



## **SAN CARLOS NORTHEAST AREA SPECIFIC PLAN**

### **PROPOSED INFRASTRUCTURE NARRATIVE**

#### **Overview**

The purpose of this proposed infrastructure narrative is to provide an overview of utility infrastructure within the San Carlos Northeast Area Specific Plan (NEASP) area, identify existing utility constraints, and provide a discussion of potential utility improvements that are required to support the development of the Preferred Scenario. This document includes recommendations, standards, and additional action items related to infrastructure for implementation of the NEASP.

#### **Development Program Summary**

The existing buildout of the Northeast Area consists of multiple land-use types, including light industrial, manufacturing, warehousing, research and development, commercial office, and hospital. The future buildout under the NEASP includes 6,398,000 gsf of new net development, including 4,508,000 gsf of non-residential development and 1,890 units of residential development. The full future build-out, including existing buildings indicated to remain, is 8,514,000 gsf.

#### **Storm Drain Infrastructure**

##### **Background:**

Surface water in the NEASP area generally trends towards the north and northeast where it is captured and conveyed through a system of catch basins and storm drain pipes in Quarry Road, Bragato Road, Taylor Way, and Industrial Road. Water is then conveyed into drainage ditches on the north side of Holly Street and the south side of US Highway 101. These drainage ditches convey water to the right-hand shoulder of southbound 101, where a series of underground storm drain pipes collect the water and convey it beneath Highway 101 and into Phelps Slough. Phelps Slough then drains to a retention pond in Redwood Shores before it is pumped into Steinberger Slough which drains to the San Francisco Bay.

Multiple studies have been previously prepared to review local drainage and storm drain infrastructure:

- Industrial Road Drainage Study, prepared by Schaaf & Wheeler, dated June 2014
- City of San Carlos Storm Drain Master Plan, prepared by GHD, dated April 2017

The 2014 Industrial Road Drainage Study (2014 IRDS) analyzes the City of San Carlos's existing storm drain system in the Industrial Road neighborhood. The study analyzes a 10-year level storm event to gauge the performance of the existing system and identify segments of the drainage system that do not provide adequate capacity.

Proposed system improvements include upsizing existing pipes, adding additional piping, and removing sediment and vegetation from choked channels.

The City of San Carlos 2017 Storm Drain Master Plan (2017 SDMP) is the most recent study of the local storm drain system in the Northeast Area and identifies portions of the storm drain system that are currently under capacity. The capacity analysis is based on a 10-year and 100-year design storm. Portions of storm drain mains in Quarry Road, Bragato Road, and Industrial Road were identified in the 2017 SDMP as being undersized and in need of potential upgrades in the future in order to convey the design storm and avoid potential flooding. Additional improvements to the system would include adding additional storm drain infrastructure as well as removing debris and vegetation from pipes and channels.

##### **Recommendations:**

The 2017 SDMP storm drain upgrades identified above are listed as "Tier 2" Capital Improvement Projects. Tier 2 Capital Improvement Projects indicate portions of the storm drain system that are under capacity, but the flooding



that results from the undersized pipes does not cause significant flooding. The 2017 SDMP notes that Tier 2 improvements would only be upsized or improved if the system was being modified for other reasons. To improve drainage of the Northeast Area, it is recommended that these Tier 2 improvements should be implemented in conjunction with build-out of the plan area. Projects which drain to the undersized storm drain pipes could be required to construct new storm drains or pay a fee for their fair share of the proposed improvements. The 2017 SDMP does not indicate pipe sizes for the Tier 2 Capital Improvement Projects. Proposed pipe size for replacement or parallel storm drain pipes shall be determined at the time of implementation of the proposed improvements. Capital Improvements for storm drainage are typically built starting with the most downstream project first. It is possible that projects in the more upstream portion of the watershed are developed first. City of San Carlos Engineering staff will determine on a case by case basis if an individual project will be responsible for constructing an identified capital improvement project in the vicinity, or if a storm drain mitigation fee is more appropriate.

It is anticipated that future redevelopment will mirror existing drainage conditions. The peak flow from individual developments to the storm drain system will be decreased by low impact design, green infrastructure, and detention measures. As part of an individual development application, a project-specific hydrology and hydraulic analysis shall be prepared to demonstrate that peak stormwater flow is reduced compared to pre-development conditions at the point of connection to the existing storm drain system.

When a project is developed and there is no storm drain main serving that site or the new green infrastructure implemented by the developments, a new public storm drain main shall be extended to the project site and along the length of the project frontage.

## **Flooding/ Sea Level Rise**

### **Background:**

The Northeast Area periodically experiences flooding during large storm events. The areas within the Northeast Area which experience flooding the most are near Quarry Road, due to Belmont Creek overtopping, as well as isolated areas along Industrial Road, specifically near Taylor Road. Flooding in the area is generally due to overtopping of Belmont Creek caused by channel deficiencies and backwater conditions, deficient capacity of existing local storm drains, and blockages due to debris and leaves.

Flooding from Belmont Creek has been previously analyzed in the following reports:

- Belmont Creek Watershed Study, prepared by WRECO, dated September 2014
- Belmont Creek Watershed Management Plan, prepared by Michael Baker International., dated August 2019
- Twin Pines Park Detention Basin Study, prepared by Wood Rodgers, dated January 2023

The 2014 Belmont Creek Watershed Study (2014 BCWS) was prepared to determine feasible flood control alternatives for Belmont Creek that would reduce flooding at a private property located on Industrial Road. The study identifies Belmont Creek as a source of flooding for the NEASP area and proposes a new parallel bypass along Harbor Boulevard to reduce overtopping of Belmont Creek and subsequent flooding during a 10-year storm event.

The 2019 Belmont Creek Watershed Management Plan (2019 BCWMP) studied flooding from Belmont Creek and proposed a number of potential improvements that could be implemented to address the current flooding conditions. These improvements included upstream detention facilities, as well as a box culvert bypass within Harbor Boulevard, parallel to Belmont Creek.

The 2023 Twin Pines Park Detention Basin Study (2023 TPPDBS) was prepared for the City of Belmont to support design of a detention basin project along Belmont Creek within Twin Pines Park. The study noted that Lower Belmont Creek is susceptible to accumulation of sediment which is transported from upstream portions of the watershed and deposited in the lower reaches of the creek. Build-up of sediment further reduces channel capacity





by reducing the cross section. The proposed detention project in Twin Pines Park will address flooding in Quarry Road for the 2-year storm. It will also reduce sediment that is transported to the lower reaches of Belmont Creek. The study notes that the detention project and the construction of a 10'x4' reinforced concrete box storm drain bypass within Harbor Boulevard are needed to address flooding for the 10-year storm event. With implementation of the two projects, flood depths within the area surrounding Belmont creek are predicted to be mostly 1 foot or less during the 100-year storm event.

### **Recommendations:**

Future development projects should anticipate implementing measures to protect new buildings from flooding and reduce impact on existing drainage infrastructure. Coordinated area-wide and regional improvements are needed to address existing flooding conditions within the Northeast Area, specifically to address flooding of the area that is caused by flows overtopping Belmont Creek. As previously noted, capital improvement projects are currently underway in the neighboring City of Belmont to address flooding from Belmont Creek.

In addition to the existing pipe deficiency, the flooding is also caused by the fact that the Northeast Area is partially within a 100-year special flood hazard zone. For any new development within a 100-year flood zone, it is required to set the finished floor elevation above the 100-year base flood elevation (BFE). This does not account for any elevation for future sea level rise. Future development will need to assess sea level rise risk for the site and elevate the finished floor elevation further above the 100-year BFE to provide resiliency to future sea level rise. OneShoreline provides voluntary planning guidance and design recommendations for tide-affected areas such as the NEASP to account for climate-driven flooding, sea level rise, and groundwater rise. Additionally, the projects within the Northeast Area, but outside the FEMA 100-year flood zone are also encourage to elevate building finished floors and critical site infrastructure (such as transformers and generators), to provide resilience to current and future flooding conditions in the area. City of San Carlos staff will determine on a case by case basis if an individual project should be provided a building height variance to accommodate proposed finished floor elevations that have been elevated to provide flood resilience. The City of San Carlos also has requirements 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.

### **Stormwater Treatment**

#### **Background:**

Redevelopment within the NEASP area is subject to the Municipal Regional Stormwater Permit (MRP). The third reissuance of the Municipal Regional Stormwater Permit, or MRP 3.0, has been adopted by the San Francisco Bay Regional Water Quality Control Board. MRP 3.0 includes significant changes and additional stormwater treatment requirements for Provision C.3.b. MRP 3.0 and its new requirements went into effect July 1, 2023.

Under MRP 3.0, parcel-based development or redevelopment is considered a Regulated Project if it will create or replace 5,000 square feet (sf) or more of impervious area. This includes any impervious surface, sidewalk, or street frontage that is created or replaced in the public right of way as part of a project. The 5,000 sf threshold also applies to new roads, sidewalks, and bike lanes. For redevelopment projects, the "50% Rule" applies as noted in the San Mateo County C.3 Regulated Projects Guide. Projects that alter or replace less than 50 percent of existing impervious surface need to treat stormwater runoff only from the portion of the site that is redeveloped. Projects that alter or replace 50 percent or more of the existing impervious surface are required to treat runoff from the entire site.

#### **Recommendations:**

It is likely that all horizontal and vertical development projects within the NEASP area will meet the Regulated Project criteria and be required to comply with MRP Provision C.3. requirements. Projects will need to implement stormwater treatment measures that collect and treat stormwater runoff from all onsite impervious areas prior to discharge into the City storm drain system. If a Regulated Project creates or replaces less than 50% of the impervious surface within





an existing road or public right of way, stormwater runoff from that portion of the road must be included in the treatment system design. If runoff from that portion of the road cannot be separated from runoff from the rest of the road, the runoff from the entire surface draining onto the reconstructed portion must be treated. If a project disturbs 50% or more of the existing roadway, the entire road surface must be included in the treatment system design. For most major development projects, it is expected that stormwater treatment will need to be designed and built to collect and treat runoff from the public roadway along the project's frontage, extending to the crown of the street.

Traditional stormwater treatment methods include stormwater gardens and flow-through planters. Bioretention is a low-impact development (LID) treatment measure that is designed to receive runoff from nearby impervious surfaces or buildings, and allow for stormwater evapotranspiration and filtration through an engineered soil mix. Other treatment measures may include cisterns and re-use facilities. In addition, landscape areas can be designed to retain run-on from adjacent sidewalk areas. Following the C.3 Regulated Projects Guide, a self-retaining landscape area will be depressed 3-inches below surrounding walkways and able to retain the first inch of rainfall. The landscape zone can accommodate a maximum ratio of two parts impervious for every one-part pervious area.

### **Sanitary Sewer Infrastructure**

#### **Background:**

Local wastewater is collected and conveyed to sanitary sewer mains in Industrial Road. All wastewater is conveyed to the South Bayside System Authority (SBSA) San Carlos Pump Station, located on the other side of US Highway 101 from the Northeast Area. From there, wastewater is pumped to the Silicon Valley Clean Water Wastewater Treatment Plant (WWTP) in Redwood Shores.

The Sanitary Sewer Master Plan (SSMP) prepared by RMC, dated January 2013, identifies sewer lines within the Northeast Area that need repairs or replacement. These include:

- A portion of sewer main along Industrial Road, needs localized repairs.
- A portion of sewer main along Quarry Road needs localized repairs.
- A portion of sewer main along Old County Road needs localized repairs.
- A portion of sewer main along Quarry Road needs replacement.

#### **Recommendations:**

As part of the City's Sanitary Sewer Master Plan (SSMP) update, analysis is being prepared to analyze the capacity of the existing sanitary sewer system under full build-out conditions for the Northeast Area Specific Plan. Development projects that discharge to undersized sanitary sewer mains will be required to upsize those sanitary sewer mains as noted in the SSMP.

### **Domestic Water Infrastructure**

#### **Background:**

Water service is currently provided in the area primarily by the Mid-Peninsula Water District (MPWD). A small portion of the area near Old County Road and Bragato Road is serviced by the California Water Service Company (CalWater). The Northeast Area is currently served by water mains in Old County Road, Quarry Road, Bragato Road, Taylor Way and Industrial Road. Development within the Northeast Area will increase water demand. The proposed domestic water demands are being studied as part of a water supply assessment prepared by MPWD in conjunction with the CEQA analysis for the NEASP. Extension of recycled water to the Northeast Area could be considered to offset increased water demand.





### **Recommendations:**

The network of piping within NEASP will need to be evaluated for adequacy on a project by project basis. It is possible that some of the existing water mains are not able to provide sufficient flow and pressure to meet required fire demands for new construction. Depending on the actual building heights, locations, densities, and construction types, water mains may need to be replaced and upsized to meet fire flow requirements. Fire flow requirements shall be identified for each development site based on their construction types and building square footage. If the fire flow demand exceeds the supply from the existing water system, the applicant may be required to perform additional capacity studies and upsize water mains as part of public improvements for their projects, which could extend beyond their immediate project frontage. It is recommended that applicants for individual development projects coordinate with the Redwood City Fire Department and MPWD during planning approvals to determine if the existing water system can deliver the required fire flows, or if water system improvements are required to meet the project's specific fire water demands.

To offset the future increased water demand, projects should consider sustainable water use options. Development projects are encouraged to utilize on-site alternative water sources, such as graywater re-use systems, rainwater harvesting and re-use, or blackwater treatment and re-use systems.

Given the proximity of the Northeast Area to the City of Redwood City's recycled water system in Redwood Shores, the City of San Carlos may consider implementing a recycled water distribution system within the Northeast to offset water demand and usage.

Further discussion with City staff and MPWD is required to evaluate feasibility of connection to the City of Redwood City's Recycled Water system and extending a pipeline to the Northeast Area.

If recycled water is available or planned for the area at the time when the City is reviewing development applications, the applicant may be required to use recycled water for site and building uses such as irrigation and toilet flushing. Individual project developments are encouraged to utilize onsite alternative water sources, regardless of whether recycled water infrastructure is extended to the Northeast Area in the future.

### **Dry Utility Infrastructure**

#### **Recommendations:**

Individual development projects will be required to underground any existing overhead utilities along their project frontages. Individual developments will also be required to coordinate with PG&E and telecommunications providers to determine if infrastructure upgrades are required to support the specific needs of the development.

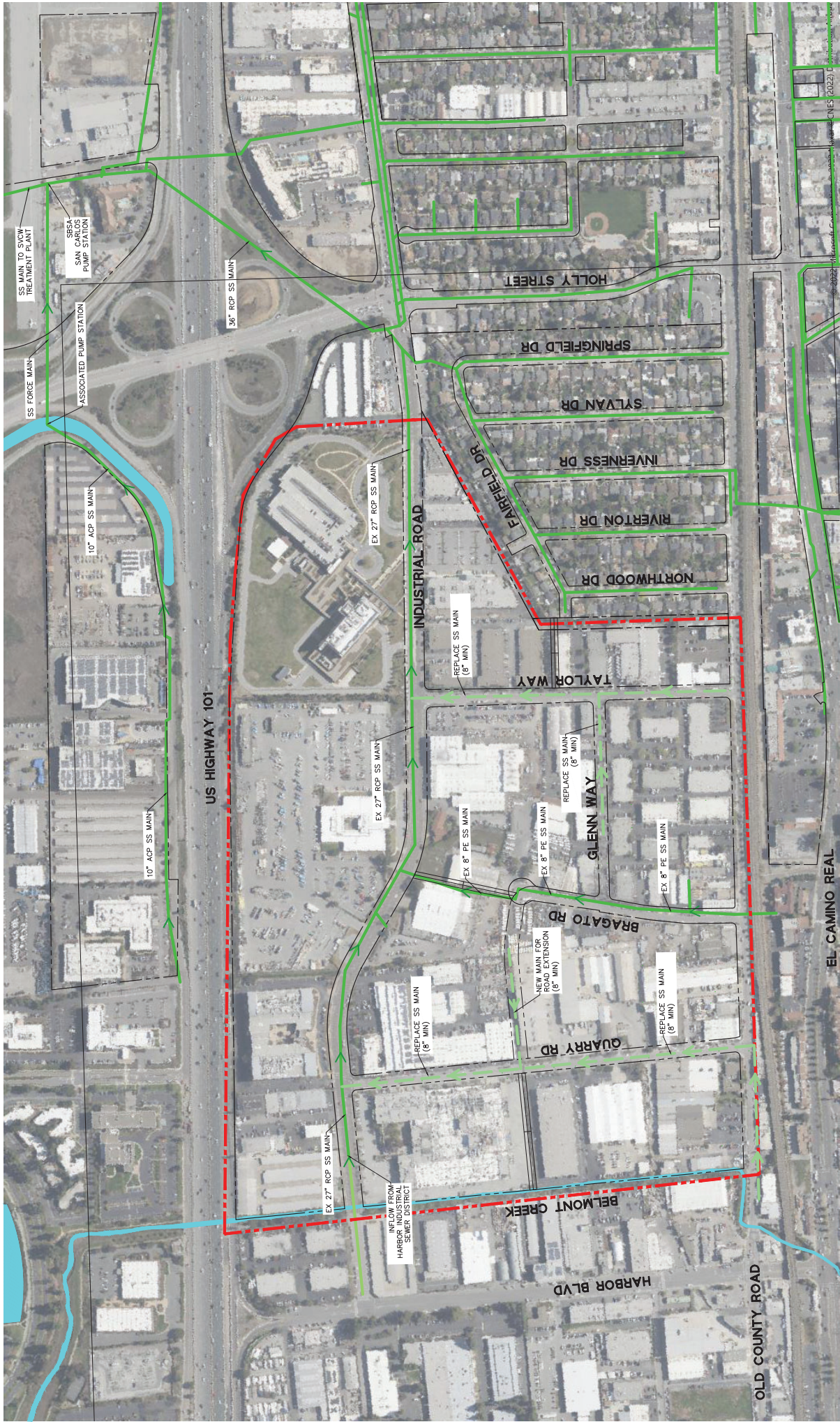
### **Rehabilitation or Reconstruction of Frontage Pavement**

#### **Recommendations:**

It is anticipated that the rehabilitation or reconstruction of frontage pavement will occur with future development projects. Each developer shall perform street pavement spot repairs and grind and overlay from the lip of gutter to centerline of street for the length of the project's frontage. Any damages to existing roadway pavement caused by construction activities shall be repaired. The City Inspector shall also have discretion to require additional repairs of existing pavement with a full-depth pavement section.

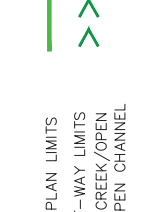




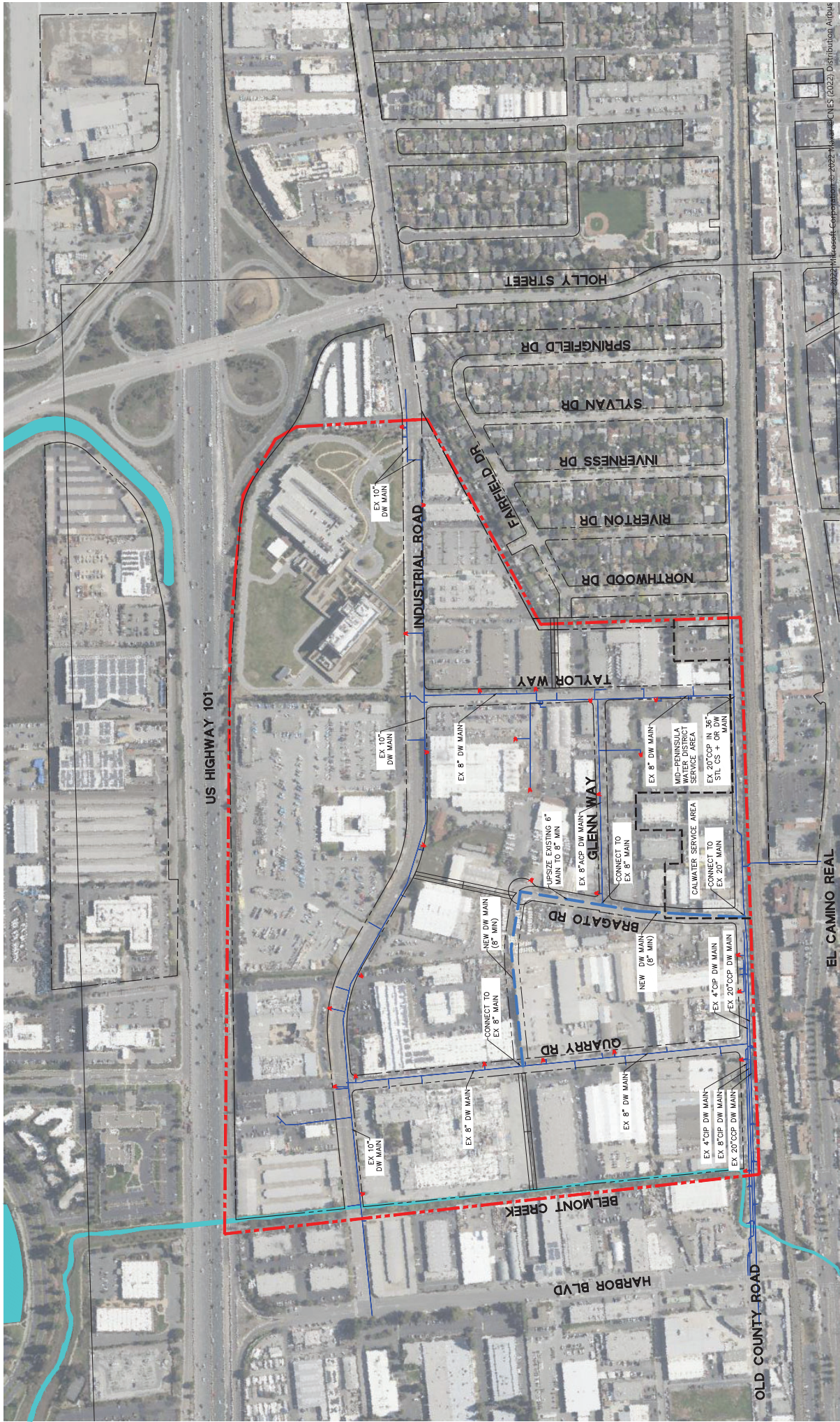


**NOTE:**  
 PROPOSED PIPE SIZES NOTED ARE MINIMUMS. REFER TO CITY OF SAN CARLOS  
 SANITARY SEWER MASTER PLAN FOR FULL DETAILS OF REQUIRED SANITARY  
 SEWER INFRASTRUCTURE UPGRADES.

- LEGEND**
- SPECIFIC PLAN LIMITS
  - - - RIGHT-OF-WAY LIMITS
  - EXISTING CREEK/OPEN DITCH/ OPEN CHANNEL
  - EXISTING SANITARY SEWER MAIN
  - PROPOSED SANITARY SEWER MAIN
  - DIRECTION OF FLOW



**PROPOSED SANITARY SEWER INFRASTRUCTURE**  
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**NOTE:**  
 ALL DOMESTIC WATER UPGRADES SHOWN ARE PRELIMINARY AND SHALL BE COORDINATED WITH MID-PENINSULA WATER DISTRICT AND CALIFORNIA WATER SERVICE COMPANY.

- LEGEND**
- SERVICE AREA LIMITS (CALIFORNIA WATER SUPPLY COMPANY AND MID-PENINSULA WATER DISTRICT)
  - EXISTING WATER MAIN
  - PROPOSED WATER MAIN
  - EXISTING FIRE HYDRANT
  - SPECIFIC PLAN LIMITS
  - RIGHT-OF-WAY LIMITS
  - EXISTING CREEK/OPEN DITCH/ OPEN CHANNEL







**LEGEND**

- - - SPECIFIC PLAN LIMITS
- RIGHT-OF-WAY LIMITS
- EXISTING CREEK/OPEN DITCH/ OPEN CHANNEL
- PAVEMENT GRIND & OVERLAY WITH SPOT REPAIRS
- NEW PAVEMENT SECTION

