

3.10 HYDROLOGY AND WATER QUALITY

This section examines impacts associated with the Orchard Park Redevelopment component of the 2018 LRDP on local and regional hydrologic characteristics, including flooding and drainage, groundwater recharge, and surface and groundwater quality.

In response to the NOP, comments were received regarding concerns regarding floodplain management, drainage plans, wastewater discharge, stormwater runoff, dewatering discharge, and groundwater resources. As they pertain to implementation of the Orchard Park Redevelopment component of the 2018 LRDP, these impacts are described and addressed within this section.

3.10.1 Regulatory Setting

Plans, policies, regulations, and laws (applicable to and/or considered for the Orchard Park Redevelopment component) are provided in Volume 1 of this EIR. As the regulatory setting provided in Volume 1 considers potential development, including the Orchard Park Redevelopment component, within the entirety of the UC Davis campus as envisioned through the 2018 LRDP, no additional regulatory setting is provided for the Orchard Park Redevelopment component.

3.10.2 Environmental Setting

Section 3.10, "Hydrology and Water Quality," of Volume 1 presents the hydrology and water quality environmental setting for the entire UC Davis campus, including the Orchard Park site. Site drainage is entirely controlled, and there are no natural drainage features. The closest stream to the Orchard Park site is the South Fork of Putah Creek, which lies about 9,500 feet south of the southern boundary of the Orchard Park site.

3.10.3 Environmental Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

Refer to Volume 1, Section 3.10, "Hydrology and Water Quality," for a discussion of applicable Significance Criteria.

ANALYSIS METHODOLOGY

See Volume 1, Section 3.10, "Hydrology and Water Quality," for analytical methods relative to hydrology and water quality impacts.

ISSUES NOT EVALUATED FURTHER

The following impacts were identified as part of the analysis of the 2018 LRDP and are either (1) adequately evaluated at the program level of analysis of the 2018 LRDP, or (2) not applicable to the Orchard Park Redevelopment component.

Construction-Related Water Quality and Erosion

Construction of the Orchard Park Redevelopment component would require grading at the entire Orchard Park site. Given that construction of the Orchard Park Redevelopment component would occur over a single 24-month phase commencing in the fall of 2018, it is expected that the entire site would be graded or exposed at one time. Grading would expose and disturb soils which could cause a temporary increase in erosion during storm events and reduce runoff water quality. As noted in Impact 3.10-1 of Volume 1, any development under the 2018 LRDP that would disturb one or more acres of land, such as the Orchard Park Redevelopment component, would be required to obtain coverage under the General Construction Permit prior to construction. To comply with the General Construction Permit, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared detailing measures to control soil erosion and waste discharges from project construction areas. As part of the UC Davis Environmental Health and Safety stormwater program, UC Davis would provide a SWPPP checklist for contractors to follow to ensure that their plan meets campus and regulatory requirements. The contractor for the Orchard Park Redevelopment component would be required to implement the SWPPP to control soil erosion and waste discharges. In compliance with existing regulations, UC Davis would also inspect the construction site, prepare written reports documenting compliance, and require additional stormwater controls where necessary to ensure compliance. As a result, no impacts beyond those identified in Volume 1 would occur, and no additional project-level analysis is necessary.

Long-Term Water Quality and Water Quality Standards

As discussed in Section 3.10, “Hydrology and Water Quality,” of Volume 1, water quality impacts associated with an increase in impervious surface coverage and altered drainage patterns from implementation of the 2018 LRDP (2018 LRDP Impact 3.10-2), including the Orchard Park Redevelopment component, would be less than significant through compliance with MS4 Phase II General Stormwater Permit, which would include implementation of site design measures to reduce runoff and treat stormwater flows. As discussed under 2018 LRDP Impact 3.10-3, implementation of the 2018 LRDP would result in an increase in the amount of wastewater generated. By continuing to adhere to the provisions of National Pollutant Discharge Elimination System permit CA0077895, it is expected that the wastewater treatment plant would continue to comply with waste discharge requirements, and therefore impacts associated with water quality standards would be less than significant. No additional project-level analysis is necessary.

Shallow/Intermediate Groundwater Supply and Recharge

Impacts to the shallow/intermediate aquifer were found to be less than significant under the programmatic analysis of the 2018 LRDP (refer to Volume 1). Groundwater withdrawals from the shallow/intermediate aquifer would not substantially increase under the 2018 LRDP, and development would not increase the amount of impervious surface such that recharge rates would be affected. While there would be an increase in impervious surface coverage, the Orchard Park Redevelopment component would be required to implement post-construction stormwater control (discussed below under Impact 3.10-2), which would enhance the infiltration capacity of the area. As part of the 2018 LRDP, development of the Orchard Park Redevelopment component, would similarly be expected to not substantially effect the supply or recharge rates of the shallow/intermediate groundwater aquifers. No additional project-level analysis is necessary.

Flood Risk

The Orchard Park site is not located on the 100-year floodplain and would therefore not experience outside risk associated with the placement of housing within a floodplain. As a result, no impact would occur, and this issue does not to be further analyzed in this project-specific analysis.

Risk of Dam Failure

As noted in Section 3.10, “Hydrology and Water Quality,” of Volume 1, the plan area, including the Orchard Park site, is located within the inundation zone of Berryessa Dam. However, the dam is regularly monitored and maintained by state and federal agencies such that the risk of dam failure at the site is considered to be minimal. As a result, no impacts beyond those identified in Volume 1 would occur and this issue does not to be further analyzed in this project-specific analysis.

Inundation by Tsunami, Seiche, or Mudflow

As noted in Section 3.10, “Hydrology and Water Quality,” of Volume 1, the plan area, including the Orchard Park site, is not located in an area subject to tsunamis, seiches, or mudflows. As a result, no impact would occur, and this issue does not to be further analyzed in this project-specific analysis.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: Impacts to the deep aquifer groundwater supply and recharge.

Development and occupancy of the Orchard Park site would increase the amount of water extracted from the deep aquifer. However, this increase in demand is not anticipated to result in a net deficit in the aquifer or a continued lowering of the groundwater table. This impact would be **less than significant**.

The Orchard Park Redevelopment component of the 2018 LRDP would place continued demand on water from the deep aquifer for domestic use. The deep aquifer is a high-quality drinking water source, understood to be of limited lateral and vertical recharge, and overlain by impermeable clay layers that restrict direct recharge from the overlying campus. As discussed in Section 3.10, “Hydrology and Water Quality,” of Volume 1, the UC Davis campus will continue to draw groundwater as a domestic water source during periods of low flow in the Sacramento River, when water is not available from the Woodland-Davis Clean Water Agency (i.e. during Term 91 conditions). However, as noted in Volume 1, groundwater supplies within the deep aquifer are not considered to be in decline by DWR, and as implementation of the 2018 LRDP, inclusive of the Orchard Park Redevelopment component, is not anticipated to increase the potential for groundwater levels to decline, impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact 3.10-2: On-site and off-site flood-related impacts.

Development and occupancy of the Orchard Park site would result in an overall increase in impervious surfaces and produce changes to site-specific stormwater infrastructure. If new stormwater infrastructure is not appropriately designed to accommodate site runoff, or existing campus infrastructure cannot accommodate increased flows, impacts related to local and off-site flooding would be **significant**.

As discussed in Section 3.10, “Hydrology and Water Quality” of Volume 1, surface water generated on campus during heavy precipitation events normally results in localized on-site ponding at storm drain inlets and along roadsides and does not generally result in property damage. In the absence of

stormwater improvements at new development sites, storm events could result in an increase in the frequency or magnitude of localized flooding, causing property damage. Large storm events have resulted in shallow overland flows in parts of the central campus in the past. The central campus drainage system involves a system of underground pipes that drain to the Arboretum Waterway (which provides the only major detention storage in the system), from which stormwater is pumped to the South Fork of Putah Creek during large storm events.

With implementation of the Orchard Park Redevelopment component, approximately 3,000 linear feet of new storm drain pipes would be added to accommodate the new buildings. Bio-swailes and small stormwater infiltration basins would be installed adjacent parking and in landscaped areas of the project site to capture, infiltrate, and offset increases in stormwater runoff generated by the Orchard Park Redevelopment component.

Currently, the site is undeveloped. The Orchard Park Redevelopment component would result in an increase in impervious surface areas and would involve changes to stormwater infrastructure. The pattern of drainage, infrastructure connectivity, and the locations of specific features could change. Stormwater infrastructure that is not replaced or redesigned could contribute to problems associated with drainage and flooding. This would be a **significant** impact.

OPR Mitigation Measure 3.10-2: Manage stormwater flows to reduce soil erosion.

Implement 2018 LRDP Mitigation Measure 3.7-4.

Significance after Mitigation

Implementation of OPR Mitigation Measure 3.10-2 would require a drainage study for the Orchard Park Redevelopment component and would ensure that necessary stormwater systems and/or on-site detention facilities would be engineered and constructed with appropriate sizing for anticipated storm events such that off-site impacts do not occur. This mitigation would reduce potential impacts associated with localized flooding to **less-than-significant** levels.
