HYDROLOGY AND WATER QUALITY REVIEW

MIDPOINT PROJECT
(REMAINING CISCO 6 SITE)

San Jose, California

January 10, 2014

Prepared For:

David J. Powers and Associates, Inc.
1871 The Alameda, Suite 200
San José, CA 95126
Tel: (408) 248-3500
Fax: (408) 248-9641

Prepared By

Schaaf & Wheeler
Consulting Civil Engineers

1171 Homestead Road, Suite 255
Santa Clara, California 95050
Tel: (408) 246-4848
Fax: (408) 246-5624

APPROACH TO ANALYSIS

This hydrology and water quality review identifies potentially significant hydrologic impacts of the project both during project construction and at completion, and describes mitigation measures needed to reduce those impacts to the level of “less than significant”.

THRESHOLDS OF SIGNIFICANCE

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

- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality;
- Substantially deplete ground water supplies or interfere substantially with ground water recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose 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; or
- Expose people or structures to inundation by seiche, tsunami, or mudflow.

PROJECT DESCRIPTION

The Midpoint project proposes to develop the remainder of the Cisco site with 415,000 square feet (sq. ft.) of office/R&D space and 579,920 sq. ft. of industrial/manufacturing space for a total of 994,920 sq. ft. The project proposes two two-story office buildings of approximately 83,000 sq. ft. each, two three-story office buildings of approximately 124,500 sq. ft. each; and two one-story industrial buildings of approximately 253,200 sq. ft. and 326,720 sq. ft., respectively, and surrounding surface parking on a 57 acre site located at the east side of North First Street immediately north of Nortech Parkway. The project applicant is applying for a Planned Development Permit from the City of San Jose.

The purpose of this report is to evaluate the existing and proposed hydrologic conditions at the site and assess potential storm water quality impacts due to the proposed project. This analysis is based on site design plans created by Arc Tec dated December 2013 and storm drain models developed by Schaaf & Wheeler as part of the North San Jose Strom Drain Master Plan (SDMP) for the City of San Jose.

Figure 1 shows an outline of the Midpoint Site, as located in North San Jose.

FIGURE 1. Site Vicinity Map

Existing Conditions

The Midpoint Project site is generally bound by Grand Boulevard on the northwest, Disk Drive on the northeast, North First Street and Nortech Parkway on the south, and Tony P. Santos Street and Wilson Way to the west. The site is currently agricultural and rural with no substantial development or improvements. City of San Jose Fire Department Station No. 25 abuts the site property on its northwestern corner.

The entire project site is relatively flat and generally slopes toward the north where a culvert under Disk Drive directs water into the New Chicago Marsh. In its existing configuration, the Midpoint site has almost no impervious surface.

Regulatory Setting

Runoff from the developed site will drain to the existing Oakmead storm drainage system, which is owned and operated by the City of San Jose. This collection system eventually drains west to the Guadalupe River, which is under the jurisdiction of the Santa Clara Valley Water District (SCVWD) and then to San Francisco Bay, which is regulated by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) as administered by the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCUVRPPP). Therefore, the project must follow SCUVRPPP standards detailed in the C.3 Stormwater Handbook.[1] Construction site controls need to be designed per the Bay Area Stormwater Management Agencies Association (BASMAA) Blueprint for a Clean Bay and California Stormwater Quality Association Best Management Practices (CASQA BMP) Handbook.

Other regulations of potential import to an evaluation of hydrology include the City of San Jose's Floodplain Ordinance and regulations set forth in the National Flood Insurance Program (NFIP) as administered by the Federal Emergency Management Agency (FEMA).

The City's Floodplain Ordinance establishes minimum elevations for finished building floors based on base flood elevations (BFEs) established for the NFIP, and generally prohibits any improvements that will cause a cumulative rise of more than one foot to the base flood elevation at any point in San Jose.

The site is protected from San Francisco Bay tidal flooding by a series of non-accredited levees to the north. This non-accreditation means that for the purpose of meeting requirements set forth by the NFIP, those protective levees are assumed to be non-functional. The site is also protected from Guadalupe River floodwaters by a levee system. This system is, however, accredited and meets the requirements of the NFIP, so the site is protected from Guadalupe River flooding.

---

[1] *C.3 Stormwater Handbook*. Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). May 2006.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact HYDRO1 ***Violate any water quality standards or otherwise substantially degrade water quality.***

Finding: ***Less than Significant with Mitigation***

Due to the increase in impervious area from development, the proposed project could adversely impact water quality. Pollutants and chemicals associated with urban development drain from new impervious surfaces into Guadalupe River and ultimately to San Francisco Bay. These pollutants may include, but are not limited to, pesticides and insecticides, heavy metals from automobile emissions, oil, grease, debris, and air pollution residue. Contaminated urban runoff that remains relatively untreated may result in incremental long-term degradation of water quality. The Guadalupe River, which is immediately adjacent to the site, is listed as an impaired water body by the EPA 303(d) for trash and diazinon, a pesticide linked to aquatic toxicity. Potential sources for these pollutants include urban runoff discharged to the river through storm sewers.

There are several pollutants that the project development could contribute to the surface water, including sediment and typical urban pollutants. Short-term adverse impacts to water quality may also occur during construction of the project when areas of disturbed soils become susceptible to water erosion and downstream sedimentation. In contrast to other potential pollutants, sediment is typically of greatest potential concern during the construction-phase of development. After a project has been constructed and the landscaping has been installed, erosion and sedimentation from commercial/office development sites are usually minimal. Pollutants other than sediment which might typically degrade surface-water quality during project construction include petroleum products (gasoline, diesel, kerosene, oil, and grease), hydrocarbons from asphalt paving, paints, and solvents, detergents, nutrients (fertilizers), pesticides (insecticides, fungicides, herbicides, rodenticides), and litter. Once the buildings and roadways have been constructed, typical urban runoff contaminants might include all of the above constituents, as well as trace metals from pavement runoff, nutrients, and landscape maintenance debris.

Mitigation Measure

The following mitigation measures are recommended during the construction-phase and post-construction phase to reduce potential adverse project impacts on surface quality to ***less than significant***.

Potential construction-phase and post-construction pollutant impacts from the development of the site can be controlled below the level of significance through preparation and implementation of an erosion control plan, a storm water pollution prevention plan (SWPPP) and a storm water management plan (SWMP) consistent with recommended design criteria, in accordance with the NPDES permitting requirements enforced by the Regional Board. [**Mitigation Measure 1**]

The applicant's SWPPP shall prescribe construction-phase BMPs to adequately contain sediment on-site and prevent construction activities from degrading surface runoff. The erosion control plan in the SWPPP would include components for erosion control, such as phasing of grading, limiting areas of disturbance, designation of restricted-entry zones, diversion of runoff away from disturbed areas, protective measures for sensitive areas, outlet protection, and provision for re-vegetation or mulching. The plan would also prescribe treatment measures to trap sediment once it has been mobilized, at a scale and density appropriate to the size and slope of the catchment. These measures typically include inlet protection, straw bale barriers, straw mulching, straw wattles, silt fencing, check dams, terracing, and siltation or sediment ponds.

The erosion control plan forms a significant portion of the construction-phase controls required in a SWPPP, which also details the construction-phase housekeeping measures for control of contaminants other than sediment. The SWMP implements treatment measures and best management practices (BMPs) to be implemented for control of pollutants once the project has been constructed. Both the SWPPP and the SWMP set forth the BMP monitoring and maintenance schedule and identifies the responsible entities during the construction and post-construction phases for the proposed site.

As specified in the Preliminary Stormwater Quality Control Plan in the project design plan set (prepared by Kier & Wright Civil Engineers, 9/30/2013), post-construction water quality to control pollutant levels follow practices outlined in the SCVURRP C.3 Treatment Method. Treatment measures and bio-retention basins have been sized and located across the site project to evenly capture runoff. Planned treatment measures are also tabulated. Source control measures have been detailed for maintenance including pavement sweeping, catch basin cleaning, and good housekeeping. Additionally, storm drains shall be labeled to discourage the disposal of pollutants such as fertilizers and pesticides. Covered trash enclosures are also specified to limit the amount of trash entering the storm drain system and into the Guadalupe River.

BMPs shall be implemented in accordance with criteria in the California Stormwater BMP Handbook for Construction[2] or other accepted guidance and shall be reviewed and approved by the City prior to issuance of grading or building permits. The applicant shall identify the SWPPP Manager who will be the responsible party during the construction phase to ensure proper implementation, maintenance and performance of the BMPs. It is noted that the Midpoint Site does not fall within an area where hydro-modification management (HMP) is required, due to its location within a tidally influenced zone.

Impact HYDRO2 ***Substantially deplete groundwater supplies or interfere with groundwater recharge.***

Finding: ***Less than Significant***

The project site is located in the Santa Clara Plain within the Santa Clara groundwater sub-basin. The Santa Clara Plain is estimated to have an operational storage capacity of 350,000 acre-feet and has a maximum pumping limit of 200,000 acre-feet per year.

[2] *California Storm Water Quality Association, 2003, California Storm Water Best Management Practice Handbook – Construction.*

This pumping limit is intended to maintain land subsidence at less than 0.01 feet per year.[3] Recharge of the Santa Clara Plain is achieved through an equal combination of natural instream recharge and recharge activities managed by SCVWD each totaling about 35,100 acre-feet per year.[4] The Midpoint Site is not located within an aquifer recharge area designated by the SCVWD. Furthermore, the referenced storm water quality control plans prepared by Kier & Wright Civil Engineers propose bio-retention basins that could infiltrate more storm water runoff into the groundwater than presently occurs on the site in its existing condition. Bio-retention areas will be constructed with sandy loam planting soil that has a higher infiltration rate than current soil types on the site. Given the lack of active aquifer recharge on site under existing conditions and the plans to promote runoff through the use of strategically located bio-retention basins, the impact of the project to groundwater recharge is ***less than significant***.

Note that this finding is specific to groundwater impacts due to the projects change in land use and drainage, and does not include potential groundwater impacts related to the project water demand or supply.

Impact HYDRO3 ***Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation.***

Finding: ***Less than Significant***

During extreme storm events, existing runoff generally flows to the northeastern corner of the site and out to the New Chicago Marsh which drains directly to San Francisco Bay. After proposed development, site runoff will be directed to the City of San Jose's Oakmead storm drain system, which consists of street gutters and underground pipe. While this does constitute an alteration of the existing drainage pattern of the site, site development will provide hardened surfaces and landscaping that is not prone to erosion. Further erosion protection comes with the bio-retention basins included in the storm water quality control plan. The project will therefore not result in increased on-site erosion that could increase the amount of soil carried with storm water runoff to cause deposition (siltation) elsewhere. Furthermore all developed site runoff will be conveyed to urbanized (hardened) drainage systems and this impact is ***less than significant***.

Impact HYDRO4 ***Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.***

Finding: ***Less than Significant with Mitigation***

---

[3] DWR, Bulletin 118, California's Groundwater Update 2003

[4] Watershed Assessment Consultant, *Water Management in the Santa Clara Basin*, February 2001

Site development substantially increases the peak rate at which surface runoff leaves the site and enters the existing storm water drainage systems that will convey this flow and discharge storm water to the Guadalupe River through existing pump stations. Since there are no storage facilities located between the Midpoint Site and the pumping facility, other than the pump station wet well, peak increases in runoff are of concern rather than increases in runoff volume.

Storm drain system models for the North San Jose area created by Schaaf & Wheeler for the City of San Jose have been used to evaluate the impact of the proposed Midpoint Site development on flood conditions in the area and the impact to existing storm drain system capacity. While this work is still under review by the City, it represents the best available information for impact analysis.

It is noted that the analyses conducted account for all sources of runoff that affect the Site and surrounding areas within north San Jose. The analyses also disregard regulatory tidal flooding, because that flooding would be sufficiently deep to mask possible changes to residual interior drainage caused by the proposed project. Subsequent figures show flood depths that would occur without tidal inundation, which despite the lack of NFIP accreditation for the outboard levee system, that system is generally protective and the conditions shown may be more likely than full tidal inundation. The Site is protected from Guadalupe River flooding by accredited levees. There is a small overflow from Coyote Creek far to the south near Charcot Avenue, but this spill does not reach the site.

Runoff from the Midpoint Site currently flows to the New Chicago Marsh. When the Site is developed, on-site storm water collection systems will connect bio-retention areas directly to City of San Jose Oakmead Storm Drain System in Disk Drive. The bio-retention ponds are intended to provide treatment for water quality mitigation, and do not contribute to significant runoff attenuation during extreme storm events.

Runoff parameters based on plans for the developed Midpoint site have been added to the existing land use condition models to determine the impact that runoff generated from the site under post-project conditions will have on the storm drain system. The provided development plans indicate the site will have an average impervious area of 83%. Flow from the site is added to the computer models at the manholes to which the development’s storm drain system will connect.

Computed flood depths within the Oakmead system during a 10- and 100-year storm event under existing conditions are presented in Figures 2 and 3 respectively. Results for the post-project models, without any changes to the City storm drain system, are presented in Figures 4 and 5. Red dots indicate significant capacity problems, defined as flood depths greater than one foot. The ten-year analyses are made because while not specifically addressed in the CEQA Guidelines, this return period is the basis for design of City of San Jose storm drain systems.

Figures 4 and 5 show the <u>increases</u> in potential flooding with the singular addition of the Midpoint development, as measured by flood depths, for the 10-year and 100-year events (i.e. the Project impact) within the Oakmead System. Based on previous CEQA analyses and conversations with the Santa Clara Valley Water District, an increase in flood depth greater than 0.1 foot is considered to be significant and is indicated in red.

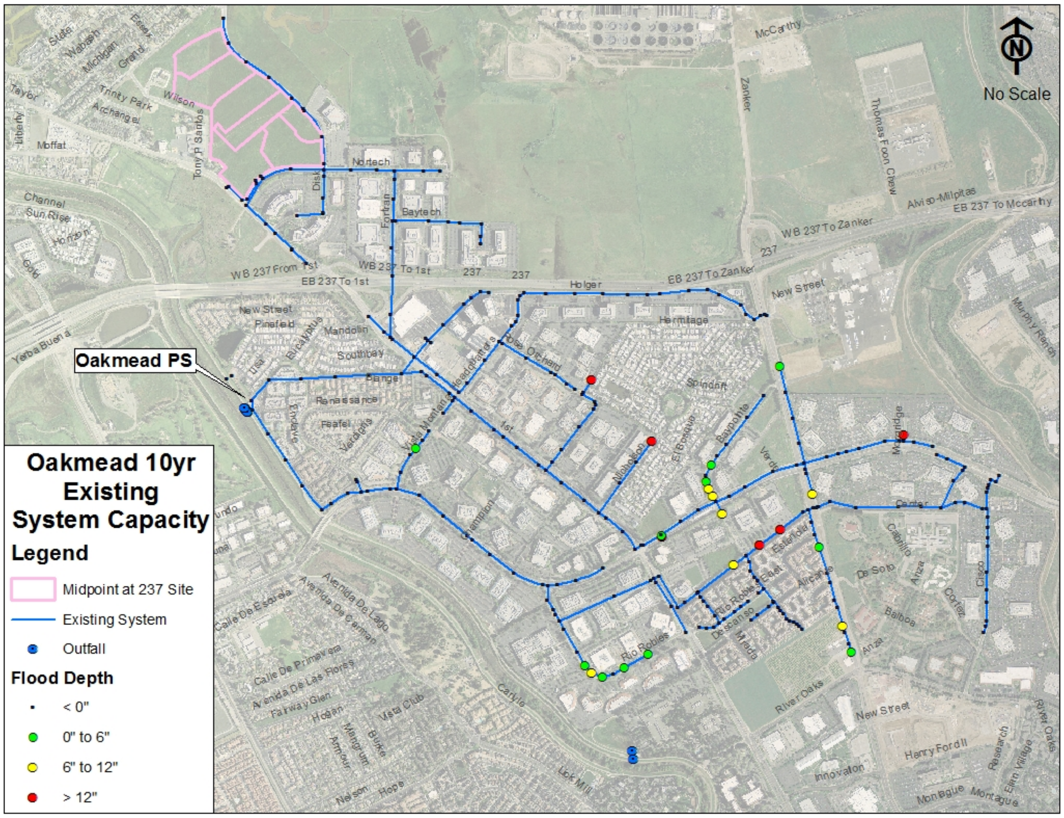

FIGURE 2. Existing 10-year Capacity of Oakmead System

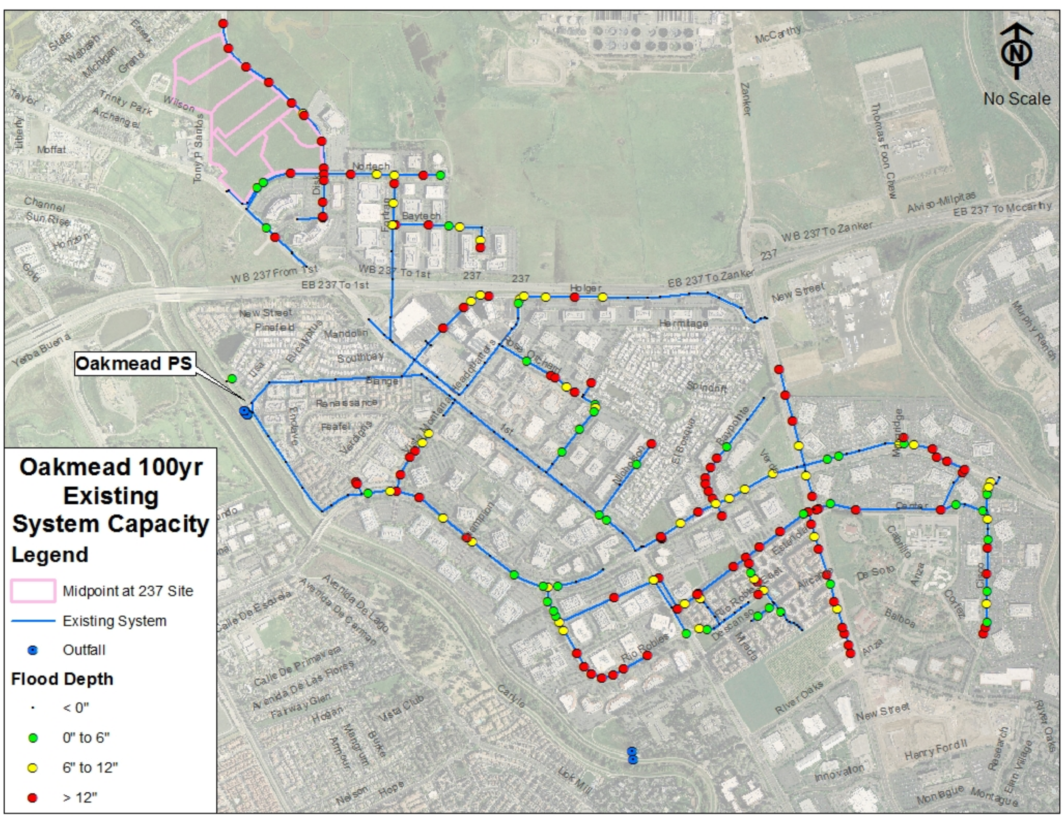

FIGURE 3. Existing 100-year Capacity of Oakmead System

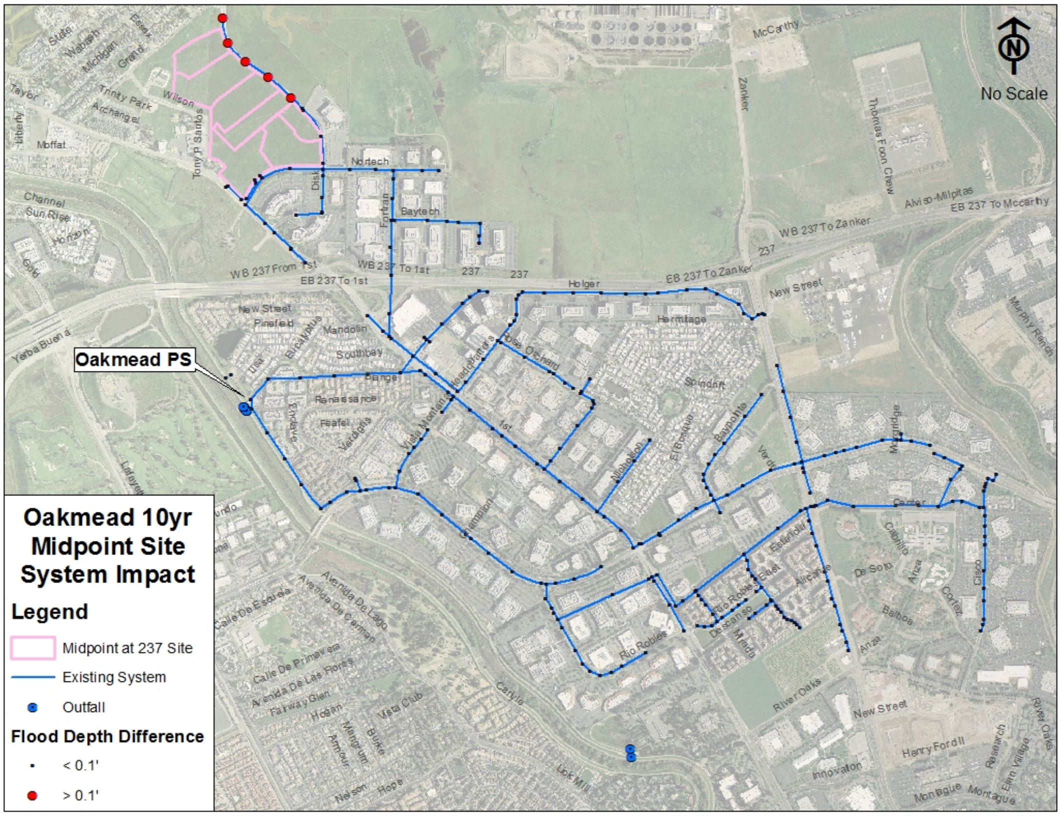

FIGURE 4. 10-year Project Impact to the Oakmead System

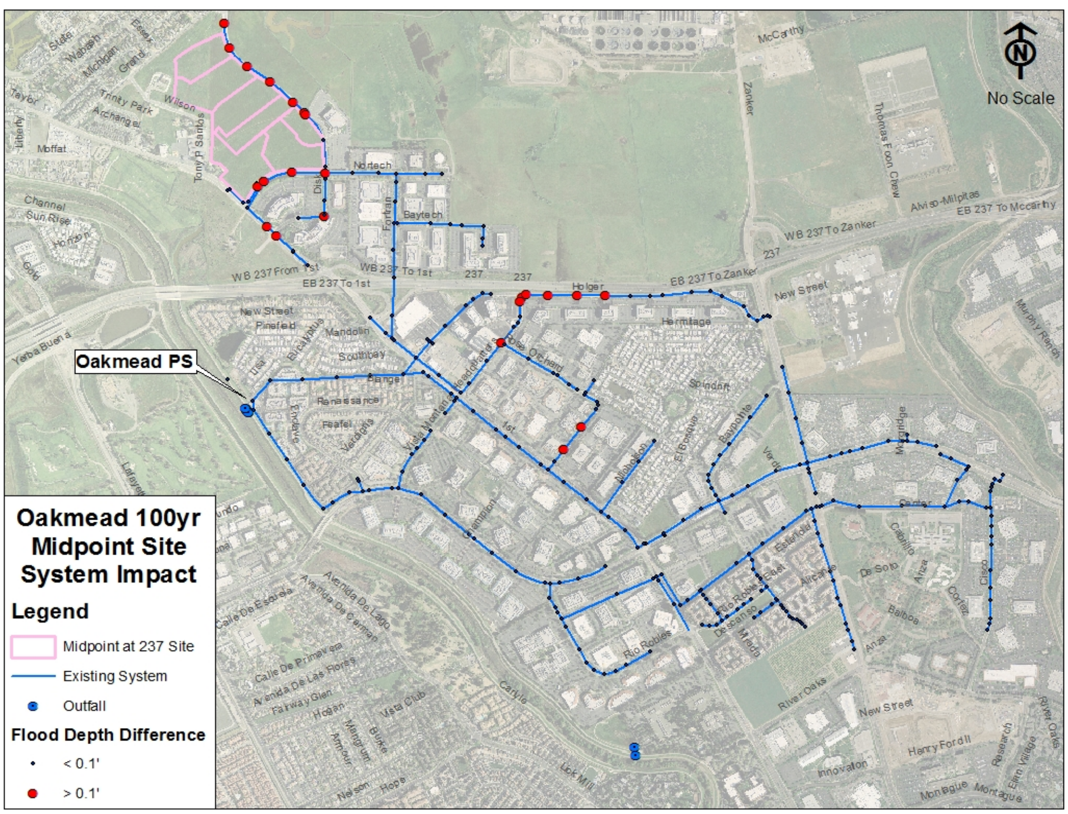

FIGURE 5. 100-year Project Impact to the Oakmead System

The Oakmead storm drain system does not have sufficient 100-year capacity as a whole, and this inadequate capacity is exacerbated by the Midpoint development. The additional runoff increases the risk for potential flooding within the Disk Drive and Nortech Parkway areas north of Highway 237 and along Holger Street on the south side of Highway 237. In essence the Midpoint development would be considered responsible for additional flood risk as manifest in an increase in local flood depths.

Mitigation Measures

Mitigation measures are necessary to reduce potential adverse project impacts on flooding and storm drain capacity to ***less than significant***. Storm drain improvements as described herein would mitigate for potential increases in local flood depths and the contribution of runoff water in excess of existing or planned storm water drainage system capacity. [**Mitigation Measure 2**]

A capital improvement project (CIP) was previously identified for the Midpoint Site area within the Oakmead system based on land use assumptions contained in the San Jose Storm Drain Master Plan (SDMP). This CIP consists of an additional 48-inch diameter storm drain pipe on Disk Drive. When this new pipe is added to the Oakmead computer model it appears that the improvement adds sufficient capacity to the system to mitigate increased runoff from the Midpoint Site without causing capacity issues downstream, provided that the Oakmead Pump Station start levels are set to the recommended SDMP levels. (The proposed pipe improvement alone does not mitigate the potential increased flooding caused by the additional runoff from the Midpoint Site.)

The recommended Oakmead Pump Station start levels are presented in Table 1 and the Oakmead System improvement necessitated by Midpoint development is presented in Figure 6. **[Mitigation Measure 3]** After development, with the proposed storm drain system modification, impacts to flood risk and storm drain system capacities as a result of the Project will be reduced to ***less than significant.***

TABLE 1
Mitigation Measure for the Oakmead Pump Station

Pump #	Existing Start Level	Improved Start Level	Stop Level
Pump_1	-7.97	-10.00	-12.97
Pump_2	-6.97	-9.75	-12.97
Pump_3	-5.97	-9.50	-12.97
Pump_4	-4.97	-9.25	-12.97
Pump_5	-3.97	-9.00	-12.97
Pump_6	-2.67	-8.75	-12.97

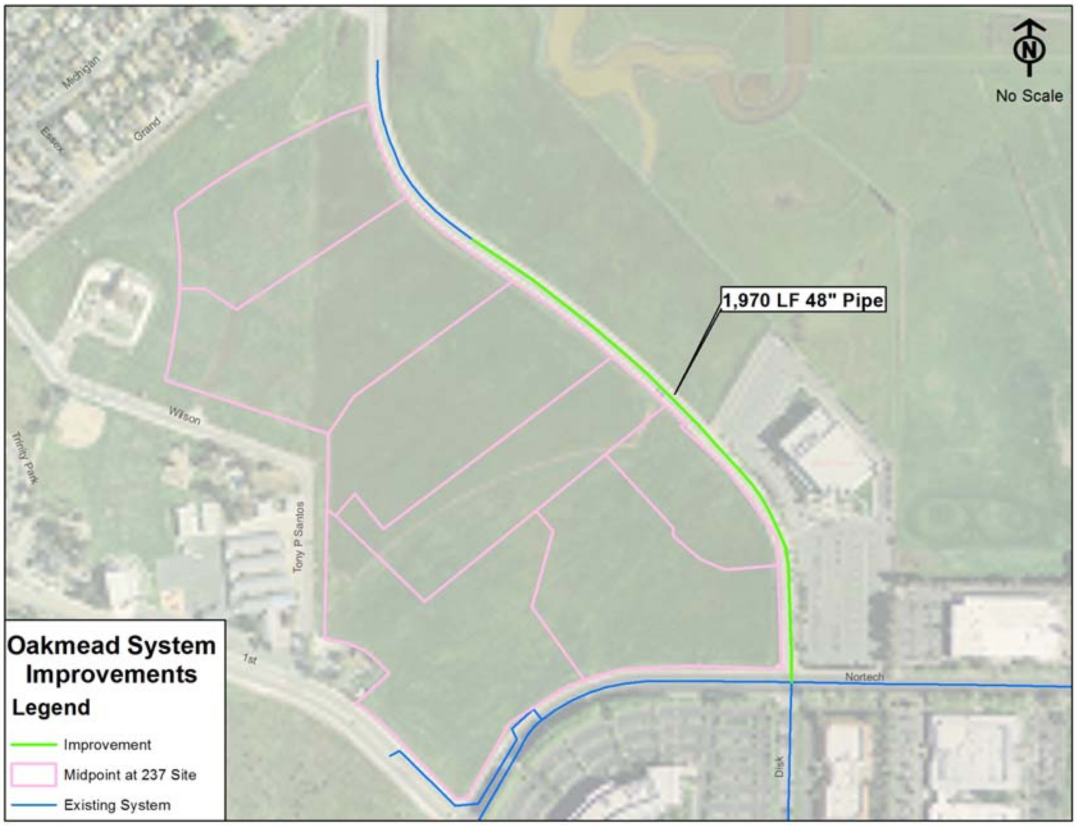

FIGURE 6. Midpoint Project Mitigation Measures within the Oakmead Storm Drain System

Cumulative Impacts

Cumulative drainage impacts to the Oakmead System after the implementation of all planned local storm drain master plan improvements have also been analyzed (Figure 7), assuming the completion of all proposed cumulative development within the area, including the 57 acre Midpoint development, the 28.5 acre 237@First office project on west side of North First Street, and the existing Cisco development on the south side of Nortech Parkway, which together constitute the 152-acre Cisco Site 6 project.

This analysis differs from the City of San Jose Storm Drain Master Plan analysis in that the 100-year return period is examined, and site runoff is calculated based on development plans rather than general land use assumptions.

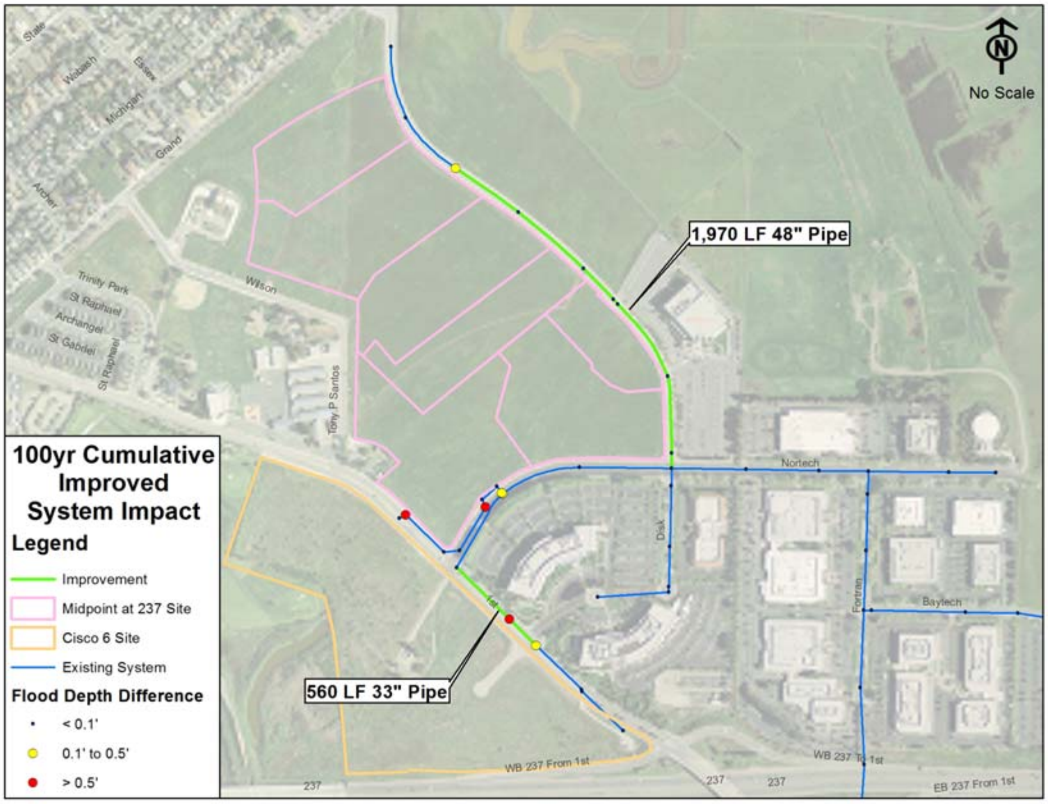

FIGURE 7. Planned Storm Drain System Improvements and Cumulative Drainage Impacts

Cumulative post-project 100-year flooding is controlled somewhat by storm drain capacity limitations in the Disk Drive system. Due to those limitations, some 100-year flow will still be released to the northeast and into the New Chicago Marsh system. It is estimated that the peak 100-year runoff contribution of the Midpoint Site in its existing condition is approximately 25 cfs. Modeling shows that in the cumulative post-project condition with most site runoff directed toward the Oakmead Pump Station, the peak 100-year runoff contribution toward the New Chicago Marsh remains at 25 cfs. Therefore there is no cumulative drainage impact to the New Chicago Marsh.

When cumulative drainage impacts are analyzed, there are two general locations where mitigated post-project 100-year flood depths are greater than 0.1 foot (Figure 7), primarily due to the low finished street elevations. Near the intersection of Nortech Parkway with North First Street there is an increase in 100-year flooding depth of about 0.2 foot, but in these locations the 100-year hydraulic grade line is confined to the street right-of-way. At the intersection of North First Street with Syntax Court, the increase in depth is as much as 0.9 foot, which increases the 100-year hydraulic grade line from 6.5 feet NAVD to 7.4 feet NAVD.

Figure 8 shows the areal extent of this increased flooding using the available LiDAR topography. It is clear that the extent of increased flooding is limited to the North First Street right-of-way and part of the driveway to the adjacent parking lot. Since the buildings are elevated and other non-impacted points for ingress and egress to the parking lot are provided. After development, with the proposed storm drain system modification, therefore, impacts to flood risk and storm drain system capacities as a result of cumulative development will be reduced to ***less than significant.***

FIGURE 8. Localized Cumulative Impact after Mitigation

Impact HYDRO5 ***Place housing or structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.***

Finding: ***Less than Significant with Mitigation***

According to the Flood Insurance Rate Map (FIRM) for Santa Clara County published by the Federal Emergency Management Agency effective May 18, 2009, the project site is located within the special flood hazard area (SFHA) Zone AE, subject to inundation by the one-percent annual flood (100-year flood). The FEMA SFHA designations are shown on Figure 9. Tidal inundation from San Francisco Bay under the regulatory assumptions necessitated by a non-accredited outboard levee system inundates the project site to a base flood elevation of 12.0 feet (NAVD 1988 Datum).

Mitigation Measure

The following mitigation measure is recommended to reduce potential adverse project impacts on flooding and storm drain capacity to ***less than significant***. By placing all structures on engineered fill compacted in conformance with NFIP standards with the minimum lowest adjacent grade of all buildings at or above elevation of 12.0 feet (NAVD 1988 Datum), structures would not be placed within a 100-year flood hazard area. [**Mitigation Measure 4**]

FIGURE 9. FEMA FIRM and Project Site

Impact HYDRO6 ***Place within a 100-year flood hazard area structures that would impede or redirect flood flows.***

Finding: ***Less than Significant***

The placement of fill within an area inundated by San Francisco Bay tides does not change the elevation of the tide and therefore does not impede or redirect tidal flooding. Current storm water runoff modeling within the interior areas of north San Jose (i.e. those areas protected from flooding the outboard levee system, Guadalupe River levees, and Coyote Creek levees north of Montague Expressway) shows that proposed buildings at the Midpoint site will not change flow paths. The current modeling effort is believed to be more detailed relative to the attenuation of interior runoff hydrographs based on storage within the storm drain systems and street rights-of-way, which is not necessarily reflected in the interior drainage study performed for the effective Flood Insurance Rate Map. The effective FIRM indicates that some interior runoff spills across Highway 237 toward the north near the Midpoint site. Since the current detailed storm drain master plan modeling effort currently under review by the City of San Jose represents the best available information, the Project is not believed to substantially impede or redirect flood flows and this impact is ***less than significant***.

Impact HYDRO7 ***Expose people or structures to a significant risk of loss, injury or death involving flooding...as a result of the failure of ... a dam.***

Finding: ***Less than Significant***

According to dam failure inundation maps of the northern San Jose region, the project site is located within the inundation area for Anderson Dam, but the Site is not located within dam failure inundation areas for Lexington, Elsma, Coyote, Cherry Flat, or Levin Dams (Figure 10).[5] Routine inspections and analysis on the potential risks to the Anderson dam are performed by the Santa Clara Valley Water District (SCVWD). Results from the most recent evaluation in 2009 determined an expected maximum inundation depth of 8 feet (elevation 17 feet) at the project site with flood waters first arriving about 7 hours after dam failure (Figure 11).

These values assume dam failure at full capacity during a large storm event, whereas currently, the maximum depth is maintained below 68 percent full, following a recent SCVWD seismic analysis.[6] The maximum reservoir water level will remain 25 feet below the spillway until seismic retrofits can be completed (anticipated date of completion is 2018). Due to the high water surface elevations occurring with a dam failure, designing the project to withstand dam inundation is infeasible.

While the project site is subject to deep inundation should Anderson Dam fail catastrophically, the dam is inspected twice a year by the District in the presence of representatives from the California Division of Safety of Dams and the Federal Energy Regulatory Commission. Furthermore as previously discussed, Anderson Reservoir is managed to prevent significant damage during a maximum credible earthquake. So while potential inundation resulting from catastrophic dam failure could damage property and proposed structures within the project site posing a severe hazard to public safety, the probability of such failure is extremely remote and, therefore can be considered ***less than significant***.

---

[5] ABAG, *Dam Failure Inundation Hazard Map for NW San Jose/Milpitas/ Santa Clara*, October 20, 2003

[6] *Santa Clara Valley Water District, Anderson Dam Seismic Stability Study, http://www.valleywater.org (July 2011).*

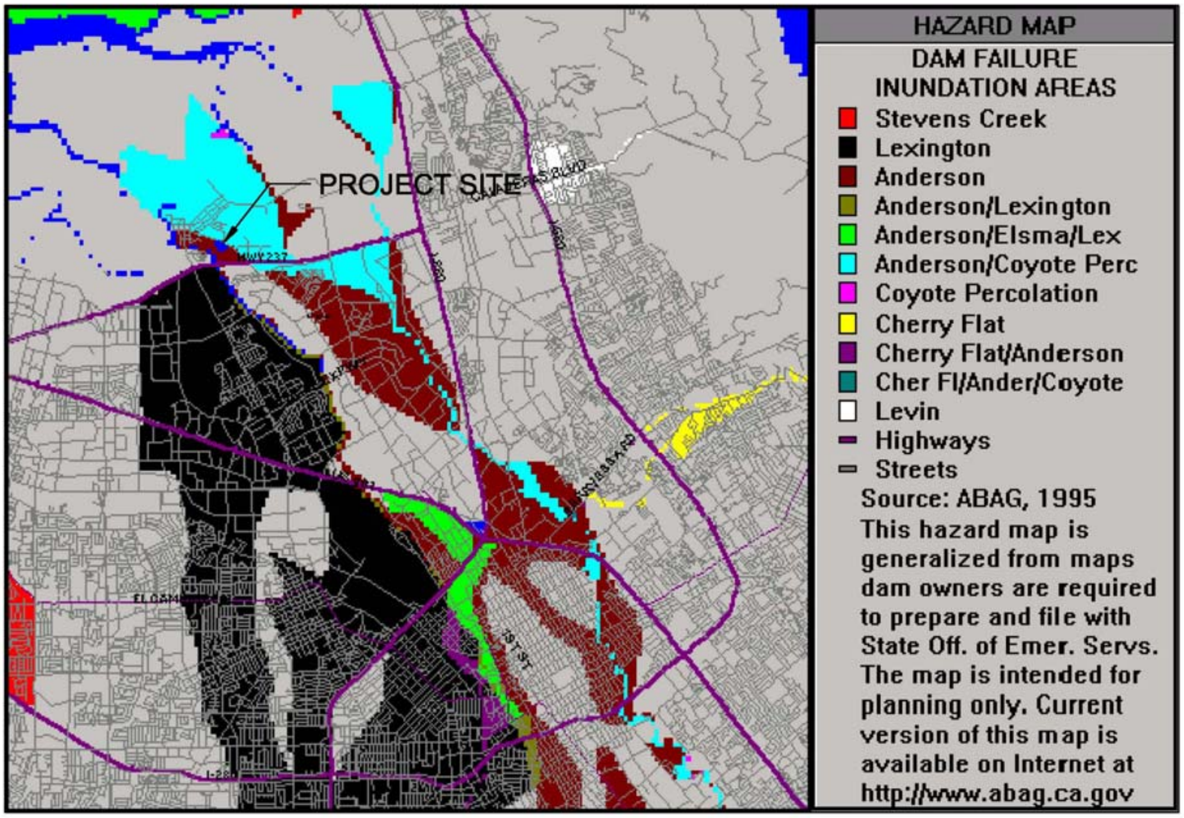

FIGURE 10. Regional Dam Failure Inundation Areas

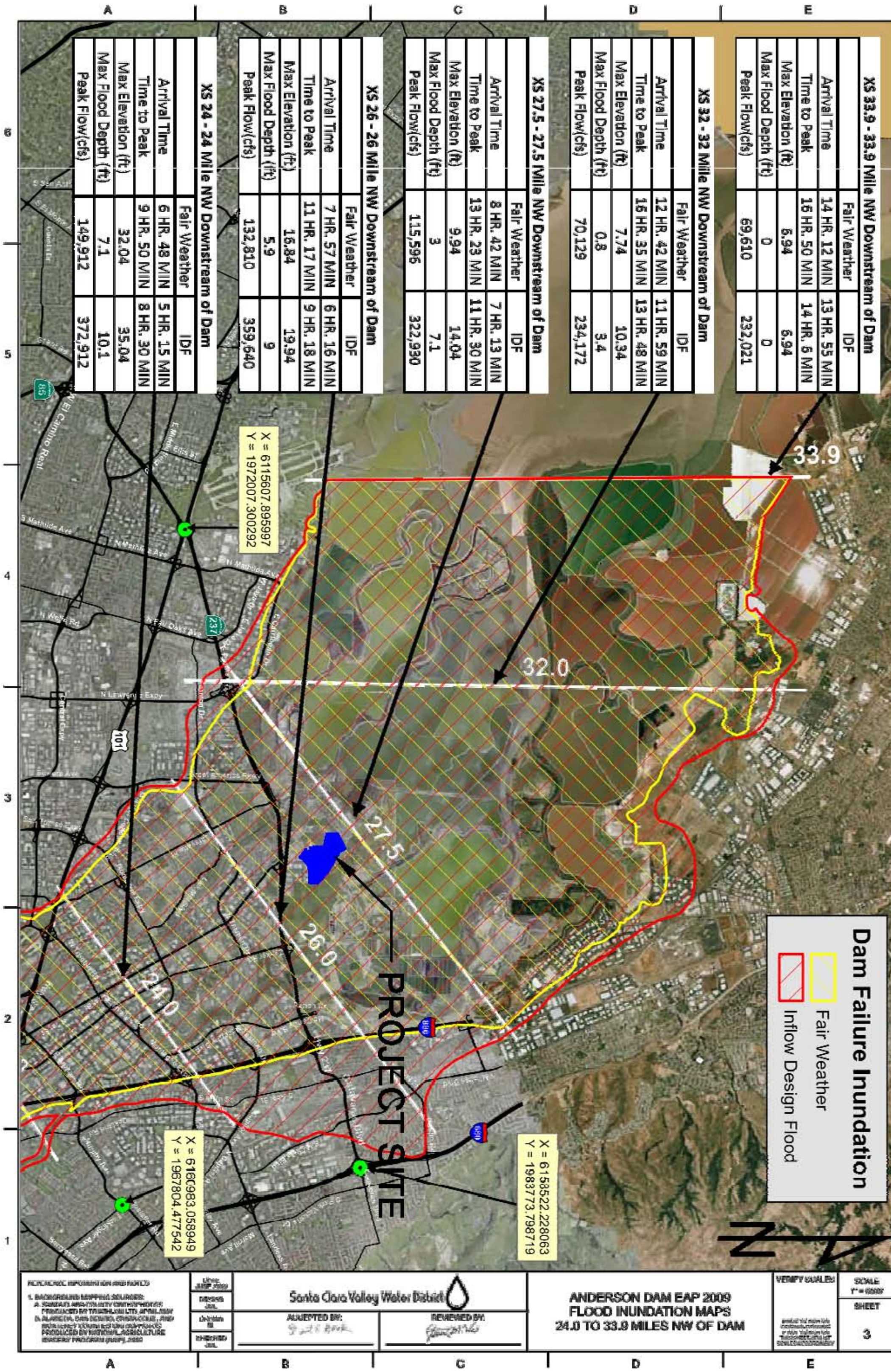

FIGURE 11. Anderson Dam Inundation Map

Impact HYDRO8 ***Expose people or structures to inundation by seiche, tsunami, or mudflow.***

Finding: ***Less than Significant***

A seiche is the resonant oscillation of water generated in an enclosed body of water, such as San Francisco Bay, from seismic activity. Seiches are related to tsunamis for enclosed bays, inlets, and lakes. These tsunami-like waves can be generated by earthquakes, subsidence or uplift of large blocks of land, submarine and onshore landslides, sediment failures and volcanic eruptions. The strong currents associated with these events may be more damaging than inundation by waves. The largest seiche wave ever measured in the San Francisco Bay, following the 1906 earthquake, was four inches high. The Bay Area has not been adversely affected by seiches during its history within this seismically active region of California.[7] Thus the risk of inundation of seiche at the Site is considered to be ***less than significant***.

Tsunami hazards for the Santa Clara County coastline have been modeled by the California Emergency Management Agency (Cal EMA) to identify areas at risk for tsunami inundation. Multiple source events were selected to represent local and distant earthquakes, and hypothetical extreme undersea, near-shore landslides occurring around the San Francisco Bay region. As defined by the Tsunami Inundation Map for Emergency Planning Milpitas Quadrangle dated July 31, 2009 shown in Figure 12,[8] the risk of inundation by tsunami at the proposed Midpoint site is ***less than significant***.

The project site is not located within limits of an existing or historical landslide according to the Landslide Inventory Map of the Milpitas Quadrangle (Figure 13). Soil texture at the project site is defined as silty clay and silt loam with hydrologic soil grouping D (Figure 14). The adhesive nature of these soils and the relatively flat grading at the site do not promote mudflow. Therefore, the possibility of landslide and mudflow hazards at the project site is ***less than significant***.

---

[7] US Army Corps of Engineers San Francisco District, Port of Oakland. *Oakland Harbor Navigation Improvement (-50 foot) Project SCH No. 97072051 Final Environmental Impact Statement/Report*, May 1998, updated January 2000.

[8] *California Emergency Management Agency. Tsunami Inundation Map for Emergency Planning, Milpitas Quadrangle.*

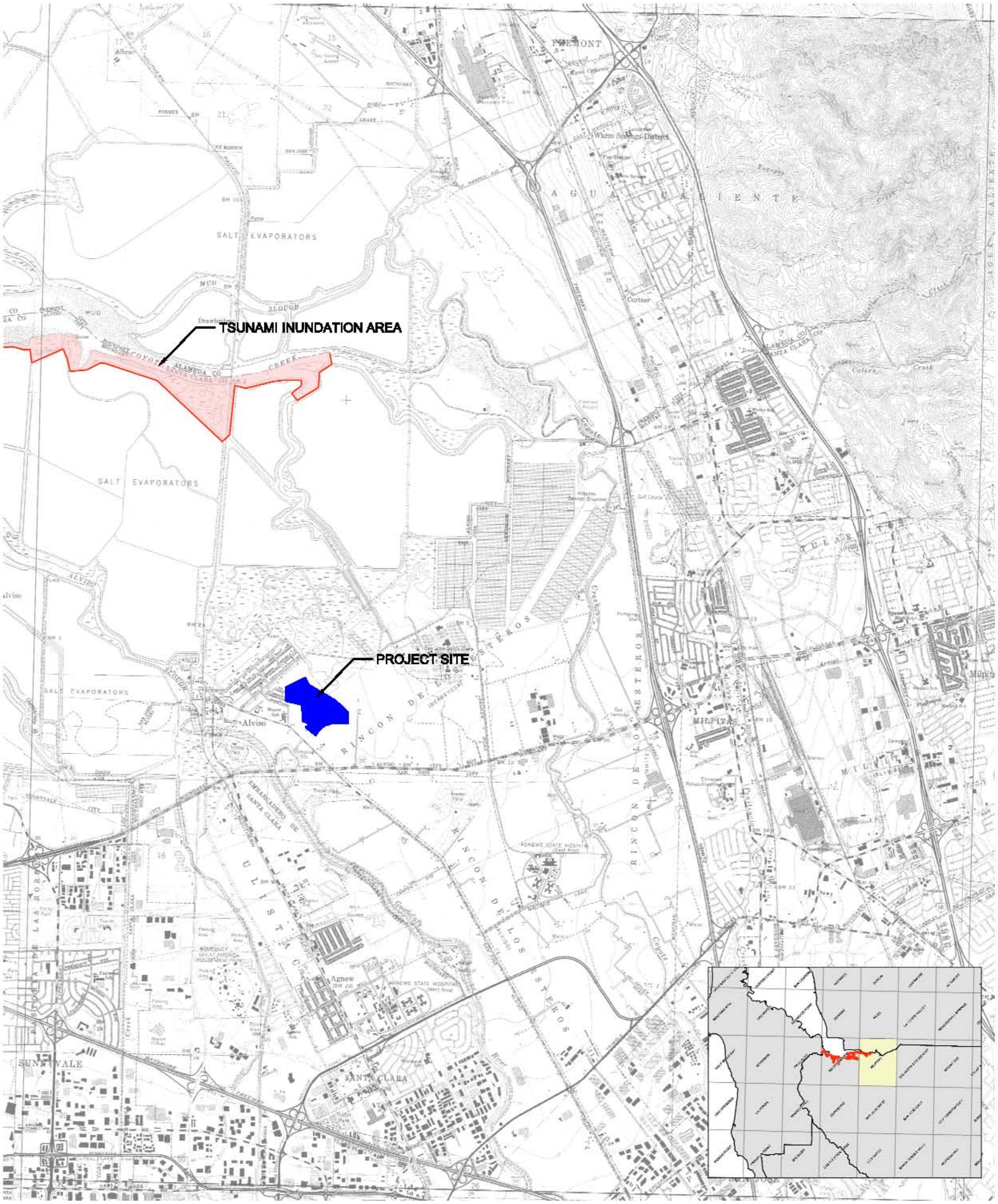

FIGURE 12. Tsunami Hazard Map

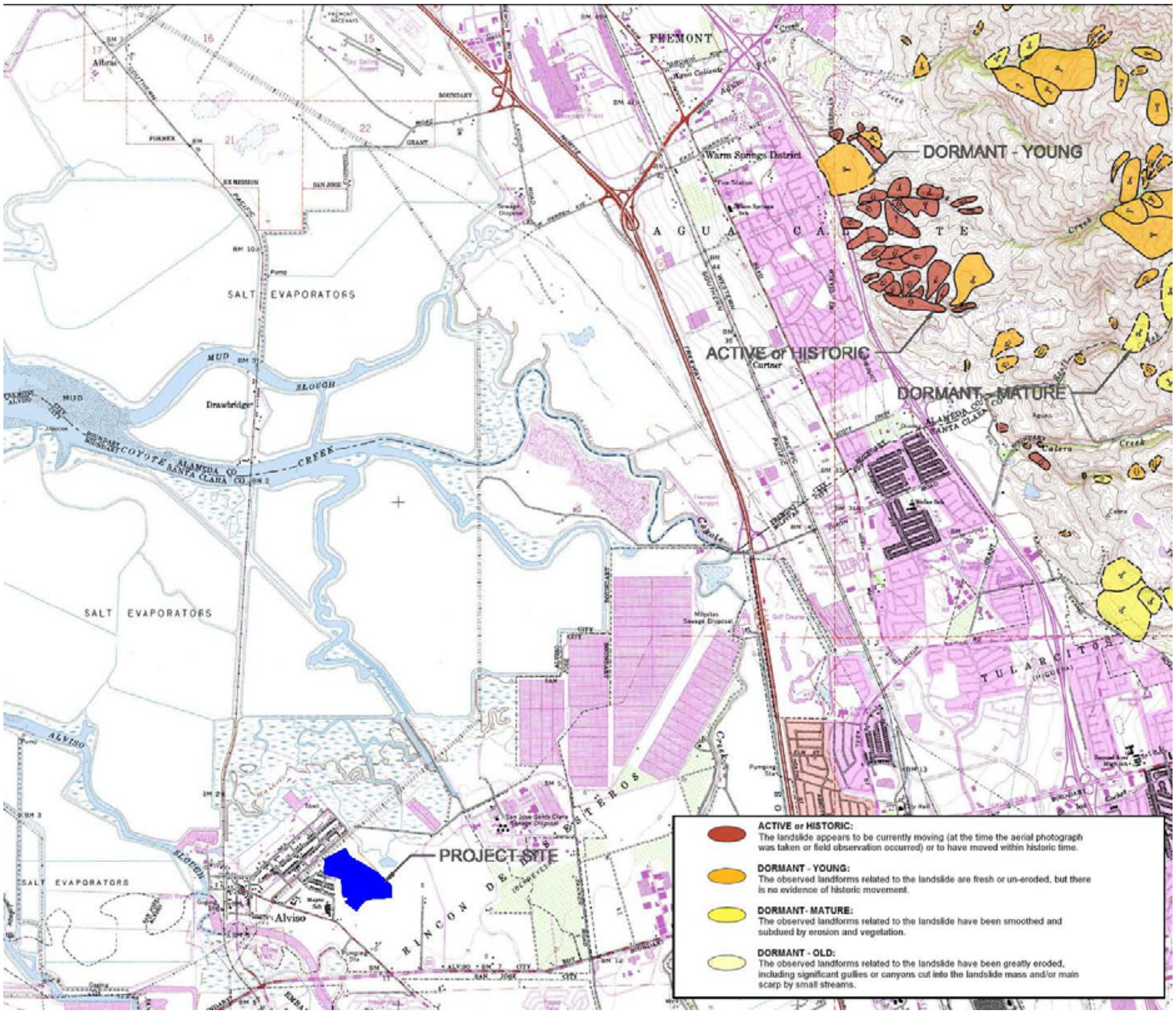

FIGURE 13. Landslide Hazard Map

FIGURE 14. Project Site Soil Map

REFERENCES

1. Association of Bay Area Governments' (ABAG), *Anderson Dam EAP 2009 Flood Inundation Maps*, Santa Clara Valley Water District, Santa Clara, CA.

2. Association of Bay Area Governments' (ABAG), *Dam Failure Inundation Hazard Map NW San Jose/Milpitas/Santa Clara*, October, 20, 2003.

3. Department of Water Resources (DWR), *Bulletin 118, California's Groundwater, Bulletin 118, 2003.*

4. California Stormwater Quality Association, *Best Management Practices Handbook for New Development and Redevelopment*, 2004.

5. California Stormwater Quality Association, *Best Management Practices Handbook for Construction*, 2009.

6. Federal Emergency Management Agency, *Flood Control Map Numbers 06085C0062H & 06085C0061H*, May 18, 2009.

7. *Santa Clara County Drainage Manual*, August 14, 2007.

8. Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), *C.3 Stormwater Handbook*, April 2012.

9. Santa Clara Valley Water District, *Anderson Dam Seismic Stability Stud*y, http://www.valleywater.org (July 2011).

10. Santa Clara Valley Water District, *Urban Water Management Plan*, 2012.

11. State of California Department of Conservation, *Landslide Inventory Map, Milpitas Quadrangle*, 2004.

12. State of California Department of Water Resources, *California's Groundwater Bulletin 118,* 3-3.01, Feb. 27, 2004

13. State Water Resources Control Board, *Water Board Map*, http://www.waterboards.ca.gov/waterboards_map.shtml, (2011).

14. State Water Resources Control Board, *2009-0009-DWQ Construction General Permit*, July 1, 2010.

15. Watershed Assessment Consultant, *Water Management in the Santa Clara Basin*, February 2001

16. Web Soil Survey – National Cooperative Soil Survey, Natural Resources Conservation Service, *Soil Map – Eastern Santa Clara Area, Californi*a, http://websoilsurvey.nrcs.usda.gov (July 27, 2010).