plan in a revised FDIP as a condition of both use permits. For discharge of Class II leachate directly to the City's treatment plant, the Applicant would comply with City Ordinance No. 3-00 and the agreement executed with the City on April 24, 2001.<sup>48</sup>

## C. SIGNIFICANCE CRITERIA

Appendix G of the CEQA Guidelines indicates a project will normally have a significant effect on water resources if it will:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).
- Otherwise substantially degrade water quality.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami, or mudflow.

#### **D. IMPACTS AND MITIGATION MEASURES**

Water resource issues associated with the proposed Project are discussed in this section. Issues discussed in this section relate to water quality standards and waste discharge requirements, depletion of groundwater supplies, water quality, and drainage and runoff.

## 1. Impacts Considered not to be Significant

Significance criteria applicable to potential water resource impacts are discussed in Section C. Criteria that are either not applicable, or not significant based on the discussion in Section A of this chapter, include the following:

- Substantially deplete groundwater supplies or interfere with groundwater recharge.
- Placement of housing within a 100-year flood hazard area.
- Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.
- Inundation by seiche, tsunami, or mudflow.

The proposed Project facilities do not require the use of groundwater so there is no impact to groundwater supplies. Water supply needs are met through use of potable water from East Bay Municipal Utility District, treated effluent from the WCWD treatment plant, or reuse of runoff water. The WCCSL is outside of the 100-year flood hazard area and does not involve placement of housing or structures within such an area.

## 2. Water Quality Standards and Waste Discharge Requirements

### **IMPACT 6-1. Proposed Project components could result in a violation of water quality standards or WDRs. This impact is considered to be less than significant.**

The WCCSL Class II landfill and the BMPC site and operations are subject to RWQCB Order No. R2-2002-0066.<sup>29</sup> The updated WDRs were recently adopted by the RWQCB on June 19, 2002. This Order contains specific requirements the Applicant must comply with to protect local surface water and groundwater resources. Violations may result in enforcement actions, including RWQCB orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of the WDRs by the RWQCB.

The proposed Project may require Order No. R2-2002-0066 to be revised depending on the RWQCB's determination regarding land application of biosolids. A ROWD would need to be submitted to the RWQCB.<sup>42</sup> A landfill elevation of 160 feet above msl is included in the WDRs. Provision No. 19 of the Order requires the Applicant to submit a technical report 120 days prior to any material change in site operation or features describing any material proposed changes to site development, redevelopment projects, site features, or site operations for the landfill. The technical report must describe the project, identify key changes to the design that may impact the landfill, and specify components of the design necessary to maintain integrity of the landfill cap and prevent

water quality impacts. No material changes to the site shall be made without approval by the Executive Officer of the RWQCB.

As indicated earlier, Order No. 96-098 does not exempt composting facilities from obtaining WDRs if sewage sludge is used. The Applicant's ROWD submitted to the RWQCB would also need to include co-composting of biosolids. The RWQCB would then determine if WDRs would need to be issued for the Applicant's Composting Facility.<sup>57</sup>

**Control Measure Incorporated by Applicant:** None.

**EIR Recommendation:**

**MITIGATION MEASURE 6-1.** None required.

### 3. Groundwater Quality

**IMPACT 6-2. Proposed Project components could generate either increased quantities of pollutants or new sources of pollutants, which could infiltrate the soil column and degrade underlying groundwater quality. This impact is considered less than significant.**

The WCCSL has a range of existing control measures associated with existing facilities, proposed Project components, and potential effects on groundwater resources. As discussed in Chapter 3 and earlier in this chapter, the Class II landfill is equipped with an LCRS, is surrounded by a barrier wall, and is regulated pursuant to the requirements of RWQCB Order No. R2-2002-0066 for the protection of surface water and groundwater quality.

The proposed vertical height increase would provide more waste that produces leachate during decomposition and increased weight that would cause the release of more groundwater from the underlying sediments. However, these increases would be accommodated within the existing leachate management system that is designed to remove the approximately 150 million gallons of leachate that has accumulated over time. With the new connection to the City's wastewater treatment plant in late 2003, although the rate at which leachate can move through waste will be the limiting factor, approximately 100,000 gallons per day of leachate would be pumped to the plant. This pumping rate would be expected to remove a sufficient quantity of the stored leachate to provide an inward hydraulic gradient to the landfill. Following lowering of leachate levels and the establishment of the inward hydraulic gradient, the leachate removal capacity would exceed the leachate generation and groundwater release rates.



Additionally, the proposed BMPC facilities on the landfill's central plateau would be located on the final landfill cover; postclosure land uses are subject to the requirements of the WCCSL Postclosure Maintenance Plan; and the proposed WRC site and building floor are paved and is underlain by 3 feet of soil and clay with a 60-millimeter-thick high density polyethylene (HDPE) geomembrane liner, and topped with 2 feet of sand designed to State final cap standards.

Given the safeguards discussed above, concerns would exist over preservation of the final cap integrity and over proposed activities that would introduce new sources of high-liquid wastes. The latter would include the proposed spreading of dredged material and biosolids on portions of the southern and eastern landfill slopes (Figure 3-3). Drying of this material on the landfill slopes would occur via solar drying and wind action.

The Applicant has conducted on-site evaluations at the Class II landfill on the effectiveness of the final cap in limiting infiltration of water. Tests conducted showed the cap is effective in limiting water infiltration and that vegetative growth serves to remove the moisture. Data collection and observation at the Potrero Hills Landfill in Solano County, also owned by Republic Services, Inc., show that the deeper soils (18 inches to 60 inches in depth) have relatively unchanged moisture levels after 5 years of rainfall (Appendix 3H).

**Control Measures Incorporated by Applicant:**

- a) A minimum of 3 feet of compacted soil would be placed over the final landfill cap in the central plateau, which will underlie operations areas and serve to protect the final cap.
- b) Benchmark marker layers would be established and annually monitored to determine that the upper 3-foot-thick soil buffer is not removed over time.
- c) Additional compacted soil would be placed as necessary to augment and maintain the 3-foot soil layer.
- d) Additional soil on the southern and eastern landfill slopes would be placed prior to application of dredged material and biosolids. Per control measures (a – c), establish benchmark marker layers, monitor annually, and place additional soil as necessary to protect the final cap.
- e) Annual soil moisture monitoring would be conducted during the initial years of dredged materials and biosolids spreading and, if necessary, adjustments will be made to facility operation under review and oversight of the RWQCB.
- f) Prior to full-scale implementation of dredged materials and/or biosolids spreading, further testing would be conducted, under RWQCB review and

oversight, of application methods and rates to optimize operational procedures while not overloading the soil's moisture assimilation capacity.

- g) Prior to accepting dredged materials for disposal, the Applicant would require the project sponsor to meet specific requirements, including providing specifications on material to be delivered and on-site operating protocols needed to manage the material on site to prevent water quality impacts.
- h) Plan and implement a leachate removal program in accordance with the requirements of Order No. R2-2002-0066 that would provide an inward hydraulic gradient to the landfill.

Control measures discussed above as part of the Project would reduce potential impacts to groundwater quality to a less-than-significant level.

#### **EIR Recommendations:**

**MITIGATION MEASURE 6-2.** None required.

#### **4. Drainage, Runoff, and Surface Water Quality**

**IMPACT 6-3. The proposed Project would alter the existing drainage pattern of the site or contribute increased runoff that could exceed system capacity and result in on-site or off-site flooding. This impact is considered to be less than significant.**

The required closure standard for the WCCSL Class II facility is based on the maximum probable 100-year, 24-hour precipitation. Therefore, any drainage controls, such as down drains, bench drains, channels, and culverts must be designed to accommodate a 100-year, 24-hour storm event. Additionally, under RWQCB composting facility policy, all areas used must be protected from inundation by surface flows associated with the 24-hour, 25-year storm event. The Applicant's design basis for drainage controls is included in Section III.B.6.b of the RDSI and in Appendix H of the FDIP.<sup>1,2</sup>

Figure 3-6, the final landfill grading plan, shows the main drainage facilities. More detailed drawings for each of the BMPC Project components with drainage patterns and control features are included as Chapter 3 appendices (Figures 3B-1, 3C-1, 3D-1, 3F-1, and 3H-1). The Project does not propose development of new paved surfaces that would increase storm water runoff volumes. Several new buildings are proposed (Figure 3-4), but these are limited in size. The proposed WRC would be located in the former Soil Remediation Building, which is an improved site with respect to pavement, drainage control, and availability of utilities. The Soil Remediation Building would be expanded by about 0.32 acres (13,940 sq. ft.) to accommodate the WRC. Increased storm water flows resulting from construction of additional impervious areas would be conveyed

away from the site by appropriately sized down-gradient channels with respect to pavement, drainage control, and availability of utilities.

**Control Measures Incorporated by Applicant:** None.

**EIR Recommendation:**

**MITIGATION MEASURE 6-3.** None required.

**IMPACT 6-4. The proposed Project could produce increased runoff or new sources of polluted runoff that could result in substantial erosion or siltation on or off site, or otherwise degrade surface water quality. This impact is considered potentially significant.**

The proposed Project involves several new activities, but generally comprises an expansion of existing operations in the context of increased waste streams and expanded hours of operation. The WCCSL is regulated under NPDES Permit No. 207S005532 and the Applicant has implemented a SWPPP for the site. The Applicant has also certified that all non-storm water discharges to storm water conveyance systems have been eliminated.<sup>1</sup> The general concept of the WCCSL's surface drainage plan is shown on Figure 3-6, the final grading plan.

Expanded operations would expose more materials to rainfall and thus potentially degrade the quality of the storm water runoff. Water that comes into contact with these materials could be affected by the following constituents:

- Nitrate from organic material.
- Sulfate and sulfur from construction debris and organic material
- Residual pesticides remaining on organic material
- Metals from organic material and construction debris
- Increased TDS levels from organic and construction debris
- Petroleum hydrocarbons associated with cleaning of equipment and inks and glues contained within paper products.

**Composting/Wood Recovery.** Figure 3B-1 in Appendix 3B shows the drainage plan for the Composting/Wood Waste Processing Area. The plan includes berms, down drain systems, storm drain systems, the location and direction of flow in perimeter drainage channels, and the discharge points for runoff water. Facility design includes a minimum grade of 5 percent in the windrow areas and a minimum of 1 percent grade in the facility's perimeter drainage channel.

The Composting Facility would continue to have two sources of drainage water that require management. These include storm water, which generally occurs from rainfall events, and leachate, which is water that infiltrates and drains from the compost windrows and curing piles. According to the Applicant's RCSI, the composting operation would not use any significant amendments or additives except for a minor amount of fertilizer material to stimulate the composting process on an as-needed basis. Such materials normally would not exceed 1 percent by volume.<sup>4</sup>

As shown on Figure 3B-1, down slope berms would be placed along the perimeter of the composting/wood waste processing area. Any compost leachate flowing from the windrow or curing piles or the wood recovery area would be retained by this berm. The berms would be about 3 feet high and 8 feet wide. The 3-foot-deep channel formed by the berm design runs for a length of about 1,000 feet along the northern edge, about 600 feet along the eastern edge, and about 1,000 feet along the southern edge of the Composting Facility, with the channels sloped to drain to the siltation control pond in Area A.

The maximum size of the Composting Facility would be 40 acres. For purposes of annual runoff calculations, the Applicant calculated that 29 acres of the total 40 acres would generate 5 million gallons of runoff, which includes 335,000 gallons per year of compost leachate. Normally, compost leachate would be collected and re-used to add moisture in the composting process. Alternatively, compost leachate collected into the Area A basin can be discharged to the WCWD treatment plant and eventually the City of Richmond plant with the Class II landfill leachate. The drainage runoff from major storms would flow to the Area A retention basin. The diluted overflow runoff from the Area A basin would be directed to the 68-acre diked Area B pond.

The remaining 11 acres of the Compost Facility that does not drain eastward would either not be used during wet weather, and hence there would be no runoff, or the materials placed in that area would include the finished compost or wood chips where the runoff would have low pollutant potential. This drainage would sheet-flow off the area, pass through the gravel filter (the same material used for siltation control for the concrete rubble processing runoff around the southern, western and northern perimeter of the facility), and then runoff would sheet-flow down the grassy landfill slope. The drainage arrows shown on Figure 3-3 show the flow directions.

**Concrete/Asphalt Processing.** Figure 3C-1 in Appendix 3C shows the drainage plan for the concrete/asphalt recycling operation to be located at the western end of the landfill's central plateau. Facility operations could be a source of sediment and other pollutants. The Applicant proposes to control sediment through the use of defined drainage grading and use of silt barriers (geofabric fences, straw and shredded wood mulch, and hay bales). As illustrated, surface drainage would be a combination of sheet flow over southern, western, and northern landfill slopes to the Bay or Area B; and discharge to the Area A retention pond. Vegetative growth on the landfill slopes would serve to filter

sediment and silt particles. The County LUP No. 2053-92 limits asphalt crushing to the dry weather season and the stored and crushed asphalt is to be covered during the wet season. The Applicant has proposed as part of this Project that these requirements be removed from the LUP.

**Waste Recycling Center.** The drainage plan for the Waste Recycling Center (WRC) is shown on Figure 3D-1 of Appendix 3D (alternative WRC site drainage plan shown on Figure 3H-1 of Appendix 3H). The WRC is proposed to be located in the former Soil Remediation Building. Drainage at the front of the building would be diverted to the western and eastern sides. Because rainfall drainage waters from the front apron would be considered to be potentially contaminated from oil dripping off vehicles and when waste unloading overflows into this area, oil/water separators would be provided to receive these drainage waters. The separators would discharge to the south bench drain that leads eastward to the Area A retention pond. The roof gutter drains for the processing building would be designed to appropriately discharge the water around the building. The wash down wastewater from cleaning the tipping floor would be processed through an oil/water separator.

**Wet/Dusty Material Blending.** The wet/dusty material blending would first occur at the former Soil Remediation Building, if sufficient time is available prior to the building's use for the WRC, or on the landfill's central plateau at the Waste Shuttle Facility. These materials would be hauled in covered trailers and placed in the building and stockpiled to be protected from the rain and prior to processing. The drainage plan for the Soil Remediation Building is shown on Figure 3D-1 of Appendix 3D. Berms and channels divert runoff from the building with most of it diverted to the Area A siltation control pond and some to San Pablo Creek. The drainage from the building and apron area would be directed to oil/water separators located at the end of the facility and then to the Area A basin.

At the landfill central plateau, runoff controls would be established to direct runoff to the Area A basin. The Applicant proposes to conduct mixing operations under controlled conditions. During wet weather, mixing would be done either under a roofed area, in a large metal mixing chamber that could be tarped, or the mixing would be temporarily suspended.

**Soil Reclamation Facility.** The Soil Reclamation Facility would involve the reclamation of non-contaminated soils in an area adjacent to the composting and wood recovery operations. Drainage would be managed as discussed above for that area.

**Biosolids/Dredged Material Spreading.** This proposed activity involves the spreading of wet dredged materials and/or biosolids from the WCWD treatment plant on the southern or eastern slopes of the closed landfill during the dry season, which is about a 6-month period, April through October. These materials may also be used as a soil

amendment on the final capped areas of the landfill. Figure 3H-1 shows the drainage plan for landfill slope spreading operation.

Liquid biosolids application to the southern and eastern landfill sideslope areas would require the application and disposal of large quantities of water. It is proposed that 24 million gallons (mg) of digested sludge (94 to 98 percent moisture) be land applied per year on about 22.5 acres. The Applicant has evaluated two application rates, 1 gallon per 5 square feet (sq. ft.) and 1 gallon per 15 sq. ft.<sup>25</sup> Using these application rates, the following analysis is possible:

<u>Application rate</u>	<u>Depth of applied liquid, in.</u>	<u>Gal. per application per 22.5 acres</u>	<u>In. of depth to apply 24 mg</u>	<u>No. of applications per year</u>	<u>No. of applications per 6 months</u>
1 gal/5 sq. ft.	0.32	196,000	39.2	122	244
1 gal/15 sq. ft.	0.11	65,340	39.2	367	734

As shown, in order to dry 24 million gallons (MG) of liquid biosolids on 22.5 acres, a total depth of 39.2 inches would need to be applied. On an annual basis, there would need to be 122 or 367 applications per year. Over a 6-month drying period, such as is proposed, these applications would be doubled to 244 to 734 (1.4 to 4 applications per day). It can be concluded that either a much larger drying area is needed, or projected quantities of liquid biosolids would need to be reduced, in order to avoid conditions of over saturation, increased runoff, and water quality impacts.

Drainage control would be provided to prevent water from entering the processing areas and to allow it to flow around and away from the areas. As illustrated on Figure 3H-1 in Appendix 3H, an existing berm at the base of the slopes would be raised in height to contain runoff and direct the water to sump pumps. Grasses would be planted in the ditches behind the berms to transpire water and for nutrient absorption. During the latter part of the wet weather season, the Applicant may be able to pump the runoff back to the top of the slopes and reapply it to the areas where it would evaporate. Otherwise, the runoff water would be pumped into the leachate piping system used for the Class I HWMF treated leachate discharge to the WCWD sewer. No Class I leachate would be pumped during this time. Currently, at the WCWD biosolids drying lagoons, plant operators decant rainwater off the lagoons and pump it back to the treatment plant headworks.

Biosolids may also be used as a soil amendment on final capped areas of the landfill that have vegetative cover, serving to absorb nutrients and consume moisture. Excess moisture, however, may result in run off. For those areas where the biosolids have been placed in that year as a soil amendment, the Applicant would establish and maintain an unscreened compost windrow or shredded green material (about 8 feet wide and 2 feet deep) at the base of the spreading area for moisture and nutrient absorption. In the following season, the windrowed materials would be spread on the slope as a thin mulch

layer. The application of biosolids on the final capped slope areas would follow a 5- to 10-year rotational pattern. The Applicant would monitor the biosolids application areas to verify that the drainage system is functioning as required.

**Control Measures Incorporated by Applicant:**

- a) A Notice of Intent and revised SWPPP related to proposed operations would be submitted for approval by the Executive Officer of the RWQCB; Best Management Practices (BMPs) would be implemented for control of storm water.
- b) The existing Drainage, Erosion, and Sediment Control Plan would be modified pursuant to County LUP No. 2054-92, as amended by LUP No. 2043-94, and City CUP No. 92-53. The FDIP revisions would be finalized, if amended use permits are obtained, and the Applicant would comply with permit conditions.
- c) Modified or new Solid Waste Facility Permits would be obtained from the LEA and CIWMB for the landfill, Composting Facility, and WRC and permit conditions would be followed.
- d) Further testing of biosolids spreading would be conducted prior to full-scale implementation to refine the rates and methods of application, under the review and oversight of the RWQCB. Revised WDRs would be obtained as necessary and the Applicant would abide by permit conditions.
- e) BMPs at the Composting Facility would be employed that would optimize applied water to the windrows while minimizing the generation of leachate.

**EIR Recommendations:**

**MITIGATION MEASURE 6-4.**

- a) Upon completion of the additional biosolids spreading trials per Control Measure 6.4(d) above, the Applicant would prepare a Progress Report for RWQCB review and approval. The Progress Report would include, at a minimum, the following:
  - Purpose of Biosolids Spreading
  - Approach and Methodology
  - Results
  - Environmental Controls
  - Conclusions and Recommendations
  - Other Components Deemed Necessary by the RWQCB

The Progress Report should demonstrate the maximum acceptable biosolids loading rate, given available site area and physical constraints and the need to maximize drying and to control runoff.

Implementation of this mitigation measure would reduce potential surface water quality impacts to a less-than-significant level.

## 5. **Flooding**

**IMPACT 6-5. The proposed Public Access Trail (Trail) could result in exposure of people to risk due to flooding. This impact is considered to be less than significant.**

The alignment of the Trail along existing levees, which border WCCSL Areas B and C, make it susceptible to flooding at times of extremely high tides and stormwater runoff. According to the Applicant, flooding has occurred only once in recent times.

### **Control Measures Incorporated by Applicant:**

- a) The Trail would be closed during times of extremely high tides in conjunction with unusually wet weather when the potential exists that the Trail could be flooded.

Closure of the Trail during extreme wet weather periods would reduce the potential impact associated with flooding to a less-than-significant level.

### **EIR Recommendation:**

**MITIGATION MEASURE 6-5.** None required.

## 6. **Planning Consistency**

**IMPACT 6-6. The Project is consistent with local General Plans, North Shoreline Specific Plan, and the Basin Plan. This impact is considered to be less than significant.**

The analysis of potential water resource impacts indicates that adverse impacts are not expected to occur. The Applicant will revise their FDIP to reflect the proposed Project, obtain amended use permits from the County and City, comply with relevant provisions of RWQCB Order No. R2-2002-0066, and will also comply with requirements of NPDES Order No. 91-13-DWQ as updated by No. 97-03-DWG. Therefore, the Project is consistent with the County and City General Plans, the North Shoreline Specific Plan, and the Basin Plan.



**Control Measures Incorporated by the Applicant:** None.

**EIR Recommendation:**

**MITIGATION MEASURE 6-6.** None required.

## **7. Impacts of Mitigation Measures**

None of the mitigation measures would have an adverse environmental impact.

### **E. CUMULATIVE IMPACTS**

The Applicant must comply with various State and local requirements for the WCCSL that address the protection of surface water and groundwater resources. Leachate and drainage would continue to be managed on site without influence from off-site land uses. Drainage associated with each of the Project components would be managed separately, but in the context of the overall site drainage plan and an updated and approved SWPPP. Similarly, all future development projects discussed in Chapter 4, Section A3(b) would be subject to regulatory review by the RWQCB and local agencies for the protection of surface water and groundwater resources and appropriate permits would need to be obtained and requirements followed. As a result, there are no cumulative surface water or groundwater impacts that would result from the proposed Project and other cumulative projects in the area.