

MEMORANDUM

DATE: March 26, 2025
TO: Natalie Noyes
Desiree Dei Rossi
David J. Powers & Associates
FROM: Daniel Schaaf, PE
Cindy Steele, PE
SUBJECT: San Carlos Northeast Area Specific Plan Flood Impact Study

Job #: DPOW.130

Introduction

David J. Powers & Associates contracted Schaaf & Wheeler to prepare this Flood Impact Study for the San Carlos Northeast Area Specific Plan. Schaaf & Wheeler has reviewed the Project Description, Proposed Zoning District Map, and Civil Infrastructure Narrative provided by David J. Powers & Associates to update the Storm Drain Master Plan model and report the impacts of the Specific Plan per Appendix G of the CEQA Guidelines.

Approach to Analysis

This impact evaluation for the City of San Carlos Northeast Area Specific Plan identifies the hydrologic and hydraulic impacts of the proposed development compared to existing conditions. This study utilizes and expands a PC SWMM model previously developed by GHD for the City of San Carlos 2017 Storm Drain Master Plan. Schaaf & Wheeler converted the SWMM model to MIKE+, updated the 2D terrain model with 2017 LiDAR, refined subcatchment boundaries, and added an existing U.S. Highway 101 culvert crossing. Impacts of the Specific Plan are determined by modeling the proposed land use and storm drain improvements as well as studying the FEMA FIRM and FIS for San Mateo County. Impacts of the proposed development are found to be “less than significant.”

Thresholds of Significance

Appendix G of the CEQA Guidelines and the Regulatory Setting requirements considers the proposed project to have a significant environmental impact with regard to hydrology if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
 - Result in a substantial erosion or siltation on- or off-site (Impact 1);
 - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site (Impact 2);
 - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Impact 3); or

- Impede or redirect flood flows (Impact 4).
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation (Impact 5).

Project Location

The Northeast Area Specific Plan consists of approximately 145 acres, roughly bound by Belmont Creek, U.S. Highway 101, the western property lines of the residential parcels along Northwood Drive, the northeastern property lines of the residential parcels along Fairfield Drive, the southeast property line of the Palo Alto Medical Facilities and Old County Road in the City of San Carlos (Figure 1).

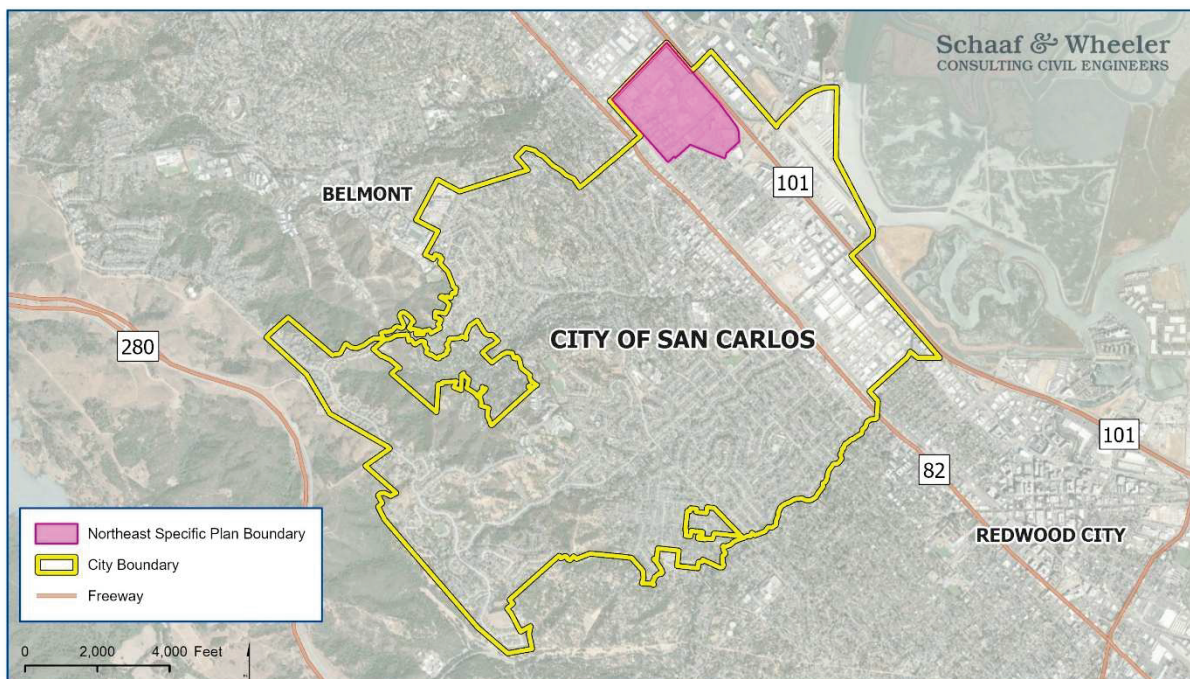


Figure 1: Project Location

Project Description Summary

The City proposes a Specific Plan to create a vision, policies, and standards to guide new development within the area in a way that supports existing and new businesses, residents, and the overall community. The Northeast Area Specific Plan will manage and direct changes in the development patterns within the area and guide present and future land uses, zoning changes, economic development, urban design, infrastructure, transportation circulation management and mobility, service provisions, and community benefits.

The Specific Plan anticipates new development and change over an approximate 20-year period, through 2045, and would allow for an increase of 1,890 residential units (no residential units exist within the Specific Plan area currently), as well as an increase in the net new square footage of existing non-residential land uses. The parcels within the Northeast Area Specific

Plan are currently designated as IL: Light Industrial, IP: Industrial Professional, and PD: Planned Development. Figure 2 shows the proposed zoning.

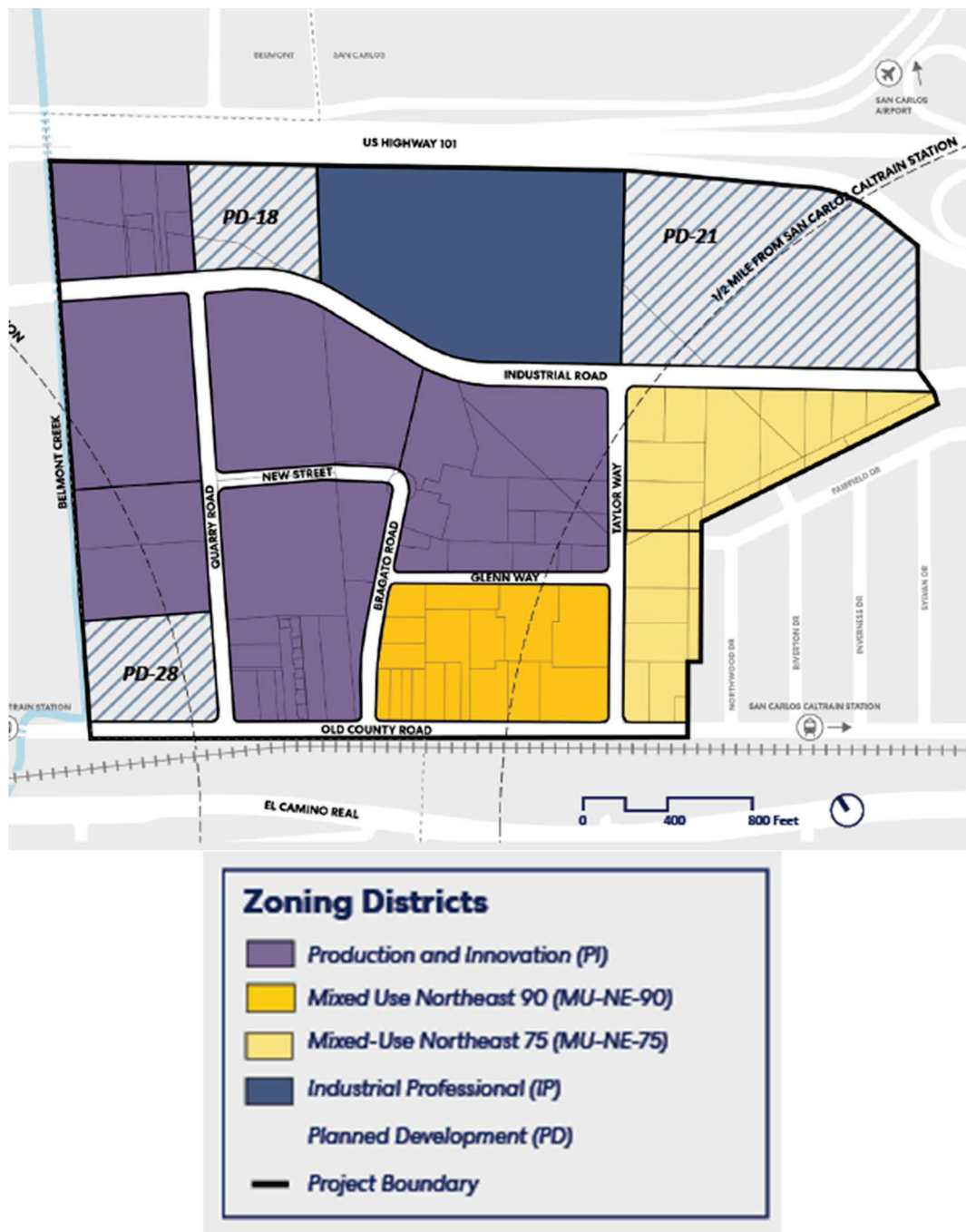


Figure 2: Project Proposed Zoning

A new street segment extending Bragato road to Quarry Road would be constructed as part of the Specific Plan. Additionally, the Specific Plan would include improvements to the existing transportation network, such as a pedestrian/bicycle connection to Belmont Creek from Quarry Road and the redesign of Industrial Road as a multi-modal district boulevard.

The Plan area is served by existing catch basins and storm drainpipes in Quarry Road, Bragato Road, Taylor Way, and Industrial Road. The stormwater is then conveyed into drainage ditches on the north side of Holly Street and the south side of U.S. Highway 101, which convey water to the right-hand shoulder of southbound 101 into a series of underground storm drain pipes that collect water and convey it beneath the highway and into Phelps Slough. Phelps Slough drains water into a retention pond in Redwood Shores before it is pumped into Steinberger Slough, which drains into the San Francisco Bay.

The 2017 City of San Carlos Storm Drain Master Plan identified several storm drainpipes within the Specific Plan area as being undersized to convey the 10-year design storm runoff, including an 18-inch pipe in Quarry Road, 24-inch pipe in Industrial Road, and 16-inch pipe in Bragato Road. Future development under the Specific Plan would require construction of new storm drainpipes or development would be required to pay a fair share contribution to the improvement. Figure 3 shows the Proposed Storm Drain (new or future by others improvement). The Specific Plan would also include green stormwater infrastructure improvements along all roadways.

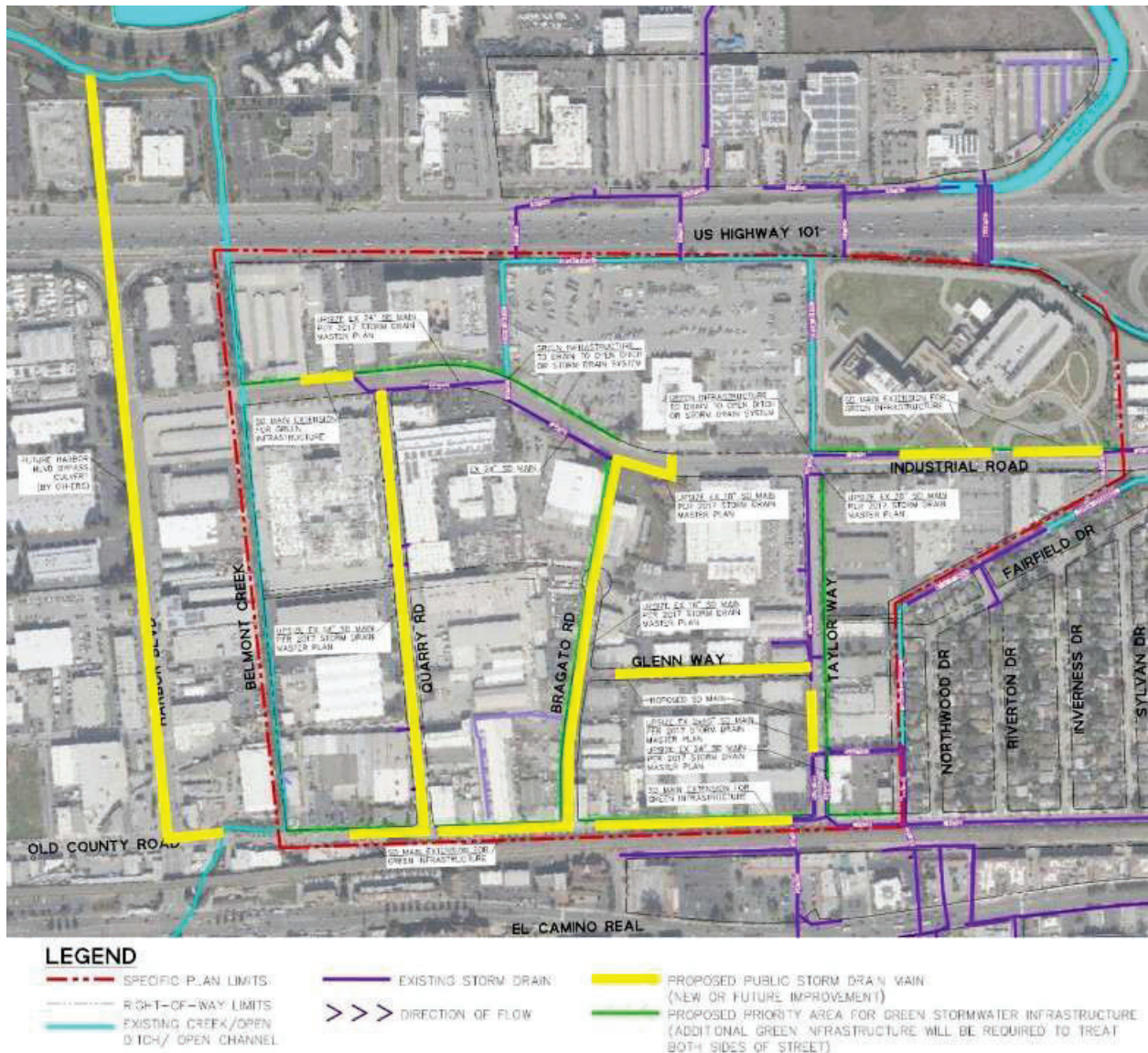


Figure 3: Storm Drain Plan

Project Impacts and Mitigation Measures

Impact 1: Substantially alter the existing drainage pattern of the site area or, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site.

Finding: Less than Significant

There is no stream or river alteration proposed as part of this project. Since the Specific Plan area and vicinity is already developed, there is little potential for an increase in erosion through the addition of impervious surfaces.

Within the Northeast San Carlos Specific Plan area, current land use is mostly light industrial, professional industrial, and planned development. The proposed industrial professional, production and innovation, and mixed-use northeast land use will likely consist of reduced impervious surfaces relative to existing land use. The proposed zoning and green stormwater street improvements result in an estimated reduction of impervious surface (Table 1).

Table 1: Estimated Impervious Surface

Condition	Estimated Impervious %
Existing	82.8
Proposed	78.6

Redevelopment will be subject to San Mateo Countywide Water Pollution Prevention Program per the Municipal Regional Stormwater NPDES Permit. Requirements include site design measures, source controls, stormwater treatment measures, and hydromodification management (if applicable) to reduce water quality impacts like siltation from increased pervious surfaces.

Therefore, since the risk of increased erosion is negligible, the project would have a *Less than Significant Impact*.

Impact 2: Substantially alter the existing drainage pattern of the site area or, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Finding: Less than Significant

There is no stream or river alteration proposed as part of this project. Since the Specific Plan area and vicinity is already developed, there is little potential for an increase in rate or volume of surface runoff which would result in flooding through the addition of impervious surfaces.

The SDMP model identified existing catchment impervious percentage and calculated existing runoff peak flow. Catchment impervious percentage was updated in a proposed condition model to calculate the runoff peak flow per the proposed Specific Plan land use. The proposed condition reduces 10-year peak flow by approximately 3% (Table 2). This minor change in runoff to the existing drainage system does not cause any significant increase in flooding downstream of the project boundary based on post-project modeling.

Table 2: Project Area Runoff

Condition	10-year Runoff (cfs)	100-year Runoff (cfs)
Existing	213	354
Proposed	206	344

Therefore, the project would have a *Less than Significant Impact*.

Impact 3: Substantially alter the existing drainage pattern of the site area or, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Finding: Less than Significant

There is no stream or river alteration proposed as part of this project. Since the Specific Plan area is already developed, there is little potential for creating runoff which would result in exceeding the capacity of existing or planned stormwater drainage systems through the addition of impervious surfaces.

The proposed project incorporates upsizing storm drains as recommended by the Storm Drain Master Plan and additional upstream end of line extensions. The proposed condition reduces Specific Plan area flooding as shown in Figures 4 and 5.

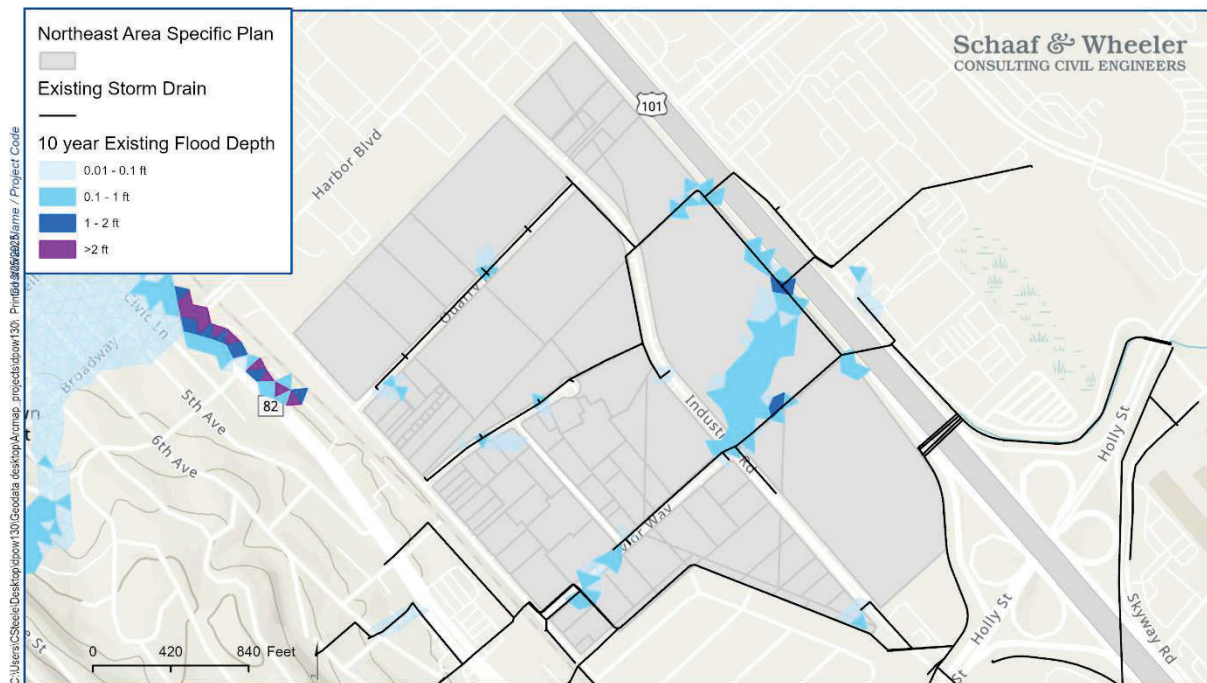


Figure 4: 10-year Existing Flood Depth

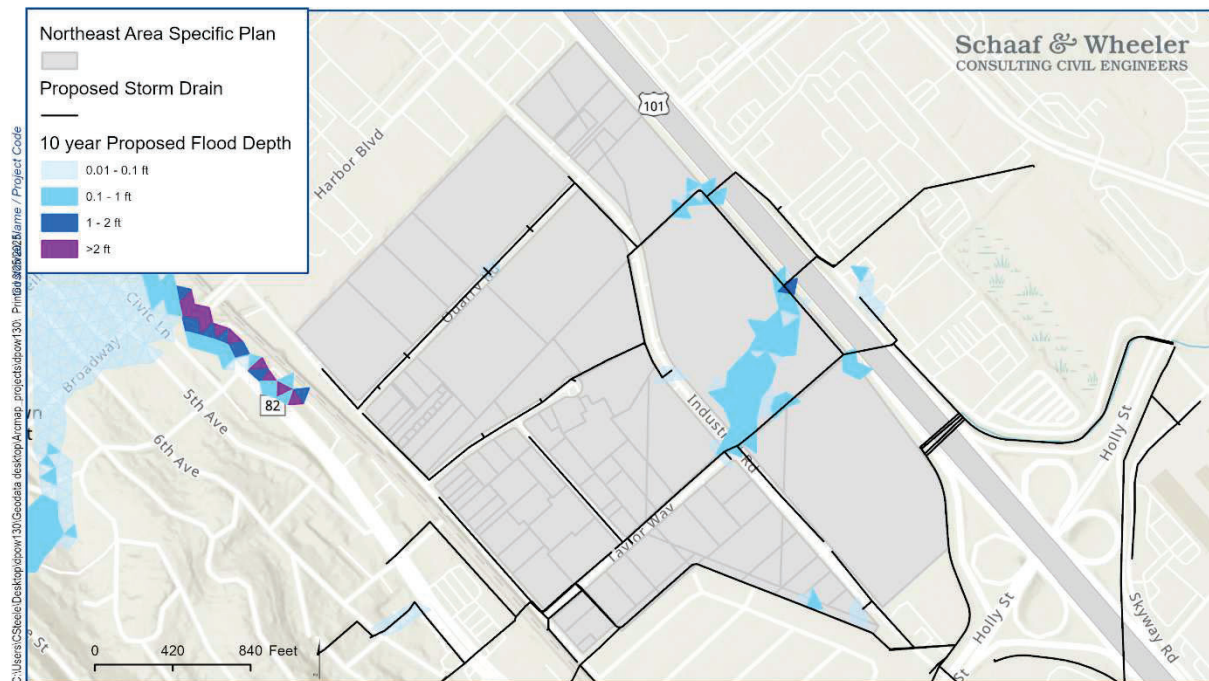


Figure 5: Proposed 10-year Flood Depth with Storm Drain Improvements

Downstream of the Specific Plan area, stormwater is conveyed beneath Highway 101 and into Phelps Slough. Phelps Slough drains water into a retention pond in Redwood Shores before it is pumped into Steinberger Slough, which drains into the San Francisco Bay. Peak flows downstream of the site are not impacted by the increased onsite conveyance because flow is choked by the Highway 101 culverts, which have limited capacity and are typically obstructed by up to 18 inches of sediment.

Therefore, the project would have a *Less than Significant Impact*.

Impact 4: Substantially alter the existing drainage pattern of the site area or, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.

Finding: Less than Significant

There is no stream or river alteration proposed as part of this project. Since the Specific Plan area is already developed, there is little potential to impede or redirect flood flows through the addition of impervious surfaces.

The Specific Plan includes the following Flooding Adaptation Development Standards:

- All new development within the Plan, regardless of whether the site is located within the 100-year flood zone shall adhere to the San Carlos Municipal Code, Chapter 15.56 – Flood Damage Prevention.
- Critical site infrastructure (such as transformers and generators) shall be elevated to provide resilience to current and future flooding conditions in the area.

- The City of San Carlos shall determine on a case-by-case basis if individual project requires a building height variance to accommodate proposed finished flood elevations that have been elevated to provide flood resilience.
- For any new development within a 100-year flood zone, the project would be required to set the finished floor elevation above the 100-year base flood elevation.

The Specific Plan lists Sea Level Rise Development Standards which include:

- Future development shall assess sea level rise risk for the site and elevate the finished floor elevation of the new building further above the 100-year BFE to provide resiliency to future sea level rise.

According to the San Mateo County Flood Insurance Study, “North of Holly Street and west of U.S. 101, ponding will occur as a result of the inability of the Harbor Industrial District Channel culvert under U.S. 101 to pass the larger flood flows.” The Highway 101 culverts that drain the Specific Plan area are undersized for even the 10-year condition, given that they are typically obstructed by up to 18 inches of sediment and modeled as such. The FEMA Floodplain is shown in Figure 6.

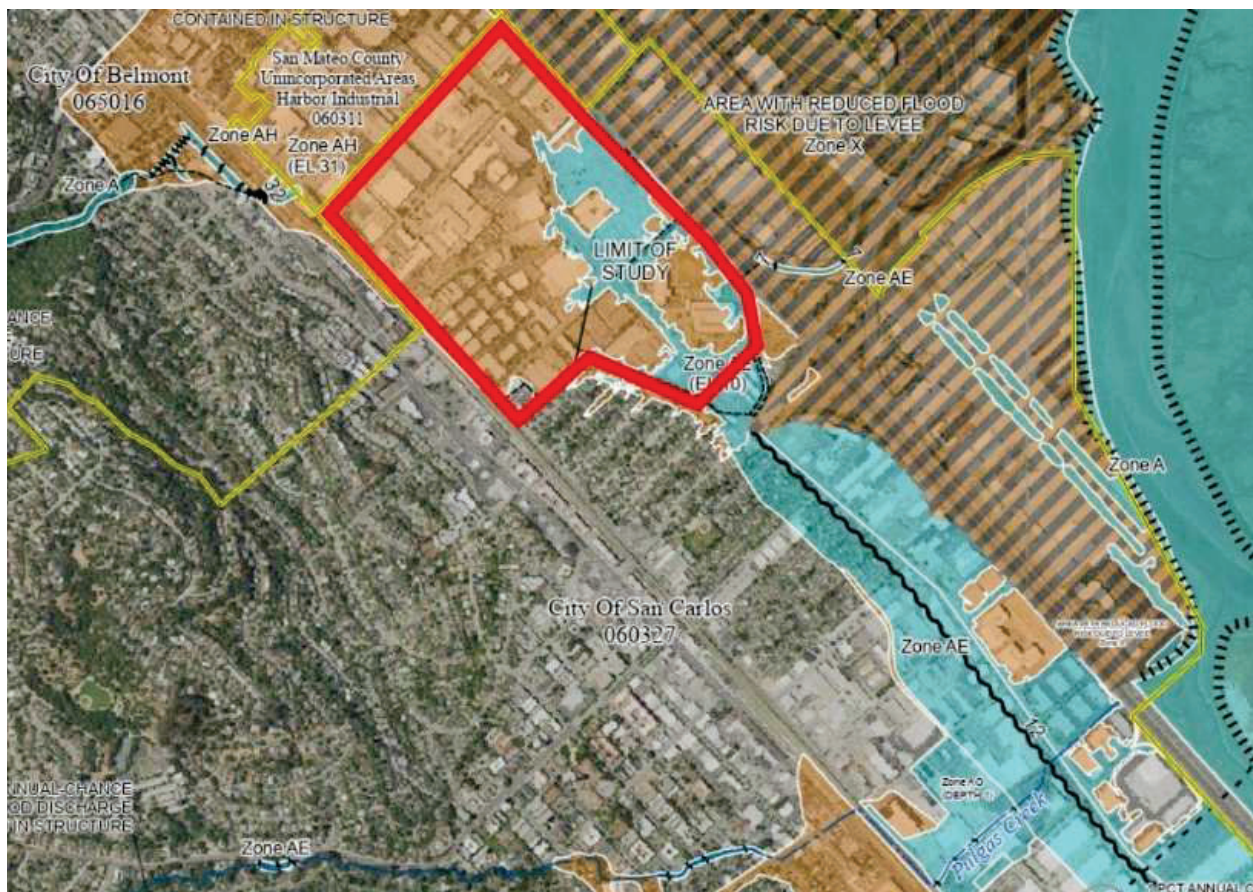


Figure 6: FEMA Floodplain

The proposed project standards include elevating new finished floors above the 100-year base flood elevation. As redevelopment occurs in the Specific Plan area, fill will be placed to elevate

building pads and structures above the base flood elevation plus sea level rise, providing some potential to displace the floodplain. For offsite flood flows to be increased, grading and building construction would have to block the active conveyance of flood flows through the project site. To meet the NFIP, the project cannot incur more than one (1) foot of cumulative impact to the floodplain. Furthermore, the City of San Carlos requires that projects located within the floodplain shall perform a hydrology and hydraulic analysis to verify that proposed improvements will not adversely affect the floodplain or exacerbate flooding of other properties.

The properties south of the Specific Plan area are inundated by Pulgas Creek overflow during high-tide conditions up to a base flood elevation of 12 feet NAVD. The base flood elevation onsite is 10 feet NAVD. The result of placing fill in the onsite floodplain will be minor displacement of floodplain volume into the streets which will remain low lying. Filling the site would not cause an impediment to any offsite flows running through the site since the onsite floodplain is generated by onsite runoff and the offsite base flood elevations are higher than onsite base flood elevations.

Therefore, the project would have a *Less than Significant Impact*.

Impact 5: In flood hazards, tsunami, or seiche zones, risk release of pollutants due to project inundation.

Finding: Less than Significant

A tsunami is a potentially destructive wave resulting from seismic activity. The project site is located significantly far away from the ocean to be outside the Tsunami Evacuation Zones per the Association of Bay Area Governments (Figure 7).

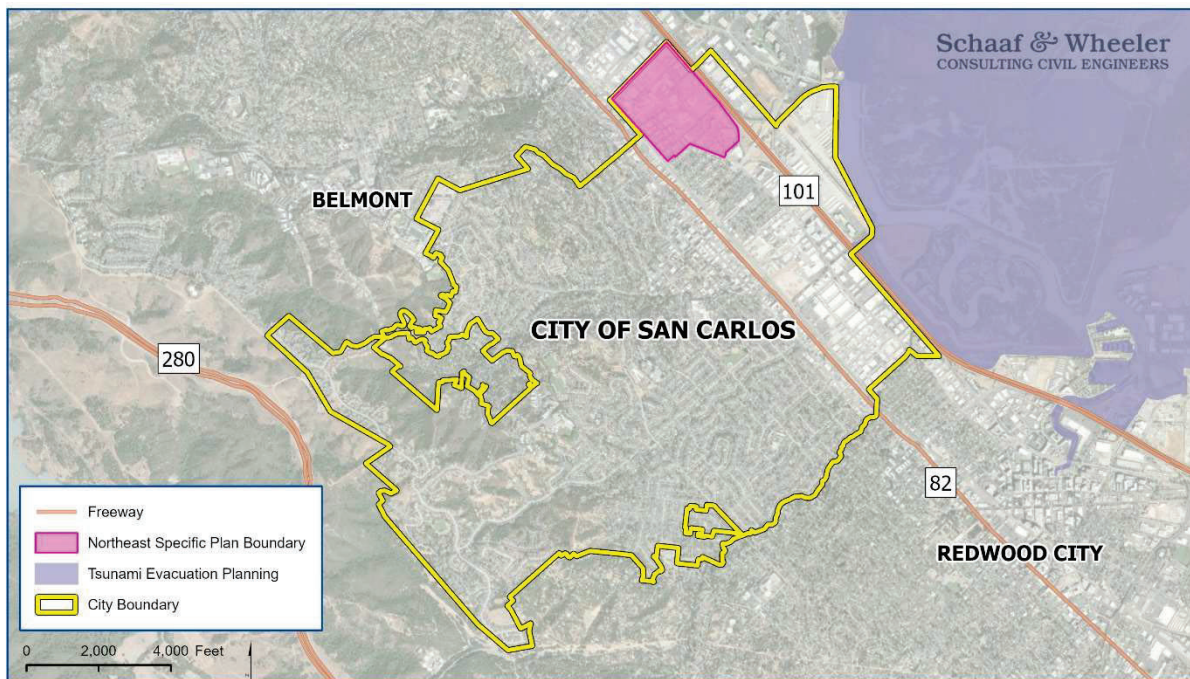


Figure 7: Tsunami Evacuation Area

A seiche is the resonant oscillation of water, usually limited to partially or fully enclosed basins. San Francisco Bay is an enclosed body of water and is in the general vicinity of the project site. There are several levees positioned between the bay and the site that would dampen any effects of a seiche (Figure 8).

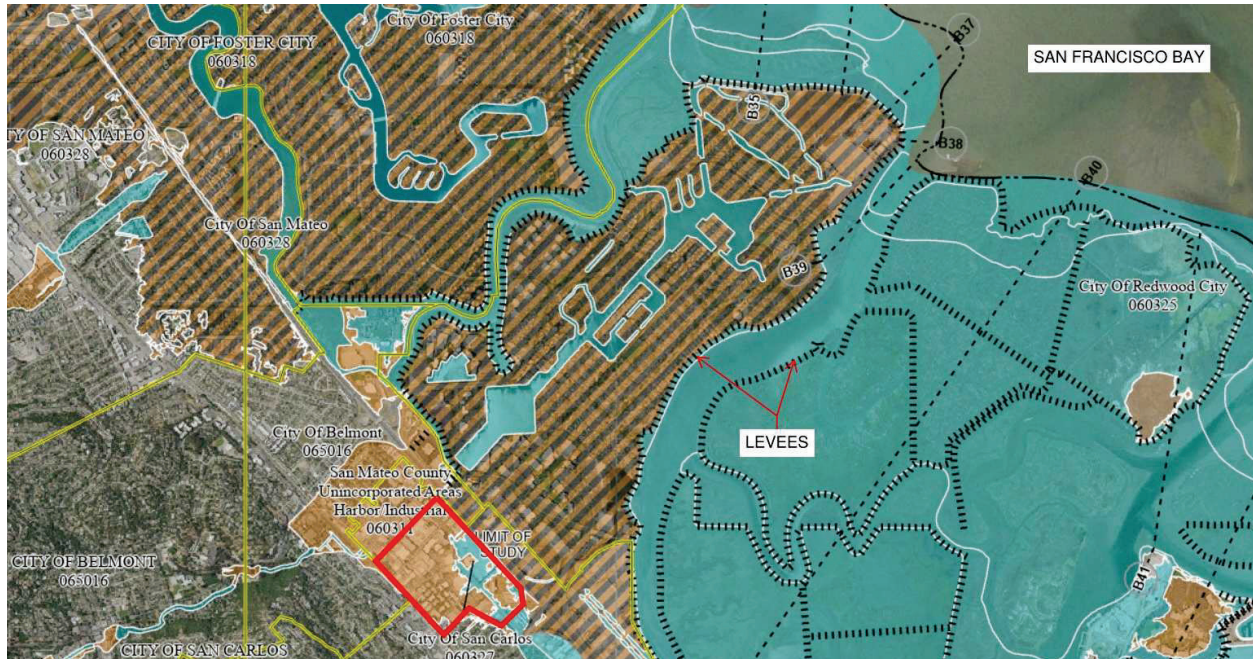


Figure 8: Levees between the Specific Plan Area and San Francisco Bay

Therefore, the project would have a *Less than Significant Impact*.

Conclusion

Based on this analysis, impervious coverage is estimated to decrease, project area runoff is estimated to decrease, local flooding is estimated to decrease, and floodplain impacts are found to be negligible given the proposed project zoning, storm drain improvements, and development standards. The project area is outside of tsunami and seiche zones. Therefore, flood impacts of the proposed San Carlos Northeast Area Specific Plan are found to be less than significant.