4.5 HYDROLOGY AND WATER QUALITY

INTRODUCTION

The Hydrology and Water Quality chapter of this Draft EIR describes existing drainage and water resources for the project site, and evaluates potential impacts of the Tuscany Meadows project (proposed project) with respect to flooding, surface water resources, and groundwater resources. Information for this chapter was primarily drawn from the Drainage Study[1] prepared for the proposed project, the *Stormwater Control Plan for Tuscany Meadows East* (see Appendix M),[2] the *Stormwater Control Plan for Tuscany Meadows West* (see Appendix N),[3] the *Pittsburg General Plan 2020*[4] and associated EIR,[5] and the Tuscany Meadows C.3 Memo (see Appendix O).[6]

EXISTING ENVIRONMENTAL SETTING

The section below describes the existing hydrological features of the project site and the surrounding region, as well as the water quality of the existing resources in and around the project site.

Regional Drainage

The City of Pittsburg's existing drainage system is comprised primarily of channelized creeks fed by surface runoff and underground storm drains. The City maintains the system within incorporated areas. Annual rainfall in the Pittsburg Planning Area is approximately 13.33 inches with nearly all of the precipitation occurring between November and April, the winter rainy season. Portions of the Planning Area, particularly along the Delta, are susceptible to storm flooding. Most flood-prone areas in Pittsburg are marshlands, and are not proposed for development under existing plans. Other areas within the 100- and 500-year flood plain include Browns Island, portions of the industrial area in northeast Pittsburg, Kirker Creek, and Lawlor Creek.

The City's Capital Improvement Program (CIP) for 1996-2001 identified the Kirker Creek and Lawlor Creek watersheds as areas most in need of attention. The channels require major cleaning due to years of siltation, as well as upgrades to the system. The City is responsible for maintaining the flood control system within the incorporated area. In the unincorporated parts of the Planning Area, the Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) maintains major channels and creeks over which they hold land rights while the County Department of Public Works maintains road drainage systems and several detention basins. However, most of the Planning Area, particularly the Kirker Creek watershed, is not managed by CCCFCWCD. The County Board of Supervisors has not adopted any plan or fee structure for flood control efforts. The City's Stormwater Management Plan identifies

deficiencies and improvements to the storm drain system, while the Storm Drain Maintenance Plan addresses maintenance requirements for Lawlor and Kirker Creek watersheds.

The project site area is located in the Kirker Creek sub-basin (see Figure 4.5-1, Kirker Creek Watershed). Surface waters in the Kirker Creek sub-basin consist of West Kirker Creek, East Kirker Creek, Los Medanos Wasteway, unnamed natural or manmade open channels, and detention basins. Except for the reservoirs and detention basins, the waterways serve as floodways and generally flow northerly, from the foothills of Mount Diablo, crossing State Route (SR) 4, and then continuing north to Suisun Bay.

The lower reaches of the Kirker Creek watersheds have been substantially urbanized between 1916 and 2005, most notably from 1940 and 2005, resulting in increased storm water runoff and culminating in cumulative needs for increased conveyance capacity or relief of constrictions downstream of the project site. Channels of West Kirker Creek and East Kirker Creek have been altered with many of the channels open, except where culverts divert the creeks underground at road crossings and along a few reaches such as the segment of West Kirker Creek near the Pittsburg-Antioch Highway. West Kirker Creek flows northward through Buchanan Park to the New York Slough via the Dowest Slough.

Detention basins and surface reservoirs play an important role in the area's hydrologic function and flooding. According to the Kirker Creek Watershed Management Plan,[7] three detention basins and one retention basin are located or planned within the Kirker Creek Watershed, including the following:

- Los Medanos College: The lake on campus serves as a perennial retention basin and discharges to a tributary of Kirker Creek via a storm drain (pipeline) to an open channel on the north side of Leland Road.

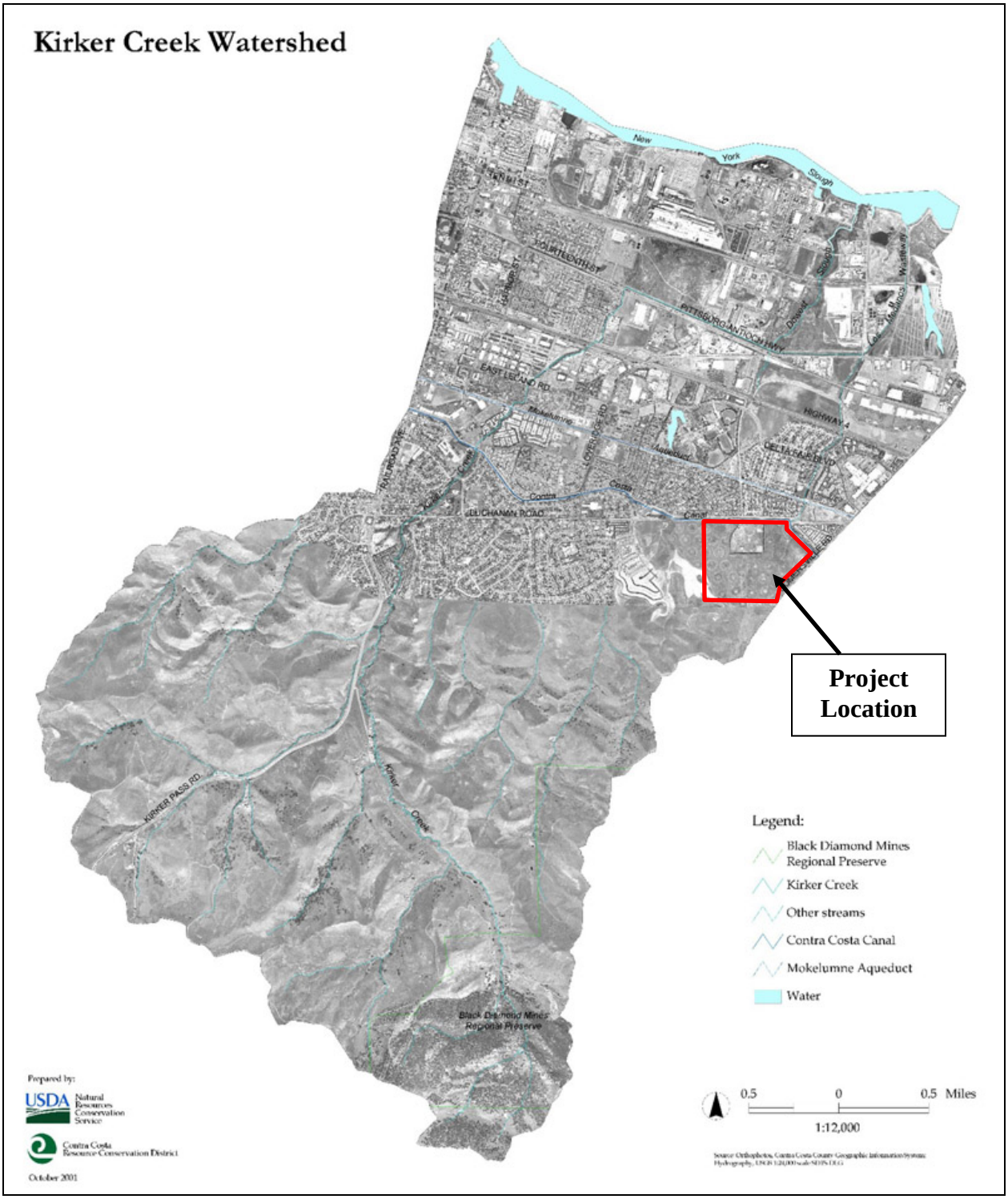
- Highlands Ranch: The housing development includes an approximately five-acre detention basin, located adjacent to a proposed five-acre park. The detention basin is designed to be a recreational amenity of the development, with future trails and attractive plantings. The capacity of the detention basin is 21 acre-feet.

- Carpino Way/Pittsburg-Antioch Highway: The detention basin is a component of the City's SR 4 flood relief project. When flows in Kirker Creek exceed 1,500 cfs, water would overflow into the proposed 6.2-acre, 40 acre-foot detention basin.

- Dowest Slough: The detention basin on the Dowest Slough is in the early planning stages by Dow Chemical and would be designed to also serve as a wetland habitat area.

The use of laterals for City drainage is limited because capacity must be maintained for irrigation flows, and hydraulic grade lines are maintained higher for water deliveries. Eight (8) individual locations show some flooding in the City's storm drain system. Most are only a few inches and are still contained within the channel banks. It is estimated that the potential flooding can be eliminated by more vigorous maintenance activities without the need for a capital project.

Figure 4.5-1
Kirker Creek Watershed



Local Drainage

The project site is located within Drainage Area 70 (DA 70), which defines the watershed for Kirker Creek, and ultimately drains to New York Slough. The proposed project site is also located on the border of Drainage Area 55 (DA 55); however, diversions to the DA 55 watershed would not be allowed. The Pittsburg Municipal Code (Chapter 15.104 – Stormwater Management Plan for Kirker Creek Watershed Drainage Area) mandates that any new development within the Kirker Creek Watershed Drainage Area that is over 6,000 square feet must:

- Construct permanent on-site detention facilities to prevent any increase in runoff over pre-development conditions; or
- Construct temporary on-site or off-site detention measures (e.g., conveying runoff to temporary ponds in parking lots or a temporary cistern/tank) that would remain in place until downstream improvements under the City's stormwater management plan are completed, and, pay a drainage fee towards those downstream improvements. The drainage fee is a one-time charge to the developer.

The proposed project is well over 6,000 square feet, and proposes to have permanent detention facilities constructed on-site. A Drainage Study was prepared for the proposed project in order to determine if the sizing of the proposed on-site detention basins would be adequate to handle the peak flows and designed acceptably in accordance with governing agency standards. The project site is divided by a north-south drainage watershed boundary line that divides the eastern half of the project site from the western half of the project site. Separate draft stormwater control plans were prepared for the two watersheds.

The eastern watershed is composed of approximately 88 acres and is bounded on the east by the Contra Costa Canal and Somersville Road, and on the south by the Black Diamond Ranch development. Total relief on the eastern portion of the site is approximately 65 feet, ranging from a high of approximately 175 feet at the southern boundary to a low of approximately 110 feet at the culvert beneath the Contra Costa Canal. Drainage from the existing 30-inch culvert to the south (the Black Diamond development) discharges onto the property and meanders in a northeasterly direction, via an earth ditch, toward the existing two-foot by two-foot reinforced concrete box culvert beneath the Contra Costa Canal. The maximum allowable 100-year peak outflow (Q_{100}) leaving the eastern watershed was determined in the Drainage Study to be 75 cubic feet per second (cfs).

The western watershed is composed of approximately 82 acres and is bounded on the west by the Highlands Ranch development and on the south by the Black Diamond Ranch development. Total relief on the western portion of the site is approximately 80-feet, ranging from a high of approximately 200 feet at the southern boundary to a low of approximately 120 feet at Buchanan Road. Drainage from an existing 30-inch culvert to the south (the Black Diamond development) discharges onto the property and meanders in a northwesterly direction, via an earth ditch, until entering the existing Highlands Ranch development to the west. According to the Drainage Study, a maximum allowable Q_{100} peak outflow leaving the western watershed was determined to be 10 cfs.

Water Quality

Water is essential to recreation, the viability of agriculture, and the development of housing, commerce, and industry, as well as the maintenance of high-quality fish and wildlife habitats. Land uses and activities that the City must consider in protecting the quality of the City's water include construction activities, agricultural land uses, dairies, and urban runoff.

Construction Activities

Construction grading can impact water quality because it exposes bare soil. Rainfall on bare soil can cause erosion and sedimentation into nearby water bodies. Unstabilized soil can be washed or wind-blown into nearby surface water. Construction activities can also result in petroleum products and other pollutants from construction equipment, entering nearby drainages.

Agricultural Land Uses

Water running off irrigated agricultural fields may contain fertilizers and pesticides. Improper use and disposal of farm chemicals can contaminate surface and groundwater resources. Agricultural procedures can also result in erosion of unstabilized soil, especially during conversion of vegetation. Aerial spraying could also drift into nearby water bodies.

Urban Runoff

Urban runoff includes household chemicals (including pesticides, herbicides, and paints), as well as petroleum products from automobiles and landscaping equipment. Municipal sources of pollution include government yards where transportation, fueling, and maintenance activities take place.

Groundwater and Groundwater Recharge

The City of Pittsburg overlies the Pittsburg Plain Groundwater Basin. The Basin is bounded by Suisun Bay on the north, by the Tracy Sub-basin of the San Joaquin Valley Groundwater Basin on the east, and by the Clayton Valley Groundwater Basin on the west. The southern boundary of the Basin extends inland from the Suisun Bay by approximately one to three miles. The basin lies within the two major drainage basins of Kirker Creek and Willow Creek. Groundwater accounts for five to 15 percent (approximately 1,500 to 2,000 acre-feet per year) of the City's water supply and eight to 10 percent (approximately 240 to 20 acre-feet per year) of water demand of the Bay Point system.[8] Other groundwater pumping within the Basin serves industrial and small-scale domestic use. The City of Pittsburg is the largest groundwater pumper in the Basin. The City's participation in the California Department of Water Resources' California Statewide Groundwater Elevation Monitoring (CASGEM) Program as a designated monitoring entity facilitates the City's efforts to take an active role in managing and protecting groundwater resources within the Basin.

A geotechnical engineering report was prepared by Wallace Kuhl & Associates on February 2, 2012 (job number 9328.01). According to the report, groundwater was not encountered during

excavation of up to 51 feet. Historical documentation indicates the groundwater level to be approximately 100 feet deep. Groundwater flow appears to generally occur in a north-northeast direction toward Suisun Bay. According to the Groundwater Management Plan for the Basin, recharge to the basin is interpreted to occur in the hills along the southern portion of the basin.

REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the review of hydrology and water quality under the California Environmental Quality Act (CEQA) process.

Federal Regulations

Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency (FEMA) is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMS), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year floodplains.

FEMA allows non-residential development in the floodplain; however, construction activities are restricted within the flood hazard areas, depending upon the potential for flooding within each area. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR). These standards are implemented at the State level through construction codes and local ordinances; however, these regulations only apply to residential and non-residential structure improvements. Although roadway construction or modification is not explicitly addressed in the FEMA regulations, the California Department of Transportation (Caltrans) has also adopted criteria and standards for roadway drainage systems and projects situated within designated floodplains. Standards that apply to floodplain issues are based on federal regulations (Title 23, Part 650 of the CFR). At the State level, roadway design must comply with drainage standards included in Chapters 800-890 of the Caltrans Highway Design Manual. CFR Section 60.3(c)(10) restricts cumulative development from increasing the water surface elevation of the base flood by more than one foot within the floodplain.

Federal Clean Water Act

The National Pollutant Discharge Elimination System (NPDES) permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff, but is not conveyed

by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements. However, two types of nonpoint source discharges are controlled by the NPDES program – nonpoint source discharge caused by general construction activities, and the general quality of stormwater in municipal stormwater systems. The 1987 amendments to the CWA directed the federal EPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase II addresses all other discharges defined by EPA that are not included in Phase I.

Section 402 of the CWA mandates that certain types of construction activities comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the State Water Resources Control Board (SWRCB), implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs).

As of July 1, 2010, all dischargers with projects that include clearing, grading or stockpiling activities expected to disturb one or more acres of soil are required to obtain compliance under the NPDES Construction General Permit Order 2009-0009-DWQ. This General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns and storm water collection and discharge points, and pre- and post- project topography;
2. Describe types and placement of Best Management Practices (BMPs) in the SWPPP that will be used to protect storm water quality;
3. Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
4. Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, a SWPPP must be submitted to the RWQCB electronically and a copy of the SWPPP must be submitted to the City of Pittsburg. When project construction is completed, the landowner must file a Notice of Termination (NOT).

Construction Site Runoff Management

In accordance with NPDES regulations, in order to minimize the potential effects of construction runoff on receiving water quality, the State requires that any construction activity affecting one (1) acre or more must obtain a General Construction Activity Stormwater Permit. Permit applicants are required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and implement Best Management Practices (BMPs) to reduce construction effects on receiving water quality by implementing erosion and sediment control measures.

State Regulations

State Water Resources Control Board

The SWRCB and the RWQCBs are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Water Quality Control Act. The project site is situated within the jurisdictional boundaries of both the San Francisco Bay RWQCB (Region 2) and the Central Valley RWQCB (Region 5). However, the project site would be under the jurisdiction of the San Francisco Bay RWQCB (SFBRWQCB). The SFBRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within their jurisdiction.

The SFBRWQCB issued an Order requiring all municipalities within Contra Costa County (and the County itself) to develop more restrictive surface water control standards for new development projects as part of the municipal regional NPDES Permit. Known as "Provision C.3," new development or redevelopment projects that disturb one or more acres of land area must contain and treat stormwater runoff from the site. The proposed project is a C.3 regulated project and is required to include appropriate site design measures, source controls, and hydraulically-sized stormwater treatment and flow control measures.

Local Regulations

The following are the local government environmental goals and policies relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

City of Pittsburg General Plan

The following goals and policies of the Pittsburg General Plan are applicable to the hydrology and water quality aspects of the proposed project.

Goal 9-G-4 Minimize the runoff and erosion caused by earth movement by requiring development to use best construction management practices (BMPs).

Goal 9-G-5 Preserve and enhance Pittsburg's creeks for their value in providing visual amenity, drainage capacity, and habitat value.

Goal 9-G-6 Preserve and protect the Contra Costa canal from storm drainage and runoff contaminating the City's municipal water supply.

Policy 9-P-15 As part of development plans, require evaluation and implementation of appropriate measures for creek bank stabilization as well as necessary Best Management Practices (BMPs) to reduce erosion and sedimentation. Encourage preservation of natural creeks and riparian habitat as best as possible.

Policy 9-P-16 Establish development standards for new construction adjacent to riparian zones to reduce sedimentation and flooding. Standards should include:

- Requirements that low berms or other temporary structures such as protection fences be built between a construction site and riparian corridor to preclude sheet-flooding stormwater from entering the corridors during the construction period.

- Requirements for installing of storm sewers before construction occurs to collect stormwater runoff during construction.

Policy 9-P-17 To prevent flood hazards in the Kirker Creek watershed, ensure that new development minimizes paved areas, retaining large blocks of undisturbed, naturally vegetated habitat to allow for water infiltration.

Additional flood control mitigation may include intermixing areas of pavement with the naturally vegetated infiltration sites to reduce the concentration of stormwater runoff from pavement and structures.

Policy 9-P-18 Require an encroachment permit from Contra Costa Water District (CCWD) for any storm drain facility crossing or encroaching onto Contra Costa canal rights-of-way. Require all crossings to be constructed in accordance with CCWD standards and requirements.

Policy 9-P-19 As part of the City's Zoning Ordinance, establish regulations for the preservation of mature trees. Include measures for the replacement of all mature trees removed.

Trees are valuable along creeks and watersheds because their root systems help stabilize topsoil and reduce erosion.

Policy 9-P-20 As part of project review and approval, establish maintenance districts to ensure uniform maintenance for selected channels and creeks.

Policy 9-P-21 As part of project review and CEQA documentation, require an assessment of downstream drainage (creeks and channels) and City storm-water facilities impacted by potential project runoff.

Calculate potential sedimentation and runoff based on the maximum storm event and determine necessary capacity of the

downstream drainage system. If the project presents potential downstream sedimentation, runoff or flooding issues, require additional mitigation including but not limited to limitations on grading, construction only in dry seasons, and funding for downstream improvements, maintenance, and repairs.

Goal 9-G-7 Comply with Regional Water Quality Control Board regulations and standards to maintain and improve the quality of both surface water and groundwater resources.

Goal 9-G-8 Ensure that soil and groundwater pollution is addressed during redevelopment and reuse projects.

Policy 9-P-22 Continue working with the Regional Water Quality Control Board in the implementation of the National Pollutant Discharge Elimination System (NPDES), with specific requirements established in each NPDES permit.

Policy 9-P-23 Require new urban development to use Best Management Practices to minimize creek bank instability, runoff of construction sediment, and flooding.

Policy 9-P-24 Reduce sedimentation and erosion of waterways by minimizing site disturbance and vegetation removal along creek corridors.

Policy 9-P-25 Encourage rehabilitation and revegetation of riparian corridors and wetlands throughout the City to contribute to bioremediation and improved water quality.

Policy 9-P-26 Monitor water quality in the local creek and reservoir system to ensure clean supplies for human consumption and ecosystem health.

Policy 9-P-27 Protect water quality by reducing non-point sources of pollution and the dumping of debris in and near creeks, storm drains, and Contra Costa Canal. Continue use and implementation of the City's storm drain marking program in newly developed or redeveloped areas.

The quality of groundwater and water flowing into the city's creeks is most likely to be affected by non-point pollution sources in Pittsburg. Urban development can potentially pose a threat to surface and groundwater quality through construction sediment, use of insecticides and herbicides, and related increases in automobile use.

Policy 9-P-28 Prepare and disseminate information about the harmful effects of toxic chemical substances and safe alternative measures.

Goal 10-G-7 Locate development outside of flood-prone areas unless mitigation of flood risk is assured.

Goal 10-G-8 Ensure that new development mitigates impacts to the City's storm drainage capacity from storm water runoff in excess to runoff occurring from the property in its undeveloped state.

Policy 10-P-18 Evaluate storm drainage needs for each development project in the context of demand and capacity when the drainage area is fully developed. Ensure drainage improvements or other mitigation of the project's impacts on the storm drainage system appropriate to the project's share of the cumulative effect.

Policy 10-P-19 Assure through the Master Drainage Plan and development ordinances that proposed new development adequately provides for on-site and downstream mitigation of potential flood hazards.

Policy 10-P-20 Develop and implement a Storm Flooding Mitigation Fee Program to fund required drainage improvements during construction of new development.

Cooperate with the County Flood Control District in developing a Storm Flooding Mitigation Fee Program for incorporated and unincorporated lands within the City's watersheds.

Policy 10-P-21 Encourage the formation of flood control assessment districts for those areas within the 100- and 500-year flood plains. Encourage new hillside developments to form flood control assessment districts to accommodate runoff and minimize downstream flooding, if determined to be necessary.

Policy 10-P-22 Ensure that pad elevations on newly constructed habitable buildings are one foot above the 100-year floodplain, as determined by FEMA.

Policy 10-P-23 Ensure that all new development (residential, commercial, or industrial) contributes to the construction of drainage improvements in the Kirker Creek and other watersheds in the Planning Area, as required by the City's adopted ordinances.

Policy 10-P-24 Allow the construction of detention basins as mitigation in new developments. Ensure that detention basins located in residential neighborhoods, schools, or child-care facilities are surrounded by a gated enclosure, or protected by other safety measures.

The enclosure of detention basins, particularly in areas where small children are present, is necessary to ensure the safety of local residents when recessed areas are saturated with floodwaters.

Policy 10-P-25 Ensure adequate minimum setbacks to reduce potential for property damage from storm flooding.

Policy 10-P-26 Reduce the risk of localized and downstream flooding and runoff through the use of high infiltration measures, including the maximization of permeable landscape.

Policy 10-P-27 Adopt practices for development and construction on sites where the erosion potential is moderate to severe.

Policy 10-P-28 Bench terraces should be used where areas of long slopes may create a stormwater gradient flow. Berms should be constructed between any riparian corridor and the construction site to preclude sediment-laden stormwaters from entering riparian zones.

Policy 10-P-29 During the review of development plans, require all commercial projects to construct on-site retention facilities. Such facilities could be in the form of landscape features or underground swells.

Ensure that all development projects build on-site retention basins during initial site preparation to store run-off water generated by construction activities.

Policy 10-P-30 Encourage residential development that includes post-construction Best Management Practices to minimize runoff from the site to the stormdrain system (for example, using permeable surfaces for parking lots, sidewalks, and bike paths, or using roof runoff as irrigation).

IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential impacts related to hydrology and water quality. A

discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

According to CEQA Guidelines and Section 17.2 Impact Analysis of the City of Pittsburg General Plan EIR (July 2013), an impact is considered significant if the proposed project would result in any of the following:

- Alter the quantity or quality of shared runoff;
- Degrade water quality or violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage patterns of the site or area such that flood risk and/or erosion and siltation potentially increase;
- Create or contribute to runoff that would exceed the capacity of an existing or planned stormwater management system;
- Reduce groundwater quantity or quality;
- And create long-term chemical or physical changes in the receiving waters of the site, area, or region, so as to impair beneficial uses.

It should be noted that, as presented in the Introduction to Analysis chapter of this EIR, the Initial Study prepared for the proposed project (see Appendix C) determined that development of the proposed project related to the following would result in a less-than-significant impact:

- Placing housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Placing within a 100-year floodplain structures which would impede or redirect flood flows;
- Exposing 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; and
- Inundation by seiche, tsunami, or mudflow.

Accordingly, impacts related to the above are not further analyzed or discussed in this EIR chapter.

Method of Analysis

Site conditions and impacts analysis for this chapter are based primarily on the Drainage Study prepared for the proposed project, as well as the Stormwater Control Plans for the eastern and western portions of the project site, prepared by Isakson & Associates. In addition, the City's General Plan and associated EIR were utilized. Furthermore, the Tuscany Meadows C.3 Memo, prepared by Isakson & Associates, was utilized for discussion of stormwater. Determinations of significance were made based on the existing, or planned, infrastructure's ability to accommodate the proposed project.

Project Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.5-1 Existing drainage pattern and surface runoff. Based on the analysis below, the impact is *less than significant.*

The proposed project, when complete, would result in new impervious surfaces and thus an incremental reduction in the amount of natural soil surfaces available for the infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels, accelerate soil erosion and stream channel scour, and provide a more lucrative means of transport for pollutants to enter waterways.

As shown in Figure 3-3 Vesting Tentative Map in the Project Description chapter of this EIR, the project includes 18.8 acres of proposed storm drain parks and detention basin areas that would detain stormwater during major storm events. Included in the storm drain basin and park areas would be two sub-basins, one on the eastern watershed and one on the western portion. The surface storage would then convey the stormwater to the adjacent underground storm drain detention pipes. The storm drain detention pipes would detain stormwater collected from the entire project site for eventual conveyance to the storm drain trunk in Buchanan Road. Further analysis will be conducted to determine any impacts to the receiving storm drain trunk line.

The Tuscany Meadows Drainage Study (2013) concluded the design of the eastern basin would allow for a 100 year peak outflow (Q_{100}) of 75 cubic feet per second (cfs) and the design for the western basin would allow for a Q_{100} of 10 cfs. The Drainage Study determined the eastern basin would have an actual Q_{100} of 27 cfs and an actual Q_{100} of nine cfs for the western basin. Therefore, the required stormwater facilities on-site would sufficiently handle runoff from the project while not exceeding of the capacity of the City's stormwater facilities or the on-site flood potential, resulting in a ***less than significant*** impact.

Mitigation Measure(s)
None required.

4.5-2 Construction-related surface water quality. Based on the analysis below, the impact is *less than significant.*

Project development would involve the construction of 917 single family units with a high density portion that could support development of up to 365 multi-family units. Construction would require grading, excavation, and other construction-related activities that could cause soil erosion at an accelerated rate during storm events. All of these activities have the potential to affect water quality and contribute to localized violations

of water quality standards if stormwater runoff from construction activities enters receiving waters.

Construction activities such as grading, excavation, and trenching for site improvements would result in the disturbance of on-site soils. These exposed soils could affect water quality in two ways. Stormwater runoff from the site may contain suspended soil particles and sediments, or sediments could be transported as dust that eventually reaches local waterbodies. Sediments could reach local water bodies either through direct deposition or as suspended sediment in the runoff. Spills or leaks from heavy equipment and machinery, staging areas, or building sites could also enter runoff. Typical pollutants could include, but would not be limited to, petroleum products and heavy metals from equipment and products such as paints, solvents, and cleaning agents, which could contain hazardous constituents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment or contaminants entered receiving waters in sufficient quantities to exceed water quality objectives. Impacts from construction-related activities would generally be short-term.

Because the proposed project would require construction activities that would result in a land disturbance greater than one acre, the applicant would be required by the State to obtain the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which pertains to pollution from grading and project construction. Compliance with the Permit requires the project applicant to file a NOI with the SWRCB and prepare a SWPPP prior to construction. The SWPPP would incorporate BMPs in order to prevent, or reduce to the greatest feasible extent, adverse impacts to water quality from erosion and sedimentation. In addition, treatment of stormwater runoff would be addressed via the proposed 18.8 acres of on-site parks and detention basins, resulting in short-term impacts to surface water quality being deemed a ***less-than-significant*** impact by the Drainage Study prepared for the proposed project.

Mitigation Measure(s)
None required.

4.5-3 Operational water quality associated with urban runoff from the project site. Based on the analysis below, the impact is *less than significant.*

The project facilities (e.g., homes, paved driveways, and roads) would involve a substantial amount of new impervious surface, which could increase the amount of surface runoff as well as convey non-point-source contaminants to surface waters during storm events. Additional runoff could contribute to the flood potential of natural stream channels, accelerate soil erosion and stream channel scour, and provide a more lucrative means of transport for pollutants to enter the waterways. Contaminated runoff waters could flow into New York Slough and degrade the water quality.

During the dry season, vehicles and other urban activities release contaminants onto the impervious surfaces, where they would accumulate until the first storm event. During this

initial storm event, or first flush, the concentrated pollutants would be transported via runoff to stormwater drainage systems. Anticipated runoff contaminants associated with the proposed project include sediment, pesticides, oil and grease, nutrients, metals, bacteria, and trash. It should be noted that some of these contaminants may be expected in the existing agricultural runoff from the project site.

As shown in Figure 3-3, Vesting Tentative Map, in the Project Description chapter of this EIR, the project includes 18.8 acres of proposed storm drain basin and park area to detain stormwater during major storm events, and in part to remove pollutants from stormwater runoff. Two draft Stormwater Control Plans have been prepared for the project, one for the western portion of the site and one for the eastern (see Figure 4.5-2 and Figure 4.5-3). According to the C.3 Memo prepared for the proposed project by Isakon & Associates, the Stormwater Control Plans were prepared prior to the decision to create the 5.4 acre park parcel to the south of the Chevron parcel. Hence, the bioretention areas for the Stormwater Control Plans were sized based on the park area being developed for residential uses. Development of the 5.4-acre parcel as a park would create less impervious surface area than development of residential homes. As such, the following analysis represents a worst-case-scenario.

Draft Stormwater Control Plan for the Western Watershed

The draft Stormwater Control Plan for the western watershed prepares for 2,389,120 square feet of impervious pavement and rooftop area (IMP1) and 965,352 square feet of pervious landscape and slopes (L1) that would drain to the 225,086-square-foot bio retention area (PL1). The bio retention area is irregularly shaped and is located at the northwest portion of the developed site. The draft Stormwater Control Plan also prepares for 12,233-square feet of the Buchanan Road frontage area to be considered a no-treatment area (NT1). NT1 would not drain to PL1 as it naturally drains westerly to the existing storm drain inlet on the south side of Buchanan Road at the Meadows Avenue intersection, approximately 800 feet west of the project. This insignificant amount of untreated area would drain to the Buchanan Road inlet via the existing curb and gutter on Buchanan Road constructed with the Highlands Ranch project.

The draft Stormwater Control Plan for the western watershed also accounts for two upstream, off-site areas (CW1 and CW2). CW1, totaling 1,501,386-square feet, consists of impervious and pervious areas which enter the south end of the site via an existing 30-inch storm drain (at the northerly terminus of the Metcalf Street). The storm drain line would be intercepted and incorporated into the storm drain system for the western portion of the site, which would drain to PL1. CW2 consists of 408,386-square feet of upstream impervious and pervious areas that would enter the northeastern corner of the site via curb and gutter along Buchanan Road. The drainage would be intercepted and incorporated into the storm drain system, which would also drain to PL1.

Draft Stormwater Control Plan for the Eastern Watershed

The draft Stormwater Control Plan for the eastern watershed prepares for 2,585,268 square feet of pavement and impervious surface area (IMP2) and 1,004,088 square feet of pervious landscape area (L2) that would drain to the 231,327-square-foot bio retention area (PL2). The irregularly shaped bio retention area is located at the northeast portion of the developed site. In addition, the project includes 40,022 square feet of the Buchanan Road frontage that would be considered a no-treatment area (NT2). The NT2 cannot be intercepted and drained to the bio retention planter area PL2 as it naturally drains easterly over the Contra Costa canal to the existing storm drain inlet on the south side of Buchanan Road, approximately 450 feet east of the project. This insignificant amount of untreated area would drain to the existing curb and gutter on Buchanan Road.

The draft Stormwater Control Plan for the eastern watershed also accounts for five upstream areas, containing both pervious and impervious ground, located off-site (CW1, -2, -3, -4, and -5). CW1, -2, and -3 total 1,036,154 square feet and consist of upstream areas that enter the south end of the site via an existing 30-inch storm drain (at the northerly terminus of Summit Way) and an 18-inch storm drain (at the City of Antioch Park constructed with the Black Diamond Ranch development). Both storm drain lines would be intercepted and incorporated into the storm drain system for the eastern portion of the site, which would drain to PL12. The 226,907-square-foot CW4 is an upstream area that would enter the eastern corner of the site, via an 18-inch storm drain, approximately 100 feet southwest of the Somersville Road/Constra Costa canal intersection, when Somersville Road improvements are constructed within the City of Antioch. The 18-inch storm drain line would be intercepted and incorporated into the storm drain system for the eastern watershed, which drains to PL2.

CW5 is 677,662 square feet of upstream area that would enter the northern boundary of the site and drain southerly toward the PL2. This drainage would bypass bio retention area PL2 and would connect directly to the PL2 outlet structure. Additional cleaning or controls and mitigation are not provided to offset the hydro modification impacts to these waters.

Conclusion

In addition to the improvements for the eastern and western watersheds described above, the proposed project would implement the requirements of the City's *Storm Water Management Program*, which would include BMPs to maximize stormwater quality and would be consistent with the City's NPDES Phase II Stormwater Permit. The BMPs would include a combination of source control, structural improvements, and treatment systems to the extent required to ensure compliance with the applicable CWA regulations. Bio retention areas remove pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to ensure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. As a result, the potential for urban pollutants to enter and potentially pollute the local water systems is a ***less-than-significant*** impact.

Figure 4.5-2
Stormwater Control Plan for Western Watershed

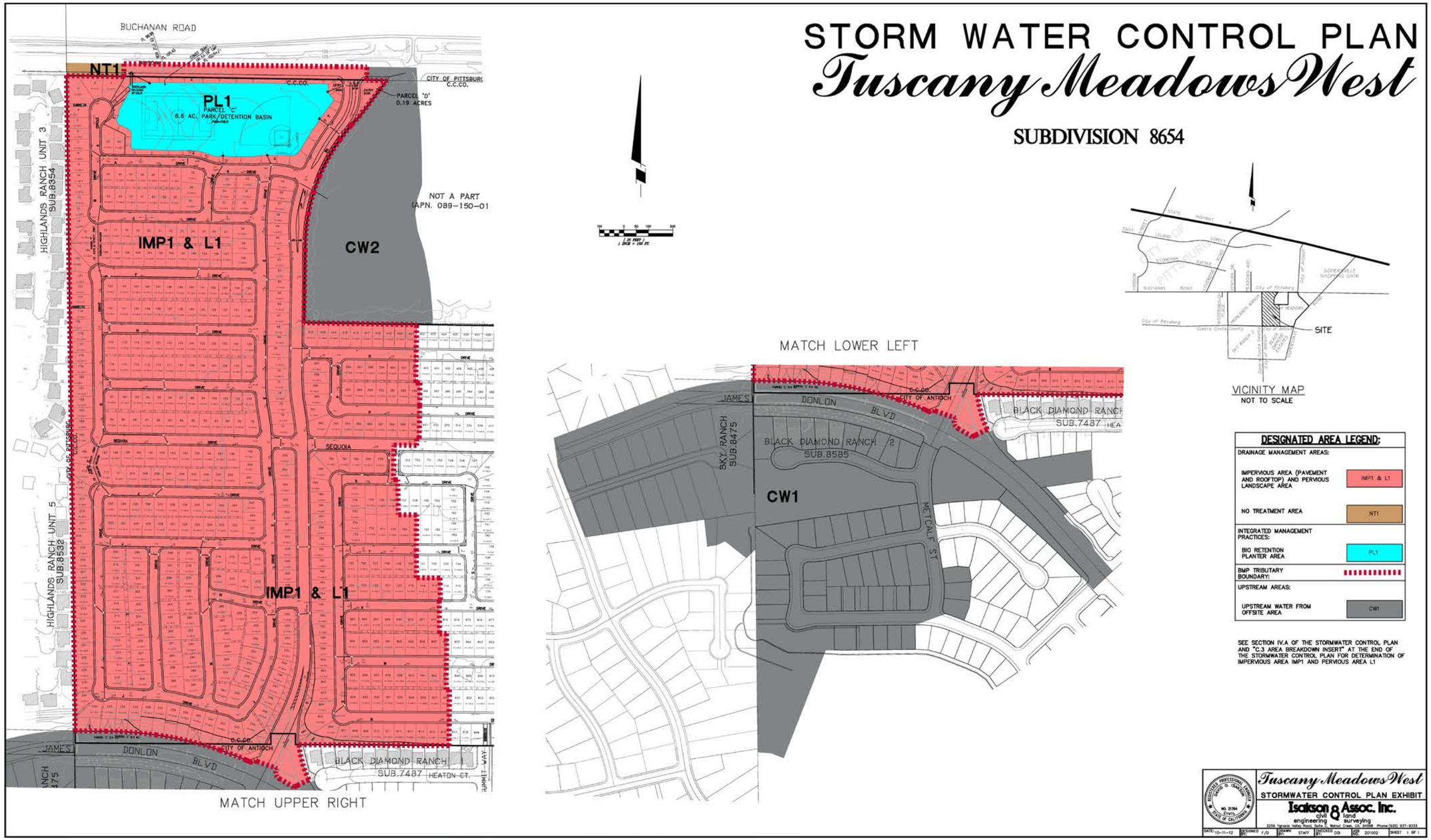
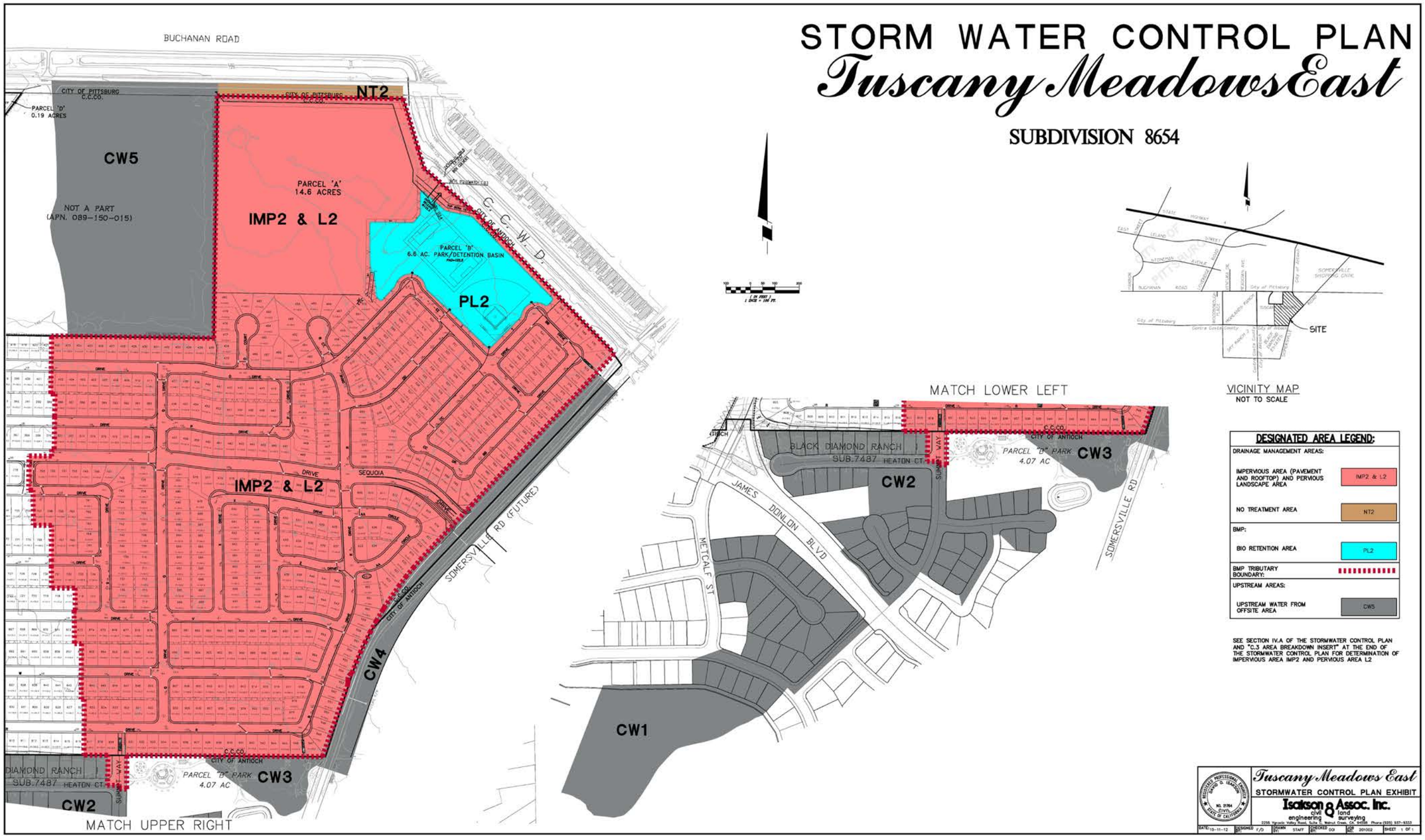


Figure 4.5-3
Stormwater Control Plan for Eastern Watershed



Mitigation Measure(s)
None required.

4.5-4 Groundwater recharge. Based on the analysis below, the impact is *less than significant.*

The proposed project would involve an increase in impervious surfaces (e.g., roads, driveways, and homes), which would reduce the infiltration of groundwater to the underlying aquifer on the project site. However, the project area is less than one percent of the total Kirker Creek sub-basin surface area and would not interfere significantly with the overall recharge of the sub-basin. Some deep percolation of applied irrigation water to groundwater is thought to occur; however, the City General Plan does not identify any notable groundwater recharge areas within the project area. The majority of runoff from the project area would drain through the on-site parks and basins to local drainage facilities and to the New York Slough, which are where the majority of recharge to the sub-basin occurs. In addition, as shown in Figure 3-3 Vesting Tentative Map in the Project Description chapter of this EIR, the project includes 18.6 acres of proposed on-site park and detention basin areas that would detain stormwater during major storm events. Stormwater detained on such areas could contribute towards potential groundwater recharge in the area. Therefore, the proposed project's impact to groundwater recharge is considered ***less-than-significant***.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Other proposed and pending projects in the region under the cumulative context would include buildout of the City of Pittsburg General Plan, as well as development of the most recent planned land uses within the vicinity of the project area, including the Black Diamond, Sky Ranch, and Montreux developments.

4.5-6 Cumulative impacts to hydrology and water quality within the City of Pittsburg. Based on the analysis below, the impact is *less than significant.*

While continued development within the City of Pittsburg would result in additional stormwater runoff and entry of pollutants into receiving waters via construction and operation of future projects, each project is required to comply with the City's regulatory stormwater documents. The City's regulatory stormwater documents ensure that each project creates adequate storage capacity for its additional stormwater runoff, as well as incorporates sufficient BMPs to successfully remove pollutants from site runoff during the construction and operational phases. As demonstrated above, the Tuscany Meadows Subdivision project would not result in significant impacts to hydrology (drainage and

flooding) or water quality. As a result, the project's contribution to cumulative hydrology and water quality impacts is ***less than significant***.

Mitigation Measure(s)
None required.

Endnotes

[1] Isakson & Associates, Inc. *Tuscany Meadows Subdivision 8654 City of Pittsburg Contra Costa County, California Drainage Study*. February 13, 2013.
[2] Isakson & Associates, Inc. *Stormwater Control Plan for Tuscany Meadows West Portion of Sub 8654*. February 13, 2013.
[3] Isakson & Associates, Inc. *Stormwater Control Plan for Tuscany Meadows East Portion of Sub 8654*. February 13, 2013.
[4] City of Pittsburg. *Pittsburg General Plan 2020 Policy Document*. November 16, 2001.
[5] City of Pittsburg. *Pittsburg General Plan 2020 Environmental Impact Report*. January 2001.
[6] Isakson & Associates, Inc. *Tuscany Meadows C.3 Memo*. August 15, 2014.
[7] Kirker Creek Watershed Planning Group and Contra Costa Resource Conservation District. *Kirker Creek Watershed Management Plan*. January 2004.
[8] Luhdorff and Scalmanini, Consutling Engineers and MWH Global, Inc. *Pittsburg Plain Groundwater Basin Groundwater Management Plan*. October 2012.