

G. HYDROLOGY AND WATER QUALITY

This section describes the existing hydrology setting for the project, including a description of the watershed, runoff, drainage, flooding, and water quality, based on available information provided as part of the project application, published reports, and a site visit conducted on July 8, 2010. The setting also includes the project regulatory framework for hydrology and water quality. Significant adverse impacts that could result from the proposed project are described, and mitigation measures to reduce impacts to a less-than-significant level are provided, where appropriate.

1. Setting

The following discussion provides an overview of hydrology and water quality of the project site, and describes the regulatory framework.

a. Watershed Description. The project is within the 4,700-acre (approximately 7.3 square miles) Lake Chabot watershed.¹ Lake Chabot is a recreational lake that is managed by the Greater Vallejo Recreation District (the lake is stocked for fishing, but swimming is not allowed).² The lake functions as a detention basin.³ The southern shoreline of Lake Chabot is within Dan Foley Park, and the northern shore is within Six Flags Marine World. Blue Rock Springs Creek discharges into Rindler Creek, which flows into the southeast side of Lake Chabot. A dam is located on the northwest side of the lake, where Chabot Creek discharges from the lake over the dam spillway when the water surface elevation rises above the spillway invert.⁴ Chabot Creek discharges into the mouth of the Napa River just north of Mare Island Strait, and Mare Island Strait discharges into the San Pablo Bay at its confluence with the Carquinez Strait.

According to the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan),⁵ beneficial uses of Lake Chabot and its tributaries include the following: municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; and fish spawning.

Beneficial uses of the San Pablo Bay include the following: municipal and domestic supply; agricultural supply; industrial service supply; water contact recreation; non-contact water recreation; commercial and sport fishing; shellfish harvesting; estuarine habitat; fish migration; preservation of rare and endangered species; fish spawning; wildlife habitat; and navigation.

b. Stormwater Runoff and Drainage. The project site has an existing stormwater drainage system that is designed to convey flows from the 100-year storm⁶ in two parallel 72-inch storm drain

¹ West Yost and Associates, 2002. *Vallejo Sanitation and Flood Control District, Storm Drain Master Plan*. July.

² McCoy, Philip, 2010. Recreation Superintendent, Greater Vallejo Recreation District. Personal communication with Baseline Environmental Consulting. August 31.

³ West Yost and Associates, op. cit.

⁴ Ibid.

⁵ San Francisco Bay Water Quality Control Board, 2007. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*. January 18.

⁶ West Yost and Associates, op. cit.

pipes (a 30-inch storm drain pipe discharges into the one of the 72-inch pipes). Storm drain inlets within the project site discharge into Blue Rock Springs Creek, which runs in a culvert beneath the project site. The runoff discharges into a short reach of open channel before crossing I-80. Flow is then conveyed across I-80 through twin 60-inch and twin 72-inch pipes. West of I-80, the flow is conveyed in an open channel through the Newell Mobile Home Park and discharges into Rindler Creek just north of Coach Lane. Rindler Creek discharges into Lake Chabot.⁷

In the event that a storm occurs that is larger than the capacity of the stormwater drainage system (i.e., in excess of the 100-year storm), or if flooding occurs during a smaller storm due to debris blockage in the downstream drainage system, flood water would be released overland from the project site across the adjacent property to the north and onto Rotary Way. In such cases, due to the difference in site elevations, surface overflows from the Elks Lodge building would drain away from Redwood Parkway and across the lower elevation site to the north.

c. Flooding, Dam Inundation, and Coastal Hazards. Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for Vallejo California, the project site is not located within a Special Flood Hazard Area subject to a one percent annual chance of flooding (often referred to as a 100-year flood). However, areas adjacent to Blue Rock Springs Creek northwest (downstream) of the project are within a Special Flood Hazard Area (Zone AE).

Historically flooding has occurred in the project vicinity. Flooding has occurred upstream of the project in Hanns Park (located adjacent to Redwood Parkway, southeast of the project). Once or twice in the last ten years, flooding has occurred due to debris clogging of drain inlets and the culvert headwall where Blue Rock Springs Creek enters the twin 72-inch culverts at the corner of Sykline Drive and Redwood Parkway.^{8,9} The debris clogging caused flooding along Redwood Parkway, including Redwood Parkway adjacent to the southern portion of the project site. The Vallejo Sanitation and Flood Control District (VSFCD) is evaluating debris control measures to alleviate the flooding problems.¹⁰

Downstream of the project, flooding occurs within the Newell Mobile Home Park located south of Coach Lane.¹¹ This area is located within a FEMA Special Flood Hazard Area (Zone AE), as delineated on the Flood Insurance Rate Map for the City. Flood water often overtops the east bank of Blue Rock Springs Creek in the northern portions of the mobile home park. Blue Rock Springs Creek also overtops its banks by its confluence with Rindler Creek, and overflows discharge across Coach Lane and into Rindler Creek.^{12,13} Flooding occurs in this area because the existing stormwater drainage system is severely under capacity to convey 100-year storm flows (which is the VSFCD requirement

⁷ Ibid.

⁸ Ibid.

⁹ Monahan, Mike, 2010. Associate Engineer, Vallejo Sanitation and Flood Control District. Personal communication with Baseline Environmental Consulting. August 27.

¹⁰ West Yost and Associates, op. cit.

¹¹ Ibid.

¹² Monahan, Mike, op. cit.

¹³ Ibid.

for the drainage area), and because the high tailwater elevation¹⁴ in Rindler Creek creates a backwater effect through the mobile home park, which decreases the capacity of Blue Rock Springs Creek and increases the flood depths through the mobile home park.¹⁵ Flooding in this area occurs every three to five years (2005, 2002, 1996, and 1984), and flooding last occurred in the winter of 2009-2010.¹⁶ The VSFCDC has not received any reports of property damage due to flooding in the last 10 years.¹⁷ The VSFCDC is currently evaluating alternatives, including channel improvements, to alleviate flooding in this area.¹⁸

The project site is not located within a dam failure inundation hazard area, as determined by the California Office of Emergency Services and mapped by the Association of Bay Area Governments.¹⁹ In addition, the project's distance from San Pablo Bay (approximately 5 miles) and site elevation (approximately 100 feet above mean sea level)²⁰ would preclude the risk of exposure to coastal hazards such as sea level rise, extreme high tides, or tsunamis. A tsunami inundation map for the project area prepared as part of a statewide multi-agency effort shows that the project area would not be inundated by a tsunami.²¹

d. Groundwater Basin and Groundwater Quality. The project site is located within the Napa-Sonoma Volcanic Highlands groundwater source area. The Basin Plan does not currently provide the beneficial uses of the groundwater, and indicates that the beneficial uses will be provided at a later date; in the interim, groundwater beneficial uses are determined on a site-by-site basis. Local groundwater is not used for water supply by the City of Vallejo.²² Groundwater quality in the project area has not been characterized. Groundwater has been encountered at the project site at depths ranging from approximately 13 to 20 feet below ground surface; groundwater levels are expected to vary by season and by location within the site.²³

e. Surface Water Quality. The quality of surface water in the vicinity of the project is affected by past and current land uses in the watershed, as well as local geology. Surface water quality is regulated by the State Water Resources Control Board (State Board) and San Francisco Bay Regional Water Quality Control Board (Water Board).

¹⁴ The tailwater elevation is the flow depth in the downstream channel measured from the invert at the culvert outlet.

¹⁵ West Yost and Associates, op. cit.

¹⁶ Monahan, Mike, op. cit.

¹⁷ Ibid.

¹⁸ West Yost and Associates, op. cit.

¹⁹ Association of Bay Area Governments, 1995. *Dam Failure Inundation Hazard Map for the City of Vallejo*. Website: www.abag.ca.gov/cgi-bin/pickdamx.pl. Accessed August 23, 2010.

²⁰ Professional Service Industries, Inc., 2009. *Geotechnical Engineering Services Report for the Proposed Retail Store, 2850 Redwood Parkway, Vallejo, California*. December 22.

²¹ California Emergency Management Agency, California Geological Survey, and University of Southern California, 2009. *Tsunami Inundation Map for Emergency Planning, Benicia Quadrangle*. July 15.

²² Vallejo, City of, 2006. Utilities Department/Water Division, *City of Vallejo 2005 Urban Water Management Plan*. February.

²³ Professional Service Industries, Inc., op. cit.

Lake Chabot and its tributaries are not listed on the 2006 303(d) list of impaired water bodies. However, Lake Chabot is monitored by the State's Toxic Substances Monitoring Program.²⁴ The Toxic Substances Monitoring Program was organized to provide a uniform statewide approach to the detection and evaluation of the occurrence of toxic substances in fresh, estuarine, and marine waters of the State through the analysis of fish and other aquatic life. The program primarily targets water bodies with known or suspected impaired water quality. The California Department of Fish and Game implements the sampling program on behalf of the State Board.

The San Pablo Bay is listed on the 2006 303(d) list due to impairment from legacy pesticides (chlordane, DDT, dieldrin), dioxin and furan compounds, mercury, polychlorinated biphenyls, selenium, and nickel.

f. Regulatory Framework. Applicable federal, state, and local regulations are described below.

(1) Municipal Stormwater Management Requirements. Pursuant to Section 402 of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act, municipal stormwater discharges in the City of Vallejo are regulated under the San Francisco Bay Region Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit, Order No. R2-2009-0074, NPDES Permit No. CAS612008, adopted October 14, 2009 ("MRP"). The most important requirements that pertain to the project are Provision C.3. (New Development and Redevelopment) and Provision C.13. (Copper Controls).

MRP Provision C.3. addresses post-construction stormwater management requirements for new development and redevelopment projects. Currently, the City of Vallejo requires project applicants to install hydrodynamic devices, or other best management practices to remove pollutants from stormwater runoff such as floating liquids and solids, trash and debris, and coarse sediment, and to show the locations of such controls on plans submitted with the building permit application. However effective December 1, 2010, the City must begin implementing the requirements stipulated in the MRP (with various phased subsequent compliance deadlines). This requirement affects certain types of projects including commercial redevelopment projects that add and/or replace 10,000 square feet or more of impervious area. Provision C.3. requires the City to require incorporation of site design, source control and stormwater treatment measures in development projects, to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge, and to prevent increases in runoff flows. The MRP requires that Low Impact Development ("LID")²⁵ methods shall be the primary mechanism for implementing such controls. Because the project would replace more than 50 percent of the impervious surface of a previously existing development that was not subject to Provision C.3., all replaced impervious surfaces must be included in the stormwater treatment system design.

By December 1, 2010, the City must require incorporation of stormwater treatment systems designed per the following hydraulic sizing criteria:

²⁴ State Water Resources Control Board, Surface Water Ambient Monitoring Program, State Mussel Watch Program/Toxic Substance Monitoring Program, 2009. Website: www.swrcb.ca.gov/water_issues/programs/swamp/mussel_watch.shtml. Accessed August 25, 2010.

²⁵ The goal of LID is to reduce runoff and mimic a site's predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring (i.e., evaporating water from soil and plants), and/or biotreating stormwater runoff close to its source.

- Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to: (a) The maximized stormwater capture volume for the area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, Water Environment Federation Manual of Practice No. 23/American Society of Civil Engineers Manual of Practice No. 87, (1998), pages 175–178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or (b) The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology set forth in Section 5 of the California Stormwater Quality Association’s Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data;
- Flow Hydraulic Design Basis – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat: (a) 10 percent of the 50-year peak flow rate; (b) The flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or (c) The flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity; or
- Combination Flow and Volume Design Basis – Treatment systems that use a combination of flow and volume capacity shall be sized to treat at least 80 percent of the total runoff over the life of the project, using local rainfall data.

Effective December 1, 2011, projects must treat 100 percent of runoff (based on the selected calculation described above) with LID treatment measures that include harvesting and reuse, infiltration, evapotranspiration, or biotreatment (biotreatment may only be used if the other options are infeasible; by May 1, 2011, the MRP permittees, working collaboratively or individually, shall submit a report to the Water Board on the criteria and procedures that will be used to determine when certain LID measures are infeasible). Biotreatment areas shall be designed to have a long-term infiltration rate of 5 to 10 inches per hour. Prior to the December 1, 2011 deadline (by December 1, 2010), the MRP permittees, working collaboratively or individually, shall submit for Water Board approval, a proposed set of model biotreatment soil media specifications and soil infiltration testing methods.

By December 1, 2011 the City must require development projects to incorporate the following source control and site design measures:

- Minimize stormwater pollutants of concern through measures that may include plumbing dumpster drips from covered trash, food waste and compactor enclosures to the sanitary sewer;
- Properly design covers, drains, and storage precautions for outdoor material storage areas and loading docks;
- Properly design trash storage areas;
- Minimize stormwater runoff by implementing one or more site design measures, which include directing roof runoff into cisterns or rain barrels for reuse, or directing roof runoff to vegetated areas.

MRP Provision C.13. addresses copper controls for stormwater and non-stormwater discharges. Provision C.13.a requires permittees to ensure that local ordinance authority is established to prohibit the discharge of wastewater to storm drains generated from the installation, cleaning, treating, and washing of the surface of copper architectural features. The permittees shall develop best management practices (BMPs) for managing copper waste during construction and post-construction, require

the use of appropriate BMPs when issuing building permits that include copper architectural components, educate installers and operators on appropriate BMPs, and enforce against noncompliance.

Section 16.71.055 of the Vallejo Municipal Code (Title 16, Zoning; 16.71, Water Efficient Landscaping Requirements; 16.71.055 Stormwater Management) encourages implementation of stormwater BMP practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration.

(2) Construction General Permit and Local Requirements for Construction. Pursuant to CWA Section 402 and the Porter-Cologne Water Quality Control Act, on September 2, 2009, the State Board adopted an NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002 (Construction General Permit). To obtain coverage under the Construction General Permit, the discharger must provide via electronic submittal, a Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and other documents required by Attachment B of the Construction General Permit. Activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as grubbing or excavation. The permit also covers linear underground and overhead projects such as pipeline installations. Local construction activities covered under the General Construction Permit are overseen by the Water Board.

The Construction General Permit exercises a risk-based permitting approach, and mandates certain requirements based on the risk level of the project (Level 1, Level 2, or Level 3). The risk level of the project is based on the risk of sediment discharge and the receiving water risk. The sediment discharge risk depends on the project location and timing (i.e., wet season versus dry season activities). The receiving water risk depends on whether the project would discharge to a sediment-sensitive receiving water, defined by the beneficial uses of the receiving water in the Basin Plan (e.g., cold freshwater habitat), a listing on the 303(d) list due to sediment impairment, or having a Total Maximum Daily Load in place to address excessive sedimentation. The project would not be a Level 1 project (lowest risk) because per the Basin Plan, cold freshwater habitat is a beneficial use of Lake Chabot and its tributaries. The determination of whether the project would be Level 2 or 3 would be made by the preparer of the SWPPP. This risk level determination would be reviewed and approved by the City.

The performance standard in the Construction General Permit is that dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and management practices that achieve Best Available Technology (BAT) for treatment of toxic and non-conventional pollutants and Best Conventional Technology (BCT) for treatment of conventional pollutants.²⁶ The permit also imposes numeric action levels (Level 2 and Level 3 projects) and numeric effluent limits (Level 3 projects) for pH and turbidity, as well as minimum BMPs that must be implemented at all sites.

²⁶ As defined by U.S. EPA, Best Available Technology (BAT) is a technology-based standard established by the CWA as the most appropriate means available on a national basis for controlling the direct discharge of toxic and non-conventional pollutants to navigable waters. The BAT effluent limitations guidelines, in general, represent the best existing performance of treatment technologies that are economically achievable. Best Conventional Technology (BCT) is a technology-based standard that applies to treatment of conventional pollutants, such as total suspended solids.

A SWPPP must be prepared by a Qualified SWPPP Developer that meets the certification requirements in the Construction General Permit. The purpose of the SWPPP is to (1) to help identify the sources of sediment and other pollutants that could affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges resulting from construction activity. BMPs must be overseen by a Qualified SWPPP Practitioner that meets the requirements in the permit. For Level 2 and Level 3 projects, the discharger must also prepare a Rain Event Action Plan as part of the SWPPP that must be designed to protect all exposed portions of the construction site within 48 hours prior to any likely precipitation event.

The SWPPP must also include a construction site monitoring program. The monitoring program includes, depending on the project risk level, visual observations of site discharges, water quality monitoring of site discharges (pH, turbidity, and non-visible pollutants, if applicable), and receiving water monitoring (pH, turbidity, suspended sediment concentration, and bioassessment).

In addition, the City of Vallejo requires submittal of a Grading and Erosion Control Plan with the building permit application, and a SWPPP if the site is one acre or larger. Section 15.06.250 of the Vallejo Municipal Code (Title 15, Subdivisions; 15.06, General Regulations; 15.06.250, Grading and Erosion Control) requires the subdivider to make or provide all onsite grading and other improvements necessary to properly control erosion and prevent sedimentation; such grading and other improvements shall conform to the final plan filed with the final map and approved by the Public Works Director.

2. Impacts and Mitigation Measures

This section analyzes hydrology and water quality impacts that could result from implementation of the proposed project during construction and for the operational phase. The section begins with the criteria of significance, which establish the threshold for determining whether an impact is significant. The latter part of the section presents hydrology and water quality impacts associated with the proposed project, and recommends mitigation measures as appropriate.

a. Criteria of Significance.²⁷ The proposed project would result in significant flooding, hydrologic, water quality, or storm drainage impacts if it would have any of the following effects:

- Violate any local, State or federal water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a significant net deficit in aquifer volume or a lowering of the local groundwater table level or alteration of the flow of groundwater;
- Otherwise substantially degrade water quality;
- Substantially degrade water quality of Vallejo area streams, Lake Chabot, wetlands, or San Pablo Bay through pollutant discharges, physical or chemical changes of water bodies, or increased erosion and sedimentation;

²⁷ Floodplain development impacts and flood hazards related to dam inundation, tsunamis, seiches, and mudflows are evaluated in the project Initial Study (LSA Associates, Inc., August 2010), and were determined to have no impact or a less-than-significant impact.

- Create or contribute runoff water of a quantity or volume that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff or would result in flooding on-site or off-site;
- Substantially alter the existing drainage pattern of the site or area, including alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite; or
- Substantially alter the existing drainage pattern of the site or area, including alteration of the course of a stream or river, in a manner that would result in substantial flooding onsite or offsite.

b. Less-Than-Significant Hydrology and Water Quality Impacts. Less-than-significant impacts related to hydrology and water quality are described below.

(1) Substantially Deplete Groundwater Supplies or Interfere with Recharge. The project would not use the groundwater for water supply. Although groundwater is not expected to affect project construction,²⁸ dewatering during the construction period could be required; however dewatering would only result in a temporary effect on the local uppermost water-bearing zones related to near-surface excavations. In the project operational phase, water supply would be provided by the City of Vallejo, which uses surface water as its sole source of water supply.²⁹

The existing condition has more vegetated areas than what is proposed for the project; therefore there would be a small increase in impervious area associated with the project. The project would landscape approximately 0.82 acres of the approximately 7.64-acre site. The decrease in vegetated areas associated with the project is not substantial and would not significantly interfere with groundwater recharge.

(2) Exceed the Capacity of Existing or Planned Stormwater Drainage Systems. The existing twin 72-inch storm drain lines would be relocated for the project so that the lines would be adjacent to and not underneath the new building. The existing 72-inch storm drain lines are sized to convey flows up to the 100-year event, per the VSFCDD's design criteria for the drainage area.³⁰ There would be no change in the conveyance capacity of the relocated 72-inch storm drain lines. The minor increase in project impervious area compared to the existing condition (due to a decrease in vegetated area with project implementation) would not result in a significant increase in peak discharge rates for the 100-year storm.³¹ In addition, in accordance with the MRP, the project would be required to install stormwater treatment systems that would minimize increases in peak flow rates from smaller, more frequently occurring storms; please refer to Mitigation Measure HYDRO-2 for a discussion of the required stormwater treatment BMPs for the post-construction phase. Therefore, implementation of the project would not exceed the capacity of the stormwater drainage system and the impacts would be less than significant.

²⁸ Professional Service Industries, Inc., op. cit.

²⁹ Vallejo, City of, Utilities Department/Water Division, op. cit.

³⁰ West Yost and Associates, op. cit.

³¹ The Storm Drain Master Plan (West Yost and Associates, op. cit.) used a hydrologic and hydraulic model to predict flooding in the stormwater drainage system. The model assumed that the drainage area that includes the project is 100 percent commercial land use with 90 percent impervious area; implementation of the project would not significantly change this assumption.

(3) Drainage Patterns and Substantial Erosion. The project would not significantly alter site drainage patterns. Approximately 6,397 cubic yards of soil would be removed from the site to allow for new building foundations, the sub-grade loading area, and other infrastructure. Approximately 2,644 cubic yards of fill would be needed for construction, for a total of 3,550 cubic yards to be exported from the site. Runoff from the site would discharge into the stormwater drainage system, and the locations of drain inlets would be modified to accommodate the grading and drainage for the new site design. The change in project drainage patterns would not result in substantial erosion or siltation onsite or offsite. Please refer to Mitigation Measures HYDRO-1 and HYDRO-2 for a discussion of the BMPs the project would employ to prevent substantial erosion and siltation for the construction (which includes erosion control requirements for earth-moving activities) and post-construction phases (which includes requirements to treat stormwater runoff before it discharges into the stormwater drainage system). In addition, the project would comply with the City's requirement to submit a Grading and Erosion Control Plan, which would minimize erosion and siltation during construction. Therefore, impacts associated with drainage pattern alteration that would cause substantial erosion would be less than significant.

(4) Drainage Patterns and Flooding. As discussed above, the project would not significantly alter drainage patterns. The project must allow for overland release of surface runoff in excess of the 100-year storm event, and/or in the case that flooding occurs during a smaller storm resulting from debris clogging in the downstream stormwater drainage system. In the existing condition, overland release of such flows is conveyed through the adjacent property to the north and onto Rotary Way. There would be no change in the drainage pattern for overland release of flood water with implementation of the project; therefore, the project impacts on flooding offsite would be less than significant. In order to prevent onsite flooding of the newly constructed grocery store, the project applicant would comply with the VSFCDC requirement to construct the new building so the finish floor elevation is one foot above the curb elevation on Rotary Way. Therefore, flooding onsite as a result of changes in drainage patterns would be less than significant.

c. Significant Hydrology and Water Quality Impacts. Development of the project could result in significant impacts related to water quality, as described below.

(1) Violate Water Quality Standards or Otherwise Substantially Degrade Water Quality. Project construction activities would include grading, cutting and filling; removing vegetation; removing existing onsite structures; and constructing the new building (with a standing seam copper roof over the customer entrance) and other onsite improvements (parking areas, landscaping and driveways).

Impact HYDRO-1: Construction period activities could generate stormwater runoff that could cause or contribute to a violation of water quality standards or waste discharge requirements, provide substantial additional sources of polluted runoff, or otherwise substantially degrade the water quality of Vallejo area streams, Lake Chabot, wetlands, or San Pablo Bay. (S)

In areas of active construction, soil erosion may result in discharges of sediment-laden stormwater runoff into Blue Rock Springs Creek, if not properly controlled. Additional sediment input to the creek from construction of the project could contribute to degradation of downstream water quality and impairment of beneficial uses. Sediment can also be a carrier for other pollutants, such as heavy metals, nutrients, pathogens, oil and grease, fuels and other petroleum products. In addition to

sediment, other pollutants associated with the various phases of construction, such as trash, paint, solvents, sanitary waste from portable restrooms, and concrete curing compounds, can discharge into and impair receiving waters if released during construction.

Mitigation Measure HYDRO-1, which requires preparation and implementation of a site-specific SWPPP in accordance with the Construction General Permit and the Vallejo Municipal Code, in addition to submittal of a Grading and Erosion Control Plan to the City, would reduce the adverse impacts to water quality associated with discharges of construction site runoff to a less-than-significant level.

Mitigation Measure HYDRO-1: Consistent with the requirements of the statewide Construction General Permit, and as required by the Vallejo Municipal Code, the project applicant shall prepare and implement a SWPPP designed to reduce potential adverse impacts to surface water quality through the project construction period. The SWPPP shall be designed to address the following objectives: (1) all pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled; (2) where not otherwise required to be under a Water Board permit, all non-storm water discharges are identified and either eliminated, controlled, or treated; (3) site Best Management Practices (BMPs) are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the BAT/BCT standard; (4) calculations and design details as well as BMP controls for site run-on are complete and correct, and (5) stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

The SWPPP shall be prepared by a Qualified SWPPP Developer. The SWPPP shall include the minimum BMPs required in Attachment D of the Construction General Permit for Risk Level 2 dischargers, or Attachment E for Risk Level 3 dischargers (as applicable, based on final determination of the project's Risk Level status [to be determined as part of the Notice of Intent for coverage under the Construction General Permit]). These include: BMPs for erosion and sediment control, site management/housekeeping/waste management, management of non-stormwater discharges, runoff and runoff controls, and BMP inspection/maintenance/repair activities. BMP implementation shall be consistent with the BMP requirements in the most recent version of the California Stormwater Quality Association Stormwater Best Management Handbook-Construction³² or the Caltrans Storm Water Quality Handbook Construction Site BMPs Manual.³³

The SWPPP shall include a construction site monitoring program that identifies requirements for dry weather visual observations of pollutants at all discharge locations, and as appropriate (depending on the Risk Level), sampling of the site effluent and receiving waters (receiving water monitoring is only required for some Risk Level 3 dischargers). A Qualified SWPPP Practitioner shall be responsible for implementing the BMPs at the site and performing all

³² California Stormwater Quality Association, 2003. *Stormwater Best Management Handbook-Construction*, with updates through 2006.

³³ Caltrans, 2003. *Storm Water Quality Handbook Construction Site Best Management Practices (BMPs) Manual*, March.

required monitoring and inspection/maintenance/repair activities. The project applicant shall also prepare a Rain Event Action Plan as part of the SWPPP.

The following are the types of BMPs that shall be implemented for the project, subject to review and approval by the Water Board.

Erosion Control BMPs

- *Scheduling.* To reduce the potential for erosion and sediment discharge, construction shall be scheduled to minimize ground disturbance during the rainy season. The project applicant shall:
 - Sequence construction activities to minimize the amount of time that soils remain disturbed.
 - Stabilize all disturbed soils as soon as possible following the completion of ground disturbing work.
 - Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities.
- *Preservation of Existing Vegetation.* Where feasible, existing vegetation shall be preserved to provide erosion control.
- *Stabilize Soils.* Hydroseeding, geotextile fabrics and mats, mulch, or soil binders shall be used, as appropriate, to reduce erosion on exposed soil surfaces.
- *Stabilize Streambanks.* When working along stream banks or within channels, BMPs shall be implemented to minimize channel erosion and sedimentation. Proper erosion and sediment controls, such as silt fences, mulch, geotextiles, and hydroseeding, shall be used. To the extent possible, existing vegetation that stabilizes the stream banks shall be preserved.
- *Earth Dikes, Drainage Swales and Slope Drains.* Earth dikes, drainage swales, or slope drains shall be constructed to divert runoff away from exposed soils and stabilized areas, and redirect the runoff to a desired location, such as a sediment basin.
- *Outlet Protection and Velocity Dissipation Devices.* Rock, concrete rubble, or grouted riprap shall be installed at culvert and pipe outlets to drainage conveyances, to prevent scour of the soil caused by concentrated high-velocity flows.

Sediment Control BMPs

- *Silt Fence/Fiber Roll.* Silt fences or fiber rolls shall be installed around the perimeter of the areas affected by construction, at the toe of slopes, around storm drain inlets, and at outfall areas, to prevent offsite sedimentation.
- *Street Sweeping and Vacuuming.* Areas with visible sediment tracking shall be swept or vacuumed daily, to prevent the discharge of sediment into the stormwater drainage system or creeks.
- *Storm Drain Inlet Protection.* Storm drains shall be protected using a filter fabric fence, gravel bag barrier, or other methods, to allow sediments to be filtered or settle out before runoff enters drain inlets.

- *Check Dams.* Barriers shall be constructed of rock, gravel bags, sand bags, or fiber rolls across a constructed swale or drainage ditch, to reduce the effective slope of the channel. This reduces the velocity of runoff, which allows sediment to settle and reduces erosion.
- *Sediment Traps.* Sediment traps shall be constructed where sediment-laden runoff may enter the stormwater drainage systems or creeks. Sediment traps are appropriate for drainage areas less than five acres.
- *Sediment Basins.* If used onsite, sediment basins shall be designed according to the method provided in the California Stormwater Quality Association Stormwater BMP Handbook—Construction.³⁴ Sediment basins are appropriate for drainage areas of five acres or greater.

Wind Erosion Control BMPs

- *Dust Control.* Potable water shall be applied using water trucks to alleviate nuisance caused by dust. Water application rates shall be minimized to prevent erosion and runoff.
- *Stockpile Management.* Silt fences shall be used around the perimeter of stockpiles, and stockpiles shall be covered to prevent wind dispersal of sediment.

Tracking Controls

- *Stabilized Construction Entrance/Exit.* Construction site entrances and exits shall be graded and stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.
- *Stabilized Construction Roadway.* Access roads, parking areas, and other on-site vehicle transportation routes shall be stabilized immediately after grading is completed, and frequently maintained to prevent erosion and to control dust.
- *Tire Wash.* A tire washing facility shall be installed at stabilized construction access points to allow for tire washing when vehicles exit the site to prevent tracking of dirt and mud onto public roads.

Non-Stormwater Controls

- *Dewatering.* The SWPPP shall include a dewatering plan for non-contaminated groundwater specifying methods of water collection, transport, treatment, and discharge. The discharger shall consult with the Water Board regarding any required permit (other than the Construction General Permit) or Basin Plan conditions prior to initial dewatering activities to land, storm drains, or receiving waters. Water produced by dewatering shall be impounded in holding tanks, sediment basins, or other holding facilities to settle the solids and provide other treatment as necessary prior to discharge to receiving waters. Discharges of water produced by dewatering shall be controlled to prevent erosion.
- *Illicit Connection/Discharge Detection and Reporting.* Contractors shall regularly inspect the site for evidence of illicit connections, illegal dumping, or discharges. Such illicit activities shall immediately be reported to the VSFCD.

³⁴ California Stormwater Quality Association, 2003, op. cit.

- *Vehicle and Equipment Cleaning.* Construction equipment shall be washed regularly in a designated stabilized area onsite, or offsite. Steam cleaning will not be performed onsite. Phosphate-free, biodegradable soaps shall be used for on-site activities. Wash water from onsite activities shall be contained and infiltrated, to avoid discharges to drain inlets and creeks.
- *Vehicle and Equipment Fueling and Maintenance.* Vehicles and equipment shall be inspected daily for leaks. Perform vehicle maintenance and fueling off-site whenever possible. If maintenance and fueling must take place onsite, designated areas shall be located at least 50 feet away from storm drain inlets, drainage courses, and receiving waters. Fueling areas shall be protected with berms and dikes to prevent runoff, and to contain spills. Fueling shall be performed on level grade. Nozzles shall be equipped with automatic shutoffs to control drips. Stored fuel shall be enclosed or covered. Drip pans shall be used for all vehicle and equipment maintenance activities. Spill kits shall be available in maintenance and fueling areas, and spills shall be removed with absorbent materials and not washed down with water. If spills or leaks occur, contaminated soil and cleanup materials shall be properly disposed.
- *Paving and Grinding Operations.* Proper practices shall be implemented to prevent runoff and runoff, and to properly dispose of waste. Paving and grinding activities shall be avoided during the rainy season, when feasible.
- *Copper Roof Installation.* All runoff resulting from the installation, treating, or cleaning of the copper roof shall be discharged to the sanitary sewer system in accordance with VSFC requirements.

Waste Management and Materials Pollution Control BMPs

- *Material Delivery and Storage and Use.* Materials such as detergents, concrete compounds, petroleum products and hazardous materials shall be stored in a designated area away from vehicular traffic, drain inlets, and creeks. The materials shall be stored on pallets with secondary containment. Spill clean-up materials, material safety data sheets, a material inventory, and emergency contact numbers shall be maintained in the storage area.
- *Spill Prevention and Control.* Proper procedures shall be implemented to contain and clean-up spills and prevent material discharges into the storm drain system.
- *Waste Management.* Solid waste shall be collected in designated areas, and stored in watertight containers located in a covered area or with secondary containment. Waste shall be removed from the site regularly. Hazardous wastes shall be stored and disposed in accordance with applicable regulatory requirements.
- *Sanitary/Septic Waste Management.* Portable toilets shall be located at least 50 feet away from drain inlets and waterbodies, and away from paved areas.
- *Stockpile Management.* Stockpiles shall be surrounded by sediment controls, covered, and located at least 50 feet from concentrated flows of stormwater, inlets, and creeks.
- *Concrete Waste Management.* Concrete washout shall be performed offsite, or in a designated area at least 50 feet away from storm drain inlets or creeks. A temporary pit or bermed area shall be constructed where the waste can be discharged and allowed to set for proper disposal.

- *Training.* Construction site personnel shall receive training on implementing all BMPs included in the SWPPP. A Qualified SWPPP Practitioner shall perform all BMP inspection/maintenance/repair and site monitoring activities. (LTS)

Impact HYDRO-2: Operational period activities could generate stormwater runoff that could cause or contribute to a violation of water quality standards or waste discharge requirements, provide substantial additional sources of polluted runoff, or otherwise substantially degrade the water quality of Vallejo area streams, Lake Chabot, wetlands, or San Pablo Bay. (S)

The project would construct impervious surfaces such as roofs, driveways, and parking lots, upon which pollutants such as metals, sediment, and oil and grease could accumulate and come into contact with rain and stormwater runoff, which would discharge into Blue Rock Springs Creek. Pollutants could also be generated from the loading, delivery and trash pick-up areas. In addition, as the copper oxidizes, a significant pollutant loading of copper from the copper roofing material proposed by the project may be released in stormwater runoff.³⁵ If not properly controlled, the discharge of polluted stormwater runoff could adversely affect water quality and the beneficial uses of receiving waters.

Implementation of Mitigation Measure HYDRO-2, which requires the project applicant to implement specific post-construction controls in accordance with the MRP, and to submit the controls for review to the VSFC and the City of Vallejo Public Works Department with the building permit application, would reduce the adverse impacts associated with post-construction stormwater runoff to a less-than-significant level.

Mitigation Measure HYDRO-2: In accordance with the Municipal Regional Permit (MRP), the project applicant shall implement the following requirements to control pollutants in post-construction stormwater runoff and non-stormwater discharges, which shall be submitted for review with the building permit application to the VSFC and the City of Vallejo Public Works Department. If the VSFC and City do not have in-house review capacity, a qualified consultant approved by the VSFC and the City shall be retained to review the project applicant's submittal.

- Locations of all stormwater treatment BMPs, sized in accordance with the MRP Provision C.3. shall be shown on a site plan;
- Roof runoff shall be directed to vegetated areas, as shown on a site plan;
- The following discharges shall be conveyed to the sanitary sewer as shown on a site plan:
 - Dumpster drainage areas for covered trash, food waste and compactor enclosures;
 - Areas used for cleaning floor mats, containers, and equipment shall be connected to a grease inceptor and shall discharge to the sanitary sewer;
 - Drains located in loading docks shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation;
 - The project applicant shall get approval from the VSFC on specific sanitary sewer connection and discharge requirements.

³⁵ Larry Walker Associates and TDC Environmental, LLC, 2006. *Copper Management Strategy Development Resources, Final*. Prepared for the Clean Estuary Partnership. September.

- The project applicant shall develop BMPs for managing wastewater generated from the cleaning and/or treating of the copper roof over the grocery store customer entrance. The wastewater shall not be discharged into the stormwater drainage system. Alternatively, an alternative material to copper will be used for this architectural detail.
- The project applicant shall submit an Operations and Maintenance (O&M) Plan that details the O&M responsibility mechanism and maintenance requirements for all stormwater treatment systems, for the life of the project. (LTS)

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