3.2 Surface Hydrology

This section describes the existing surface hydrology in the project area and the federal, state, and local regulations that would apply to the North Bay Water Recycling Program (NBWRP). This section evaluates the potential impacts related to hydrology, drainage, and flooding that could result from implementation of the NBWRP. The Impacts and Mitigation Measures section defines significance criteria used for the impact assessment and presents a discussion of potential project-related impacts. Determination of significance of impacts in this EIR/EIS apply only to CEQA, not to NEPA.

3.2.1 Affected Environment/Setting

Regional Setting

The project area lies within the San Pablo Bay watershed. The watershed is approximately 900 square miles in area; **Figure 3.2-1** shows the watershed and its sub-watersheds. Mount St. Helena is located to the north of the watershed with the Howell Mountains in Napa and Solano Counties, the Carquinez Strait, and the Franklin Ridge, the Briones Hills, and the northern portion of the East Bay Hills in Contra Costa County to the east. The western border is defined by a series of small mountains and hilltops including: Loma Alta and Red Hill in Marin County; Meacham Hill, Sonoma Mountain, Bennet Mountain, and Mt. Hood in Sonoma County; and the Mayacamas Mountains along the northern border of Napa and Sonoma Counties. San Pablo Bay receives freshwater inflow from this watershed as well as from the Sacramento-San Joaquin Delta. San Pablo Bay has brackish water and receives tidal inflows of salt water twice daily from San Francisco Bay.

Surface water runoff creates the majority of freshwater flows within the rivers and streams. Consequently, stream flow in all of the creeks and rivers varies greatly with the season and the year depending on precipitation. Several smaller tributaries are naturally dry during the summer, while in others flows vary between wet and dry years. The withdrawal of water from streams for both agricultural and domestic uses has affected flow rates in the streams. Lower base flow rates occur in the streams as a result of water storage in reservoirs and direct withdrawals from the streams and aquifers.

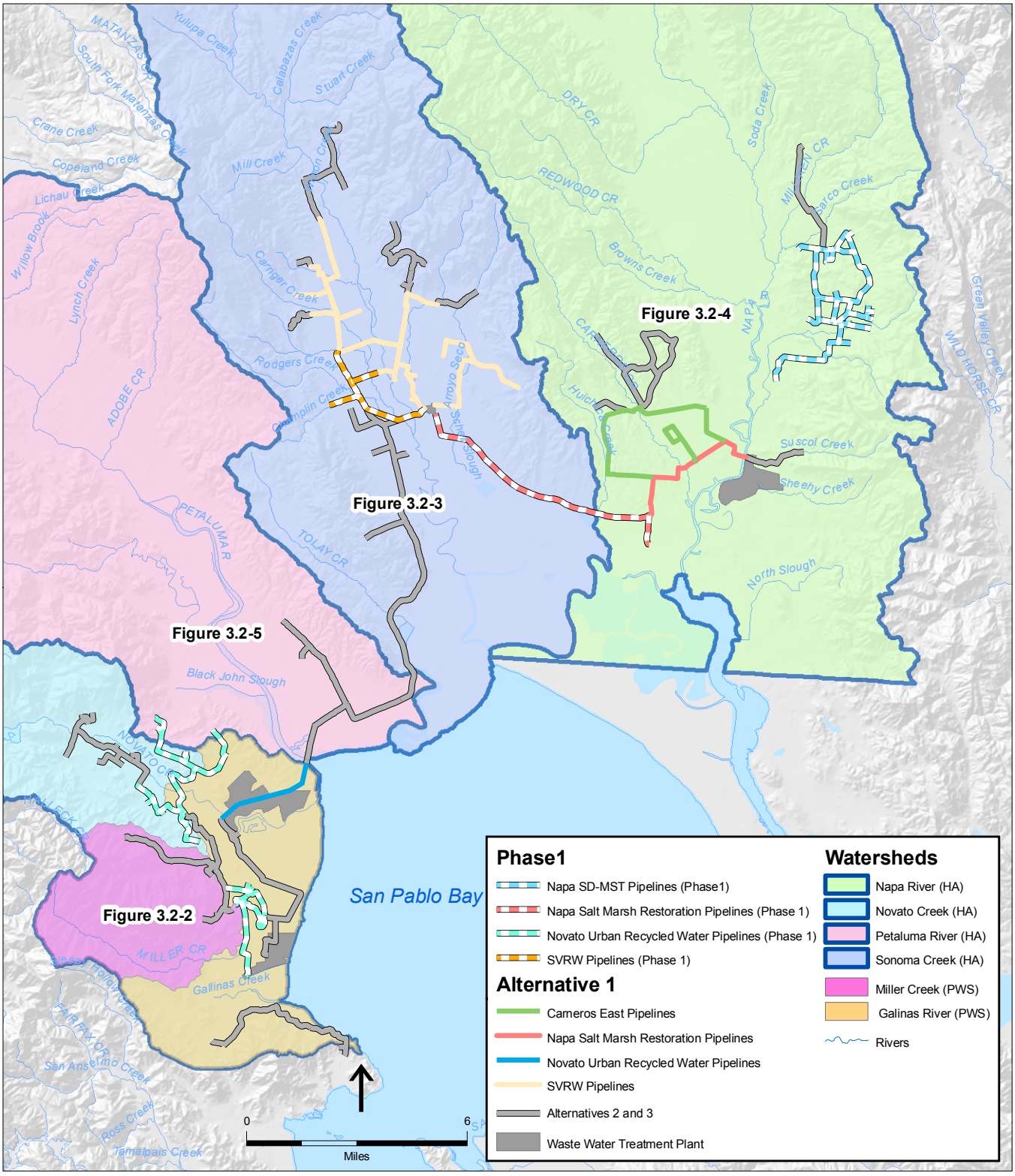
The WWTPs within the region contribute treated effluent to major tributaries, with discharge restricted to wet months of the year. Estimated 2002 monthly discharge provides the best available dataset from all of the dischargers, and is provided in **Table 3.2-1**.

Local Setting

LGVSD

Miller Creek/Gallinas Creek Watershed

The Miller Creek/Gallinas Creek watershed covers approximately 44 square miles. The watershed reaches from the coastal mountain ridges on the west, including the Terra Linda-Sleepy Hollow



SOURCE: CDM, 2008; ESRI, 2006; SWRCB, 2006; and ESA, 2008

Note: Existing Water Distribution Facilities Not Shown

NBWRA North Bay Water Recycling Program. 206088.01

Figure 3.2-1
Regional Watersheds

TABLE 3.2-1
EXISTING 2002 MONTHLY WATER DISCHARGE BY WWTP (AF/MONTH)

	Napa	Sonoma	Novato	LGVSD	Total
January	1,115	612	786	371	2,884
February	837	375	567	255	2,035
March	1,030	396	595	275	2,297
April	521	139	495	160	1,315
May	0	0	499	143	641
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	407	0	407
October	0	0	424	0	424
November	983	603	477	201	2,264
December	1,028	680	1,016	502	3,226
TOTAL	**5,515**	**2,805**	**5,267**	**1,906**	**15,492**

SOURCE: USGS, 2008.

Divide Open Space Preserve, to San Pablo Bay on the east. The upper subwatershed for Miller Creek is largely undeveloped park or open space. The valley area of the Miller Creek watershed and most of the Gallinas Creek watershed primarily includes urban development, with some parks and open space (San Francisco Estuary Institute, 2008).

The LGVSD service area is located in the Miller Creek and Gallinas Creek watershed. During the wet season (November 1 through May 31), treated wastewater is discharged to the tidal portion of Miller Creek, which flows into San Pablo Bay. During the non-discharge dry season (June 1 through October 31), treated wastewater is stored in ponds and used to irrigate local pasture and maintain freshwater wetland habitat.

Novato SD

Novato Creek Watershed

Novato Creek extends approximately 17 miles in the 55-square mile-Novato Creek watershed (California Coastal Commission, 2006). The watershed extends from the western border in the coastal mountains just west of Stafford Lake east to San Pablo Bay. The upper watershed primarily includes agricultural areas and open space. The valley floor includes residential development with parks (Lewis and Lattanzio, 2006). Tributaries to Novato Creek include Arroyo San Jose and Arroyo Avichi (Oakland Museum of California, 2008). Based on the data for Novato Creek (USGS, 2008), flows in the creek are heavily influenced by precipitation, with higher flows during the wet season and very low flows during the dry season.

The Novato Creek watershed has experienced significant flooding in 1955, 1982, 1983, 1986, and 2005-2006. The creek was formerly dredged for navigation and is now dredged for flood control (Lewis and Lattanzio, 2006).

The Novato SD service area lies within the Novato Creek watershed. Discharge from the WWTP is restricted during summer months (May through September); during this time, secondary effluent from the Novato SD WWTP is conveyed through a pipeline that extends through the reclamation area to three Novato SD-owned irrigation parcels (totaling approximately 820 acres), two treated water storage ponds, and 15 acres of wildlife habitat. The effluent discharge occurs in the wet season (i.e., September through May) and is subject to lower limits for biochemical oxygen demand and suspended solids. The effluent discharge is restricted from June 1 to August 31.

Petaluma River Watershed

The Petaluma River watershed covers approximately 146 square miles (Southern Sonoma County Resource Conservation District (SSCRCD), 2008). The watershed extends from upstream mountain peaks, including Sonoma Mountain, Mecham Hill, Weigand's Hill, and Mt. Burdell, south to San Pablo Bay. The land use in the area includes 56 percent mountainous or hilly uplands, 33 percent valley, and 11 percent salt marshes (SSCRCD, 2008). The valley area includes the urban and suburban development in the city of Petaluma, pasture and grazing, and vineyards. The lower 12 miles of the Petaluma River flow through Petaluma Marsh, the largest salt marsh in the San Pablo Bay watershed (SSCRCD, 2008). Major tributaries include Black John Slough, Basalt Creek, Rush Creek, San Antonio Creek, Adobe Creek, Lichau Creek, Willow Brook, and Lynch Creek (Oakland Museum of California, 2008).

The U.S. Army Corps of Engineers dredges the Petaluma River approximately once every four years because of high siltation rates. The Petaluma River has experienced recent flood events in 1982, 1986, 1997, and 1998, of which the flood in 1982 was the most damaging and the most damage experienced in the upstream segments of the river. The areas most prone to flooding were the residential areas from Lynch Creek to Payran Street and upstream of the old Lakeville Street and railroad bridges. The City of Petaluma and the U.S. Army Corps of Engineers have collaborated to implement a flood control project in Petaluma (City of Petaluma, 2003).

SVCSD

Sonoma Creek Watershed

The Sonoma Creek watershed drains an area of approximately 170 square miles between ridges of the Sonoma Mountains. Sonoma Creek begins on Sugarloaf Ridge and flows 31 miles to North San Pablo Bay. The watershed is bounded by the Petaluma River watershed on the west, the Napa River watershed on the east, and the Russian River watershed on the north (McKee, et al., 2000). Land use within the watershed is predominantly rural with open space, grazing and agriculture, especially viticulture (wineries). Sonoma Creek is the principal drainage for the Sonoma Valley sub-basin. The southern Napa and Sonoma Valley basins receive an average of 20 to 24 inches of precipitation a year and the highest runoff occurs shortly after rainfall (USGS, 2008). Levels of precipitation and soil permeability affect the volume of creek and river flow into the Bay (Jones and Stokes, 2003). Some of the creeks and tributaries to Sonoma Creek include Dowdall Creek, Malone Creek, Carriger Creek, Felder Creek, Champlin Creek, Fowler Creek, Rodgers, Schell Creek, west and east Arroyo Seco, and unnamed tributaries.

Flooding in the city of Sonoma largely stems from two major streams, Nathanson Creek and Fryer Creek, which flow southward and lie on the east and west of the city respectively. Fryer Creek, the smaller of the two creeks, has a narrow and shallow 100–year flood plain. The most extreme flooding from Fryer Creek produces only nuisance street inundation, and historic flooding problems have been corrected through storm drain improvements. The 100–year flood plain for Nathanson Creek is also fairly narrow within the city, although flooding along the creek can threaten a few houses with minor interior inundation (City of Sonoma, 2004).

The SVCSD service area lies in the Sonoma Creek watershed. Wastewater discharge from the SVCSD WWTP is restricted from May 1 through October 1 and is treated further for reuse in local irrigation and habitat projects. SVCSD discharges treated wastewater from November 1 to April 30 into Schell Slough and Hudeman Slough, which ultimately flow into San Pablo Bay.

Napa SD

Napa River Watershed

The Napa River watershed covers an approximately 426 square-mile-area surrounding the 55 mile-long Napa River (Napa County Resource Conservation District (RCD), 2008). The watershed extends from Mount St. Helena in the north to San Pablo Bay in the south. The watershed is bordered on the west by the Mayacama Mountains and by a northwest-trending ridge on the east. The watershed includes undeveloped areas, such as forests in the hills, riparian vegetation near rivers and creeks, and grasslands in the valley. Much of the valley floor is developed including urban development in cities such as Calistoga, St. Helena, Rutherford, Oakville, Yountville, Napa, and American Canyon. Vineyards comprise 98 percent of the approximately 37,000 acres of agricultural land in the valley (Napa County, 2005). Major tributaries to Napa River include Huichica Creek, Carneros Creek, Browne Valley Creek, Redwood Creek, Dry Creek, Conn Creek, Rector Creek, Soda Creek, Sarco Creek, Tulucay Creek, Murphy Creek, Spencer Creek, Suscol Creek, Fagan Creek, and American Canyon Creek (Oakland Museum of California, 2008).

The Napa River has experienced serious flood events 21 times since 1862. In response to the damage from the flood in 1986, the Napa County Flood Control and Water Conservation District (FCWCD) and the U.S. Army Corps of Engineers are implementing the Napa River Flood Protection Project. The purpose of the project is to create a “Living River” by incorporating multiple goals that include reducing flood damage, restoring wetlands and reconnecting the river to the floodplain, providing river-related economic development opportunities, and expanding recreational opportunities. Multiple elements are complete, with remaining elements scheduled for completion in 2011 (pending federal funding availability) (Napa County FCWCD, 2006).

The Napa SD service area lies in the Napa River watershed. Wastewater discharge from the Napa SD WWTP to Napa River occurs from November 1 to April 30. Between May 1 and October 31, the wastewater is stored in reservoirs onsite and some portion of the stored water is treated and distributed to recycled water users.

3.2.2 Regulatory Framework

State

California Fish and Game Code Sections 1600-1616

California Fish and Game Code Sections 1600-1616 (Lake or Streambed Alternation Agreement Program) require notification of the California Department of Fish and Game (CDFG) for any project that may substantially modify a river, stream, or lake. Specifically, project proponents must notify DFG if a project could:

- "Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." (DFG, 2008)

If CDFG determines that the project has the potential to adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement would be required for the NBWRP to establish conditions to protect these resources. See Section 3.5, Biological Resources for additional information.

Local

The local general plans, policies, and regulations associated with impacts to surface hydrology within the affected jurisdictions are presented in **Appendix 3.2** of this EIR/EIS.

3.2.3 Environmental Consequences/ Impacts

Significance Criteria for Impact Analysis

Based on the Appendix G of the CEQA Guidelines, the NBWRP would have significant impacts and environmental consequences on surface hydrology if it would:

- Substantially alter the existing drainage pattern of the site or area (including through the alteration of the course or by substantially increasing the rate or amount of surface runoff) in a manner that would result in flooding on- or offsite;
- Create or contribute substantial runoff that would exceed the capacity of existing or planned stormwater drainage systems;
- 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 substantial risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

Water Quality impacts are discussed in Section 3.4, Water Quality. The NBWRP would not involve housing, therefore the impact related to the 100-year flood hazard area is not discussed further.

Environmental Consequences/Impact Analysis

Impact 3.2.1: Changes in drainage patterns. Project construction could modify existing drainage patterns. (Less than Significant with Mitigation)

Treatment upgrades would occur within the existing WWTPs and would not add to impervious surfaces or change the existing drainage patterns. Construction of pump stations would involve paving and construction of building structures resulting in increases in impervious surface. This could affect the existing drainage patterns. However, the new impervious surfaces would not be as extensive as to cause significant changes in the downstream hydrology or flow rates. Further, the pump stations would be designed to include appropriate drainage infrastructure to convey flows generated onsite and from upstream areas. Drainage designs would be integrated with existing drainage systems, and would be designed to avoid or minimize effects to downstream areas and infrastructure.

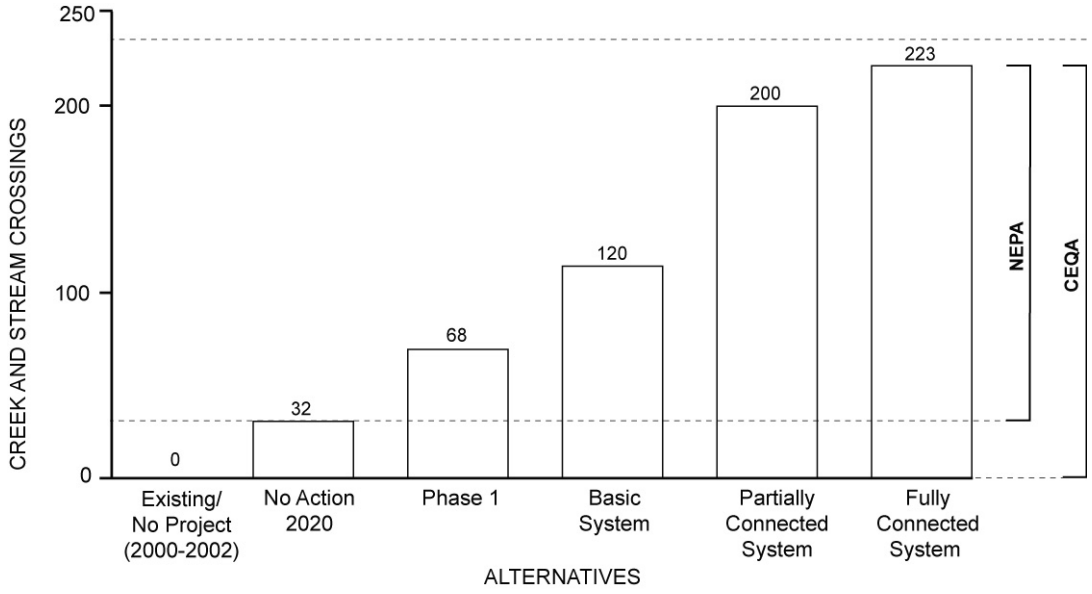
In general, pipelines would be constructed within roadway rights-of-way, and would only cross drainages where necessary. In these instances, construction of the proposed pipelines would involve activities such as grading, excavation, and trenching, which could alter existing surface drainage patterns. However, such activities would be temporary and limited to areas of active construction within the 25 foot construction corridor. The excavated areas would be returned to the pre-existing condition; therefore the impacts would be less than significant. Construction of pipelines would occur at stream crossings, which could temporarily alter drainage patterns at locations where pipelines cross local waterways. A summary of the number of stream crossings by alternative is provided in **Chart 3.2-1**.

Construction activities for pump stations and storage facilities, would involve excavation, grading and building activities that could alter surface drainage patterns. The impacts associated with these facilities in different areas are discussed further. Construction associated with treatment upgrades would not involve excavation or other activities that would alter drainage patterns, therefore is not discussed further.

No Project Alternative

The NBWRP would not be implemented under the No Project Alternative, therefore no impact would occur. For a discussion of the No Project under future conditions, see No Action alternative below.

CHART 3.2-1
SUMMARY OF STREAM CROSSINGS BY ALTERNATIVE



SOURCE: ESA, 2009

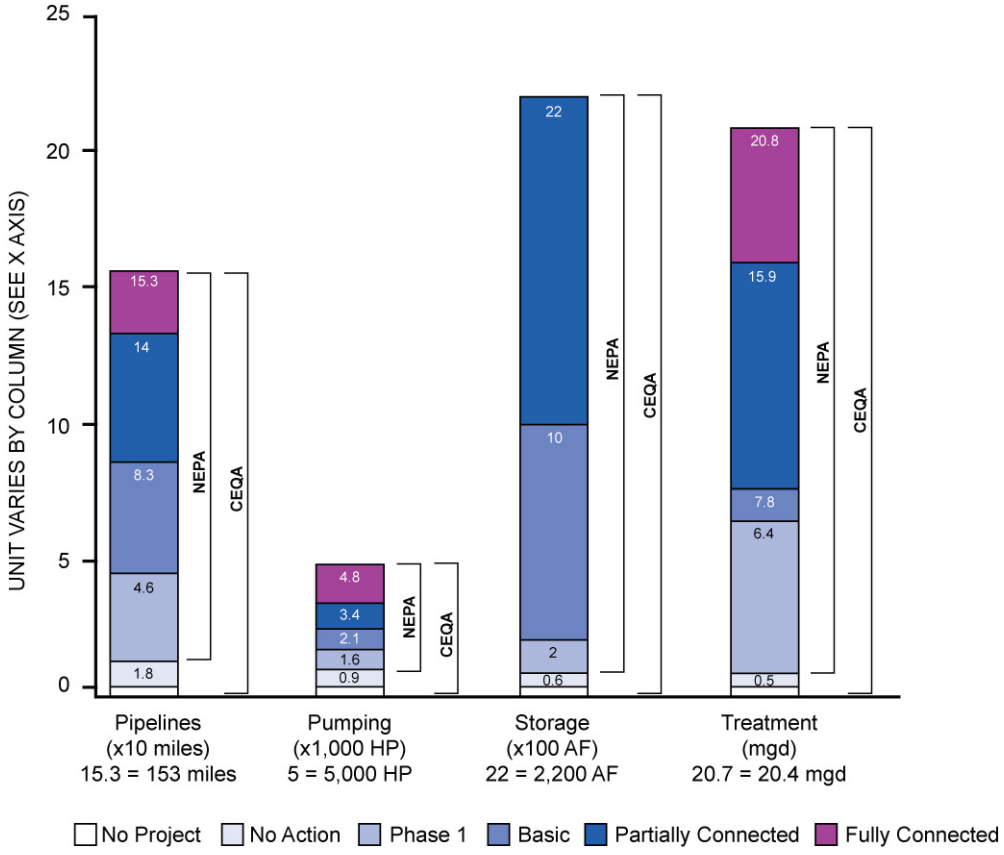
No Action Alternative

Under the No Action Alternative, which includes consideration of future conditions, it is likely that a subset of water recycling projects would be implemented by the Member Agencies on an individual basis, without the benefit of regional coordination or federal funding.

For comparison with the Action Alternatives, it is estimated that approximately 18 miles of new pipeline, 912 HP of pumping capacity, treatment facilities providing 0.5 mgd of tertiary capacity, and approximately 65 AF of storage would be constructed by Member Agencies on an individual basis (see **Chart 3.2-2**, **No Action**).

Under future baseline (2020) conditions, it is anticipated that surface hydrologic conditions within the region would be generally unchanged from existing conditions. Construction of the project facilities particularly pipelines could affect the drainage patters at stream crossings. However, implementation of **Mitigation Measure 3.2.1**, which incorporates measures to protect the stream from construction activities, would reduce the impact to less-than-significant-level. The No Action Alternative would include elements within the Novato Creek, Sonoma Creek, and Napa River watersheds, and involve a total of 32 stream crossings. A discussion of individual Member Agencies is provided below.

CHART 3.2-2
COMPARISON OF NEPA AND CEQA BASELINES FOR PROPOSED FACILITIES, BY ALTERNATIVE



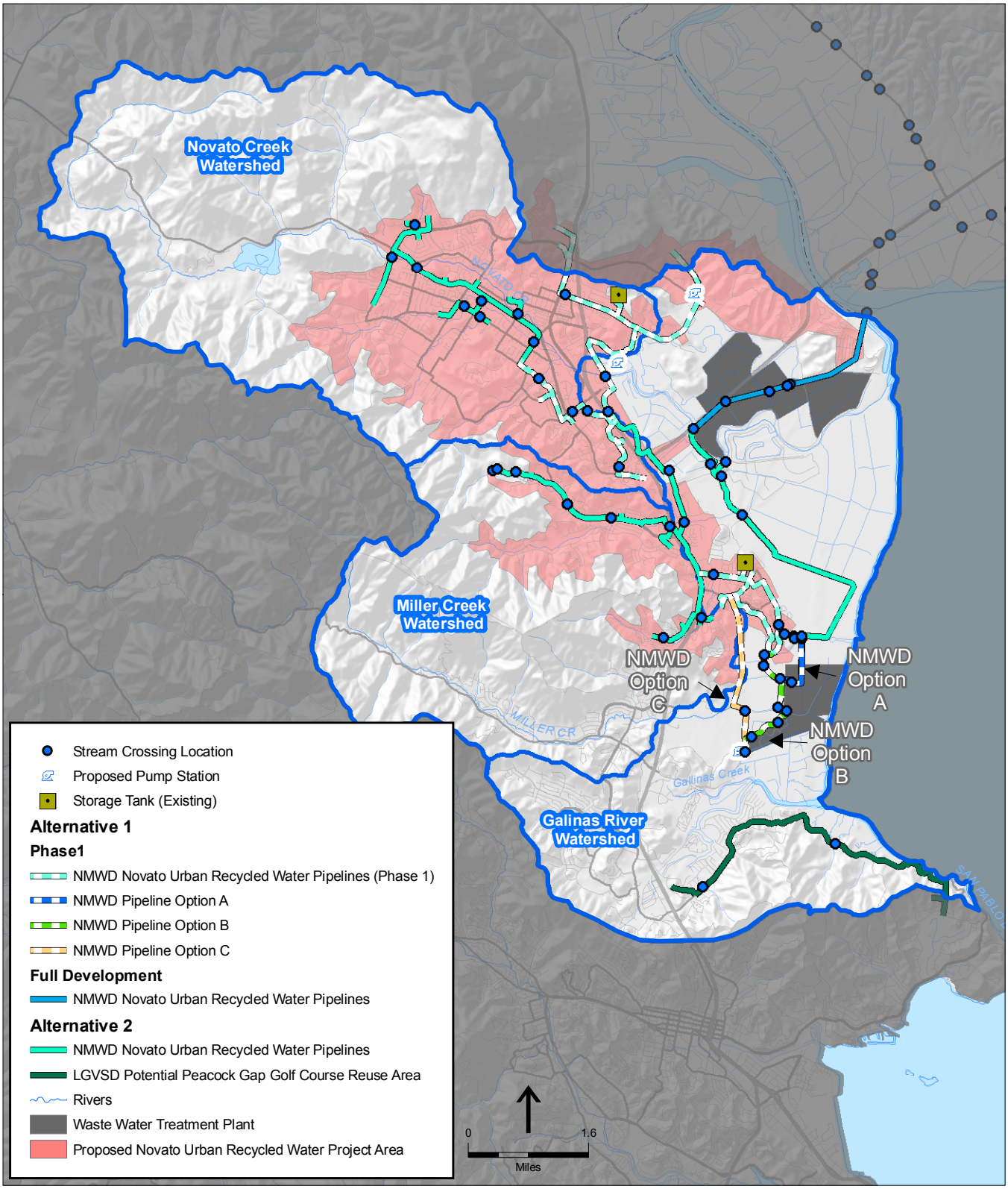
SOURCE: CDM, 2009

LGVSD/NMWD

There would be no project facilities constructed under the No Action Alternative, therefore no impact would occur.

Novato SD/NMWD

Construction under the No Action Alternative would involve a total of seven stream crossings. This includes one stream crossing at a small, intermittent creek in the Novato Creek Watershed (see **Figure 3.2-2**). The drainage pattern at the stream crossing could get altered during construction. The NMWD Novato Urban Recycled Water Pipeline (North) would involve 6 stream crossings. Although the impact would be temporary, Novato SD would implement **Mitigation Measure 3.2.1** to ensure a less-than-significant impact. The No Action Alternative would include one new booster pump station near the intersection of Olive Avenue and Atherton Avenue that would add approximately 1,000 square feet of impervious surface. The site runoff would flow to the local storm drain system or nearby ditches.



SOURCE: CDM, 2007; ESRI, 2006; SWRCB, 2006; ESA, 2008; Field Collected Stream Data, 2008; DWR NHD Stream Data, 2007

Note: Existing Water Distribution Facilities Not Shown

NBWRA North Bay Water Recycling Program. 206088

Figure 3.2-2
Novato Creek, Miller Creek, and Galinas River Watershed Stream Crossings

Given the size of the pump station, the runoff would not be significant and would not result in significant changes to drainage in the area.

The No Action Alternative would include retrofitting an existing storage facility (the Plum Street Tank). These improvements would occur on existing disturbed sites and would not substantially change the drainage patterns.

SVCSD

Construction under the No Action Alternative would include approximately 8 stream crossings (see **Figure 3.2-3**) for installing the pipelines for the Sonoma Valley Recycled Water Project (SVRWP). The Napa Salt Marsh pipeline would involve 17 stream crossings and could alter existing surface drainage patterns on a temporary and localized basis. Such alteration of drainage patterns would occur when sandbags, dikes, pumps, or other means are used to divert surface runoff around open-trench areas, pipe-jacking pits and receiving areas, and other such work areas. Such diversion generally would be short-term (typically 1–5 days) and limited to areas of active construction (i.e., pipeline construction segments would typically be about 200 to 300 feet long).

To the extent feasible, construction activities related to trenching or jack and bore tunneling, would be timed to avoid storm events/periods. It may be necessary on occasion, however, to employ short-term drainage diversion and control measures such as those described above.

The SVRWP pipelines would cross Sonoma Creek and Felder Creek at multiple locations. The pipelines would also cross Carriger Creek, Rodgers Creek, Fowler Creek, and a tributary to Felder Creek. Refer to the impact discussion under Novato SD. The impact would be less than significant with implementation of **Mitigation Measure 3.2.1**.

The No Action Alternative would include construction of new pumping and storage facilities at the SVCSD WWTP. These facilities would be on a disturbed site and would not substantially change the drainage patterns.

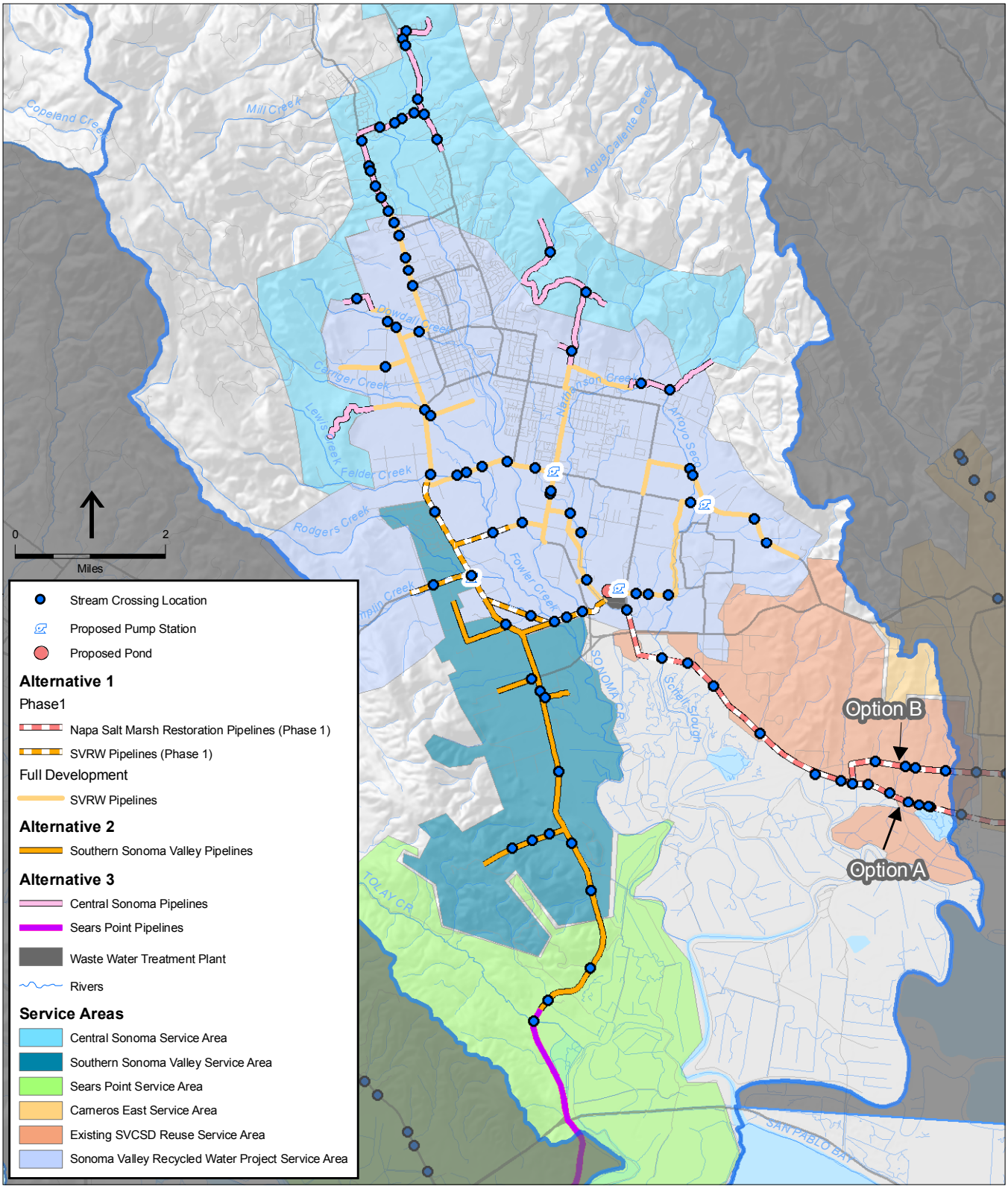
The impacts from the No Action Alternative on drainage patterns for SVCSD would be less than significant.

Napa SD

There would be no project facilities constructed under the No Action Alternative, therefore no impact would occur.

Phase 1 (Project level)

For comparison with the Action Alternatives, it is estimated that approximately 18 miles of new pipeline, 912 HP of pumping capacity, treatment facilities providing 0.5 mgd of tertiary capacity, and approximately 65 AF of storage would be constructed by Member Agencies on an individual basis.



SOURCE: CDM, 2008; ESRI, 2006; SWRCB, 2006; and ESA, 2008
Field Collected Stream Data, 2008; DWR NHD Stream Data, 2007

Note: Existing Water Distribution Facilities Not Shown

NBWRA North Bay Water Recycling Program. 206088.01

Figure 3.2-3
Sonoma Creek Watershed Stream Crossings

The hydrologic impacts to proposed facilities under Phase 1 would be equivalent to and greater than the impacts discussed for the No Action Alternative, in proportion to the facilities constructed under this alternative (see Chart 3.2-2, Phase 1). Elements of Phase 1 would involve a total of 68 stream crossings (see **Table 3.2-2**). A discussion of impacts by Member Agency is provided below.

TABLE 3.2-2
STREAM CROSSING DATA BY ALTERNATIVE

Pipeline Location	No Project Alternative	No Action Alternative	Phase 1	Basic System	Partially Connected System	Fully Connected System
LGVSD						
Peacock Gap	0	0	0	0	2	0
NMWD URWP (South)			2			
Option A	--	--	10	--	--	--
Option B	--	--	8	--	--	--
Option C	--	--	2	--	--	--
LGVSD Total	**0**	**0**	**4**[1]	**0**	**2**	**0**
Novato SD						
NMWD URWP (North)	0	7	7	5	24	0
Sears Point	0	0	0	0	18	0
Novato SD Total	**0**	**7**	**7**	**5**	**42**	**0**
SVCSD						
Southern Sonoma Valley	0	0	0	0	11	0
Central Sonoma	0	0	0	0	0	22
Sonoma Valley Recycled Water Project	0	8	8	31	1	0
Sears Point	0	0	0	0	0	1
Napa Salt Marsh	0	17	17[2]	5	5	0
Option A	--	--	17	--	--	--
Option B	--	--	14	--	--	--
Option C	--	--	14	--	--	--
SVCSD Total	**0**	**25**	**25**	**36**	**17**	**23**
Napa SD						
Napa MST	0	0	32	0	4	0
Carneros East	0	0	0	11	15	0
Napa SD Total	**0**	**0**	**32**	**11**	**19**	**0**
Alternative Total	**0**	**32**	**68**	**52**	**80**	**23**

1 Assumes Novato Option C
2 Assumes Napa Option A
-- = no pipelines are proposed for this project phase/alternative in this Recycled Water Service Area

SOURCE: ESA, 2009

LGVSD/NMWD

Additional impacts under Phase 1 would occur from pipeline construction in the Novato South service area. NMWD URWP pipelines in the Hamilton Field area would involve four stream crossings. Pipeline Options A would be installed adjacent to an agricultural canal as it runs north, perpendicular to Perimeter Road, and would involve 10 stream crossing. The pipeline under Option B would extend through grazing land and under Option C the pipeline would extend north from LGVSD WWTP through grazing land, parallel to Highway 101 and continue along existing roadways, and would involve 8 and 2 stream crossings, respectively (see Figure 3.2-2). Please refer to the impacts discussed above, which would be similar to the construction activities in the open grazing lands. The impact would be less than significant with mitigation, which would apply to the open lands.

Novato SD/ NMWD

Additional impacts under Phase 1 would occur during construction of pipelines, which would include seven stream crossings (see Figure 3.2-2), including two crossings of tributaries to Novato Creek. The larger stream crossings would be accomplished using a jack and bore, directional drilling, or suspension on bridges to prevent alteration of the stream course or waters therein. Please refer to the impacts discussed above. The impact would be less than significant with implementation of **Mitigation Measure 3.2.1**.

Phase 1 would include one new booster pump station near the intersection of Olive Avenue and Atherton Avenue that would add approximately 1,000 square feet of impervious surface. The addition of the booster pump station would not substantially change the amounts or timing of drainage contributing the system. A booster pump station in this location would increase the impervious surface, hence the storm runoff (see also Impact 3.2.3 below); however, given the size of the pump station, the increase would not be substantial and would not likely result in noticeable changes to drainage in the area. Please refer to the discussion under Novato SD under No Action Alternative. The impact would be less than significant**.**

SVCSD

Additional impacts under Phase 1 would occur during construction of SVRWP pipelines at 25 additional stream crossings (shown on Figure 3.2-3). The pipelines would cross Champlin Creek, Felder Creek, Rodgers Creek, and Arroyo Seco at multiple locations. The pipelines would also cross Carriger Creek, Rodgers Creek, Fowler Creek, Huichica Creek, and a tributary to Felder Creek, and a tributary to Arroyo Seco. Additional impacts would be associated with portions of the pipelines for the Napa Salt Marsh Restoration Project that would cross two small unnamed creeks or ditches. Refer to the discussion under Novato SD above. Impacts under Phase 1 for the Napa Salt Marsh Restoration Project would be equivalent to those discussed under the No Action Alternative. Implementation of **Mitigation Measure 3.2.1** would ensure a less-than-significant impact.

Phase 1 would also include construction of new pumping and storage facilities at the SVCSD WWTP. Refer to the discussion above under Novato SD.

Napa SD

Additional impacts under Phase 1 would occur during construction of the pipelines in the MST Creeks area at 32 stream crossings (shown on **Figure 3.2-4**). Pipelines would cross Tulucay Creek, Murphy Creek, and Kreuse Creek. Pipeline crossings also include two crossings of tributaries to Tulucay Creek, nine crossings of tributaries to Sarco Creek, and 17 crossings of smaller, unnamed creeks. Portions of the pipelines for the Napa Salt Marsh Restoration Project would cross Huichica Creek and two small channels. The impacts would be similar to those discussed for Novato SD and SVCSD above.

Additional impacts under Phase 1 would occur from increasing the pumping capacity at the Napa SD WWTP, and constructing four booster pump stations along the pipelines. The four pump stations would be on Imola Avenue, Wild Horse Valley Road, East 3rd Avenue, and 3rd Avenue. Due to the developed nature of the pump station site, the addition of booster pump stations would not substantially change the amounts or timing of drainage contributing the system. However, booster pump stations on undeveloped sites would increase the impervious surface runoff. The sizes of the pump stations, however, are relatively small (approximately 1,000 square feet at each site), and would not likely result in noticeable changes to drainage in the area.

Alternative 1: Basic System (Program level)

Compared to the CEQA Baseline, the Basic System projects would provide 83 miles of new pipeline, 2,158 HP of pumping capacity, treatment facilities providing 7.8 mgd of tertiary capacity, and 1,020 AF of storage. Compared to the No Action Alternative (NEPA Baseline), Basic System would provide 65 miles of new pipeline, 1,246 HP of pumping capacity, treatment facilities providing 7.3 mgd of tertiary capacity, and 955 AF of storage.

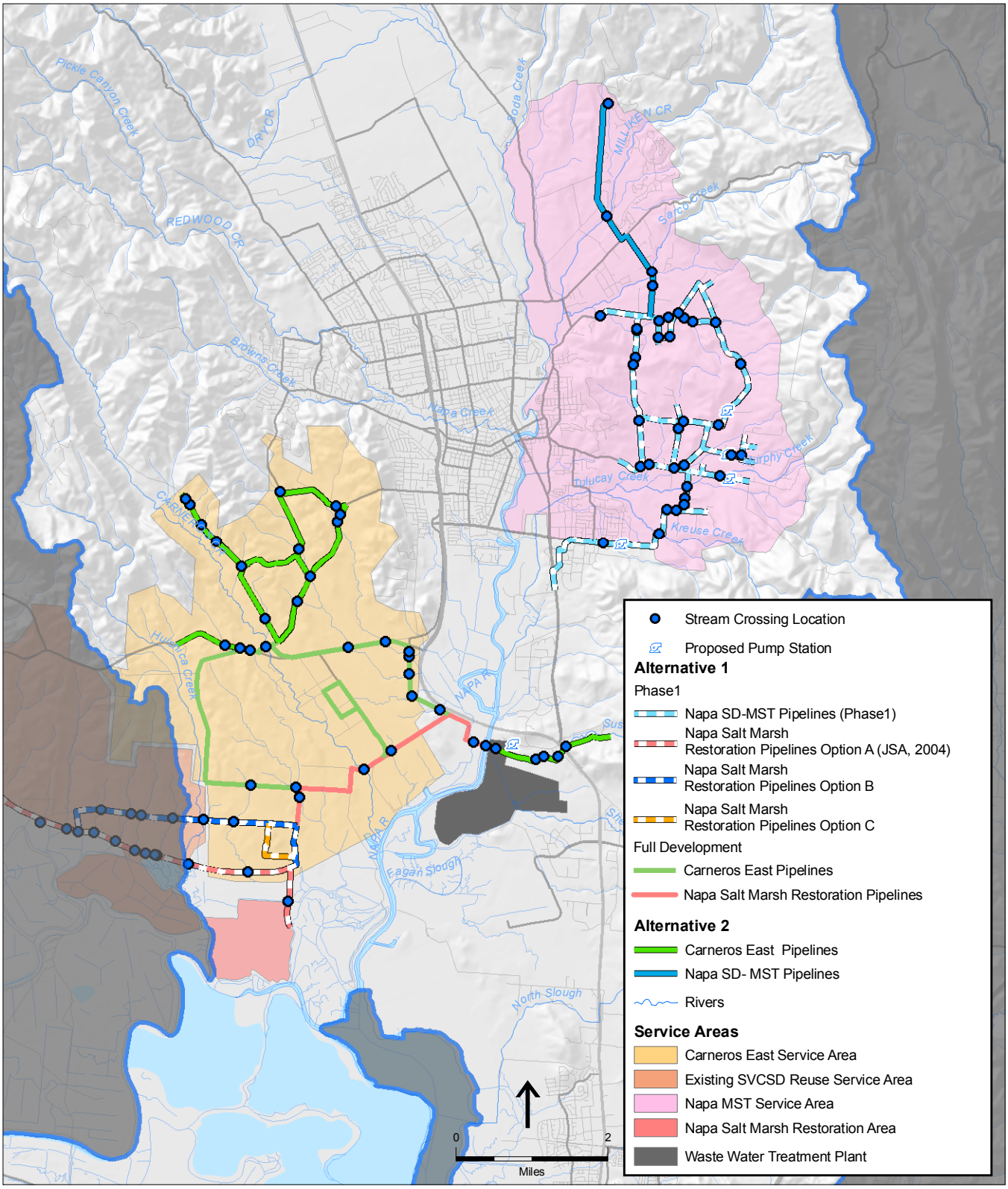
The hydrologic impacts to proposed facilities under the Basic System would be equivalent to and greater than the impacts discussed for Phase 1, in proportion to the facilities constructed under this alternative (see Chart 3.2-2, Basic System). The Basic System would involve 33 additional stream crossings. A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

Implementation of the NBWRP components under the Basic System would not involve additional stream crossings, and therefore would not contribute to a change in drainage patterns.

Novato SD/NMWD

In addition to the impacts discussed under Phase 1, pipeline in the Novato SD service area would involve five additional stream crossings, including the pipeline from Novato to the Petaluma River which would cross two creeks (Figure 3.2-2). Please refer to the discussion under Novato SD for Phase 1.The impact would be less than significant with implementation of **Mitigation Measure 3.2.1**.



SOURCE: CDM, 2008; ESRI, 2006; SWRCB, 2006; ESA, 2008;
Field Collected Stream Data, 2008; DWR NHD Stream Data, 2007

Note: Existing Water Distribution Facilities Not Shown

NBWRA North Bay Water Recycling Program. 206088.01

Figure 3.2-4

Napa River Watershed Stream Crossings

SVCSD

In addition to the impacts discussed under Phase 1, the impacts from SVRWP would be associated with 31 crossings at streams including multiple crossings at Nathanson Creek and single crossings at Sonoma Creek, Dowdall Creek and other small creeks (see Figure 3.2-3). All of these creeks are intermittent. Impacts to drainage patterns would also occur from construction of a pipeline from SVCSD to the salt marsh under the Napa Salt Marsh Restoration Project, which would cross Schell Slough and four other small, unnamed creeks. Please refer to the discussion for Napa SD under Phase 1 and the Basic System. The impact would be less than significant with mitigation. Impacts under the Basic Alternative for the Napa Salt Marsh Project would be equivalent to those under the No Action Alternative. The impact would be less than significant with mitigation.

Additional impacts from the Basic System would occur from increased pumping and storage capacity construction at the SVCSD WWTP compared to Phase 1. As in Phase 1, these improvements would be on disturbed sites and would not substantially change the drainage patterns. Refer to the discussion under Phase 1. The SVRWP would include additional pumping in the Basic System. The exact site for this pumping has not yet been identified; however, preference would be given to disturbed sites to minimize impacts.

Napa SD

Additional impacts associated with the Basic System would be associated with additional pipelines in the MST area, a pipeline from the Napa SD WWTP to the Napa Salt Marsh, and distribution pipelines to the Carneros East area, which would involve 11 additional stream crossings (see Figure 3.2-4). The pipelines in the MST area would cross Sarco Creek, Tulucay Creek, a tributary to Sarco Creek, and a tributary to the Napa River. The Napa Salt Marsh pipeline would cross two unnamed creeks. The Carneros East pipelines would include eight stream crossings, including Carneros Creek and other unnamed creeks. The impacts would be similar to those discussed under Phase 1 and implementation of **Mitigation Measure 3.2.1** for the additional stream crossings would minimize the impact to less than significant.

Increasing pumping capacity at the Napa SD WWTP would involve constructing a pump station at the existing WWTP site. The drainage patterns onsite would not change substantially. The impact would be less than significant.

Alternative 2: Partially Connected System (Program level)

Compared to the CEQA Baseline, the Partially Connected System would provide 139 miles of new pipeline, 3,454 HP of pumping capacity, treatment facilities providing 15.9 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Partially Connected System would provide 122 miles of new pipeline, 2, 542 HP of pumping capacity, treatment facilities providing 15.4 mgd of tertiary capacity, and 2,155 AF of storage.

The hydrologic impacts to proposed facilities under Phase 1 would be equivalent to and greater than the impacts discussed for the No Action Alternative, in proportion to the facilities

constructed under this alternative (see Chart 3.2-2, Partially Connected). A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

Additional impacts under the Partially Connected System would occur from construction of the Peacock Gap Golf Course pipeline that would involve two additional stream crossings, including the crossing of an unnamed tributary (**Figure 3.2-5**). Refer to the impact discussion under Novato SD above for Phase 1 and the Basic System. Implementation of **Mitigation Measure 3.2.1** at the additional crossings in the Peacock Gap Golf Course area would ensure a less-than-significant impact.

Additional impacts would occur from construction of storage facility in the Peacock Gap area and at the LGVSD WWTP. The activity would involve rehabilitating an existing reservoir and constructing storage on an existing disturbed site. Therefore the impact is not considered to be significant.

Novato SD/NMWD

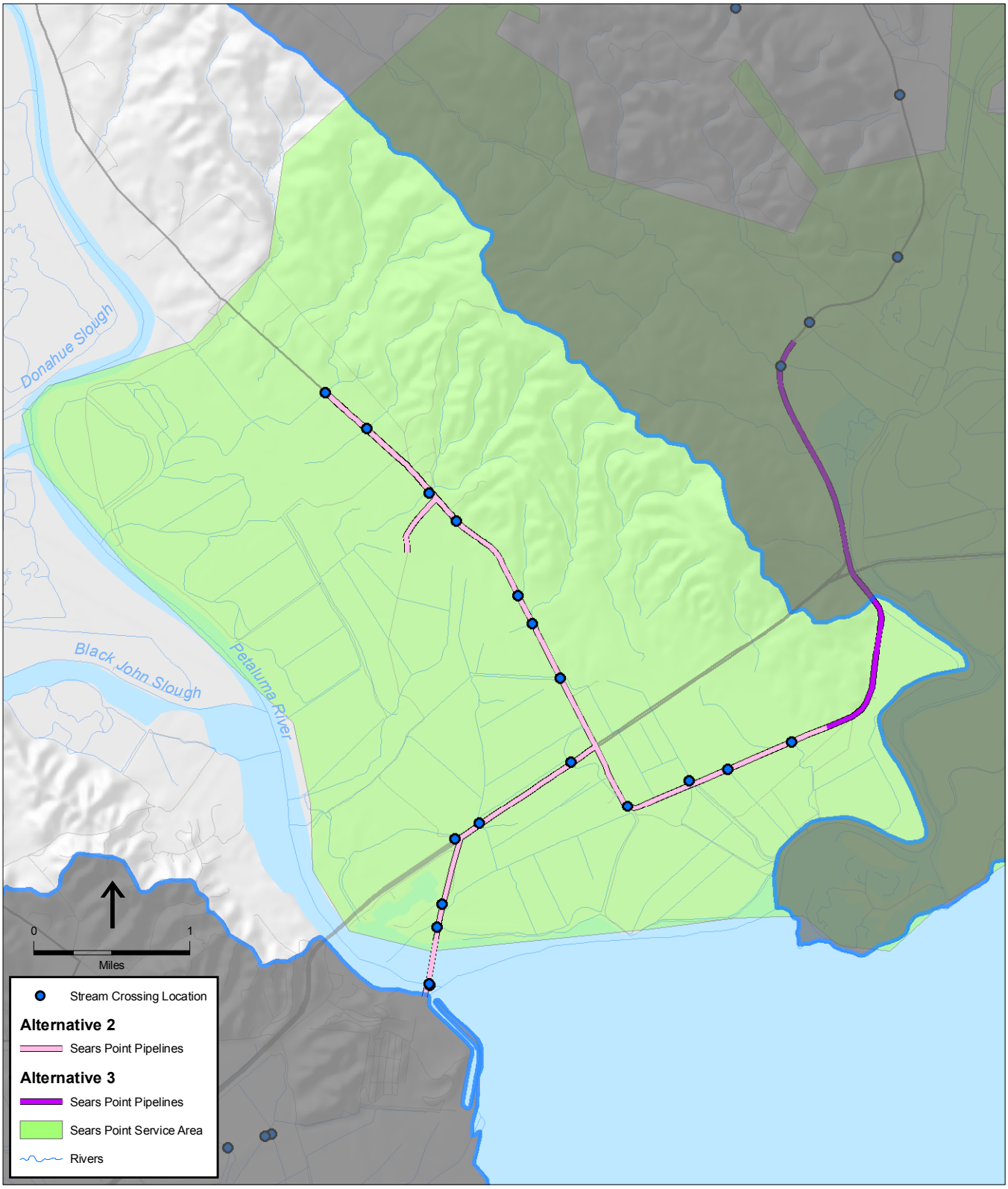
Additional impacts would occur from construction of pipelines at 24 additional stream crossings, including Novato Creek and tributaries to Novato Creek (see Figure 3.2-2) and Petaluma River, Tolay Creek, and 10 unnamed creeks. Refer to the discussion under the Basic System. The NMWD Novato Urban Recycled Water Pipeline that connects to the Sears Point area would involve 18 stream crossings. Implementation of **Mitigation Measure 3.2.1** at the additional stream crossings would minimize the impact to less-than-significant level.

Additional storage for the Partially Connected System would include rehabilitation of existing reservoirs. As in Phase 1, these improvements would be on disturbed sites and would not substantially change the drainage patterns.

SVCSD

Additional impacts would occur from construction of pipelines that would involve 17 additional stream crossings, including Nathanson Creek and Arroyo Seco (Figure 3.2-3). Refer to the discussion above under the Basic System. The impact would be minimized by implementation of **Mitigation Measure 3.2.1** at the additional stream crossings. Impacts under the Partially Connected Alternative for the Napa Salt Marsh Project would be equivalent to those under the No Action Alternative. The impact would be less than significant with mitigation.

Additional impacts would occur from construction of pumping facilities at the SVCSD WWTP and pump stations and new storage ponds in the existing SVCSD service area. The exact locations for the pump stations and ponds have not yet been identified; preference would be given to disturbed areas. The impact would be similar to those discussed under the Basic System and is expected to be less than significant.



SOURCE: CDM, 2008; ESRI, 2006; SWRCB, 2006; ESA, 2008
Field Collected Stream Data, 2008; DWR NHD Stream Data, 2007

Note: Existing Water Distribution Facilities Not Shown

NBWRA North Bay Water Recycling Program. 206088.01

Figure 3.2-5
Petaluma Creek Watershed Stream Crossings

Napa SD

Additional impacts would occur from construction of pipelines in the Carneros East and MST service areas, and a new pipeline to the east of the Napa SD WWTP, which would involve 19 additional stream crossings (see Figure 3.2-4), including Milliken Creek, a tributary to Milliken Creek, Soscol Creek, and a tributary to Carneros Creek. Refer to the discussion above under the Basic System. The impact would be minimized by implementation of **Mitigation Measure 3.2.1** at the additional stream crossings.

No additional impacts would occur from increasing the pumping capacity at the Napa SD WWTP, which would not affect the drainage patterns at the existing developed WWTP site. Pump stations would be constructed in the Carneros East and MST service areas. The exact locations for the pump stations have not yet been identified, but preference would be given to already disturbed areas to minimize associated changes to drainage patterns. The impact is expected to be less than significant.

Alternative 3: Fully Connected System (Program level)

Compared to the CEQA Baseline, the Fully Connected System would provide 153 miles of new pipeline, 5,021 HP of pumping capacity, treatment facilities providing 20.8 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Fully Connected System would provide 135 miles of new pipeline, 3, 907 HP of pumping capacity, treatment facilities providing 20.3 mgd of tertiary capacity, and 2,155 AF of storage.

The hydrologic impacts to proposed facilities under Phase 1 would be equivalent to and greater than the impacts discussed for the No Action Alternative, in proportion to the facilities constructed under this alternative (see Chart 3.2-2, Fully Connected). A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

Minimal drainage impacts would occur as a result of construction of pumping facilities at the LGVSD WWTP, which is an existing disturbed site. The impact would be less than significant.

Novato SD/NMWD

Minimal drainage impacts from implementation of the Fully Connected System are anticipated. There would be one additional stream crossing as a result of construction of the pipeline extending to Sears Point; however the impact would be minimized by implementation of **Mitigation Measure 3.2.1**. Additional impacts would occur from increased pumping capacity at the Novato SD WWTP. As in Phase 1, and Basic and Partially Connected Systems, these improvements would be on disturbed sites and would not substantially change the drainage patterns. The impact from increased pumping would be less than significant.

SVCSD

Additional impacts would occur from construction of additional pipelines that would involve 22 additional stream crossings in central Sonoma, including Sonoma Creek and Wilson Creek

(see **Figure 3.2-3**). Refer to the discussion under the Partially Connected System above. There would be one additional stream crossing as a result of construction of the pipeline extending to Sears Point. Implementation of **Mitigation Measure 3.2.1** at the additional stream crossings would minimize the impact to less-than-significant level. Impacts under the Fully Connected Alternative for the Napa Salt Marsh Project would be equivalent to those under the No Action Alternative. The impact would be less than significant with mitigation.

Additional impacts could occur from construction of new pump stations. Construction of pump stations at the SVCSD WWTP would have minimal impact due to the existing developed nature of the WWTP site. The locations of the pump stations in the Central Sonoma Valley service area, SVRWP area, and the existing SVCSD reuse area have not yet been determined. Preference would be given to already disturbed areas to minimize associated changes to drainage patterns. The impact would likely be less than significant.

Napa SD

Minimal drainage impacts from implementation of the Fully Connected System are anticipated. There would be no additional stream crossings, and therefore a less than significant impact.

Mitigation Measure

Mitigation Measure 3.2.1: The Member Agencies would implement the following measure during pipeline installation at stream crossings:

- Schedule construction so as to avoid storm events to the extent feasible ;
- Use trenchless techniques such as jack and bore tunneling to avoid direct impacts to the streams;
- Employ short-term drainage diversion and control measures such as sandbags, dikes, pumps, or other means; and
- Following construction, restore the construction area to pre-existing conditions
- Implement **Mitigation Measure 3.5.1** (see Section 3.5).

Impact Significance after Mitigation: Less than Significant.

Impact 3.2.2: Flooding and Effects to Surface Waters. The proposed action could expose public or structures to the risk of flooding due to placement of facilities within the 100-year flood plain. The proposed action would also change the amount of discharge to local surface waters. (Less than Significant)

Implementation of the proposed action would result in construction of facilities that would be located within existing 100-year flood plains. In general, construction of facilities within 100-year flood plains would be limited to pipeline installation across drainages, as noted in Impact 3.2.1, or

where pipelines, pump stations, or storage facilities are located with mapped 100-year flood plains. The only pump station that lies within the 100-year flood plain is the one at the Novato SD WWTP in Marin County, which is located close to the edge of the 100-year flood plain. Placement of structures within the mapped 100-year flood plain would have the potential to expose structures to periodic flooding and water damage. However, the design of proposed facilities to convey recycled water would reduce the potential for these facilities to be impacted by flood waters. Pipelines would be installed below-grade, and design of stream crossings would take into account streambed scour potential. Pump stations would be located to avoid mapped flood plains, or would be constructed at an elevation that provides adequate freeboard to avoid impacts.

The NBWRP would deliver recycled water that is currently either discharged to tributaries to North San Pablo Bay or is used for irrigation. Current practices vary with each Member Agency. Typically, a portion of the wastewater generated is stored during the dry season.

With the NBWRP, the agencies would recycle and deliver some of the water that they now discharge in the fall. Reduced discharge have the potential to reduce flooding; however, any beneficial effects would be very minor because the facilities discharge very close to San Pablo Bay and downstream of areas that generally experience flooding.

Irrigation would occur during the dry season and irrigators would be required to avoid over-application of reclaimed water in order to avoid direct runoff and ponding. Therefore, no adverse impacts to drainage or flooding are anticipated as a result of recycled water irrigation.

Some water users in the project area rely on diverting local surface water, often from smaller creeks or streams that may not be reliable sources throughout the year or in dry years. The NBWRP would deliver recycled water to users; in some areas, this water would offset local surface water supplies. This surface water would stay in the small creeks and streams during the irrigation season, and could increase base flows. However, because of the timing of this offset, base flows are not anticipated to affect stream conditions relative to flood stage.

No Project Alternative

The NBWRP would not be implemented under the No Project Alternative; therefore no impact would occur. For a discussion of the No Project under future conditions, see No Action alternative below.

No Action Alternative

Under the No Action Alternative, which includes consideration of future conditions, it is likely that a subset of water recycling projects would be implemented by the Member Agencies on an individual basis, without the benefit of regional coordination or federal funding. For comparison to the Action Alternatives, it is estimated that approximately 18 miles of new pipeline, 912 HP of pumping capacity, treatment facilities providing 0.5 mgd of tertiary capacity, and approximately 65 AF of storage would be constructed by Member Agencies on an individual basis to deliver 1,067 AFY of recycled water (see Chart 3.2-2, No Action).

It is estimated that WWTP inflow will increase over time, with a corresponding increase in discharge of treated effluent by the year 2020 (**Table 3.2-3**). Provision of 1,067 AFY of recycled water for use as irrigation and release of 3,460 AFY to the Napa Salt Ponds as envisioned under the No Action Alternative would reduce WWTP discharges, as shown in Table 3.2-3. Provision of this amount of recycled water would result in a discharge reduction of 4,860 AFY to receiving waters tributary to North San Pablo Bay at 2020, with approximately 3,460 AFY redirected to Napa Salt Ponds, depending upon year type. Reduced discharge would have the potential to incrementally reduce flows during flood events; however, any beneficial effects would be very minor because the facilities discharge very close to San Pablo Bay and downstream of areas that generally experience flooding.

TABLE 3.2-3
COMPARISON OF NO PROJECT (2002, 2020) AND NO ACTION ALTERNATIVE – PROJECTED MONTHLY DISCHARGE (2020) (AFY)

	Napa SD	SVCSD	Novato SD	LGVSD	Total	Salt Ponds
No Project (2002)	5,515	2,805	5,267	1,906	15,492	0
No Project (2020) Discharge	7,402	4,334	8,406	2,768	22,911	0
2020 Discharge Increase	1,887	1,529	3,139	862	7,499	0
No Action (2020) Discharge	6,338	2,882	6,574	2,257	18,051	3,460
No Action (2020) Reduction	**(1,064)**	**(1,452)**	**(1,832)**	**(511)**	**(4,860)**	**+3,460**

SOURCE: CDM, 2009

LGVSD/NMWD

The No Action Alternative would not include any new recycled water facilities by LGVSD; however, future conditions would include development within the LGVSD service area consistent with approved General Plans, with corresponding increases in treated effluent discharge. Discharge to Miller Creek, and eventually San Pablo Bay, under future 2020 discharge conditions would increase by an estimated 862 acre-feet per year (AFY). Under the No Action Alternative, which considers implementation of a subset of recycled water projects, 2020 discharge conditions would increase by an estimated 511 AFY. This represents the future baseline discharge conditions, and no impacts would occur as a result from the NBWRP.

Novato SD/NMWD

Under the No Action Alternative, Novato SD would deliver 193 AFY of tertiary treated recycled water to the Novato North Service Area. Future conditions would include development within the Novato SD service area consistent with approved General Plans, with corresponding increases in treated effluent discharge. Discharge under future 2020 discharge conditions would increase by an estimated 3,139 AFY. Under the No Action Alternative, which considers implementation of a subset of recycled water projects, 2020 discharge conditions would increase by an estimated

1,832 AFY. This represents the future baseline discharge conditions, and no impacts would occur as a result from the NBWRP.

SVCSD

Under the No Action Alternative, SVCSD would deliver 874 AFY of tertiary treated recycled water to the Sonoma Valley Recycled Water Project. Future conditions would include development within the SVCSD service area consistent with approved General Plans, with corresponding increases in treated effluent discharge. Discharge under future 2020 discharge conditions would increase by an estimated 1,529 AFY. Under the No Action Alternative, which considers implementation of a subset of recycled water projects, 2020 discharge conditions would increase by an estimated 1,452 AFY. This represents the future baseline discharge conditions, and no impacts would occur as a result from the NBWRP.

Napa SD

The No Action Alternative, would not include any new recycled water deliveries by Napa. Future conditions would include development within the Napa service area consistent with approved General Plans, with corresponding increases in treated effluent discharge. Discharge under future 2020 discharge conditions would increase by an estimated 1,887 AFY. Under the No Action Alternative, which considers implementation of a subset of recycled water projects, 2020 discharge conditions would increase by an estimated 1,062 AFY. This represents the future baseline discharge conditions, and no impacts would occur as a result from the NBWRP.

Phase 1 (Project level)

Compared to existing conditions (CEQA Baseline), Phase 1 projects would include 46 miles of new pipeline, 1,655 HP of pumping capacity, treatment facilities providing 4.3 mgd of tertiary capacity, and 65 AF of storage to provide 3,755 AFY of recycled water. This would result in a corresponding reduction in discharge. Analysis of Phase 1 recycled water use and corresponding changes in estimated discharge assumed 2020 inflow and discharge conditions for the WWTP, which include increased inflow over time. Implementation of Phase 1 projects would have an estimated 2020 discharge reduction of 6,121 AFY for all the WWTPs combined.

Compared to the No Action Alternative (NEPA Baseline), Phase 1 projects would provide 2,688 AFY of recycled water, 28.9 miles of new pipeline, 961 HP of pumping capacity, treatment facilities providing 3.8 mgd of tertiary capacity, and 0 AF of additional storage. When implemented, Phase 1 would result in an estimated total discharge reduction of 1,073 AFY for all the WWTPs combined, compared to the No Action Alternative. (see **Table 3.2-4**).

The reduction in discharge, and any resulting benefit to flooding, associated with the proposed facilities under Phase 1 would be equivalent to and greater than the impacts discussed for the No Action Alternative, in proportion to the facilities constructed under this alternative. A discussion of impacts by Member Agency is provided below.

TABLE 3.2-4
PHASE 1 DISCHARGE COMPARED TO
CEQA NO PROJECT AND NEPA NO ACTION BASELINE

	Napa SD	SVCSD	Novato SD	LGVSD	Total	Salt Ponds
No Project (2002)	5,515	2,805	5,267	1,906	15,492	0
No Project (2020) Discharge	7,402	4,334	8,406	2,768	22,911	0
Phase 1 Discharge	5,265	2,882	6,423	2,220	16,790	3,460
Phase 1 Discharge vs 2002 Discharge	**-250**	**+77**	**+1,156**	**+314**	**+1,298**	**+3,460**
Phase 1 Discharge vs 2020 Discharge	**-2,137**	**-1,452**	**-1,983**	**-548**	**-6,121**	**+3,460**
No Action Discharge (2020)	6,338	2,882	6,574	2,257	18,051	3,257
Phase 1 Discharge	5,265	2,882	6,423	2,220	16,790	3,460
Phase 1 Discharge NEPA Increment	**-1,073**	**+0**	**-151**	**-38**	**-1,261**	**+203**

SOURCE: CDM, 2009

LGVSD/NMWD

Compared to existing conditions (CEQA baseline), Phase 1 would provide 202 AFY of recycled water, with a corresponding decrease in discharge. Analysis of Phase 1 recycled water use and corresponding changes in discharge assumed 2020 inflow and discharge conditions for the WWTP, which would increase over time. When incorporated into projected 2020 flow conditions, Phase 1 this would reduce 2020 discharge by an estimated 548 AFY.

Compared to the No Action Alternative (NEPA baseline), Phase I would result in the same reduction in discharge; however, when compared to the No Action Alternative, estimated net discharge reduction would be 38 AFY. LGVSD discharges into the tidal portion of Miller Creek, near San Pablo Bay. Changing the discharge at this downstream location is unlikely to have an effect on flooding, which typically occurs upstream on the river. Therefore, the change in discharge from LGVSD WWTP in Phase 1 would have a less-than-significant impact on flooding under both CEQA and NEPA baselines.

Novato SD/NMWD

Compared to existing conditions (CEQA baseline), Phase 1 would provide 542 AFY of recycled water. Analysis of Phase 1 recycled water use and corresponding changes in discharge assumed 2020 inflow and discharge conditions for the WWTP, which would increase over time. When incorporated into projected 2020 flow conditions, Phase 1 this would reduce 2020 discharge by an estimated 1,983 AFY.

Compared to the No Action Alternative (NEPA baseline), Phase 1 would reduce discharge by 151 AFY. Novato WWTP discharges into the San Pablo Bay mudflats. This change in discharge

is not likely to affect flooding on Novato Creek which typically occurs upstream. Therefore, the change in discharge from Novato WWTP in Phase 1 would have a less-than-significant impact on flooding under both CEQA and NEPA baselines.

SVCSD

Compared to existing conditions (CEQA baseline), Phase 1 would provide 874 AFY of recycled water. Additionally, SVCSD would provide flows to the Napa Salt Ponds, of up to 3,460 AFY (depending upon year type). Analysis of Phase 1 recycled water use and corresponding changes in discharge assumed 2020 inflow and discharge conditions for the WWTP, which would increase over time. When incorporated into projected 2020 flow conditions, Phase 1 this would reduce 2020 discharge by an estimated 1,452 AFY.

Compared to the No Action Alternative (NEPA baseline), Phase 1 would not reduce SVCSD discharge, as these projects would likely be implemented by SVCSD under the No Action Alternative.

SVCSD discharges into Schell Slough and Hudeman Slough, which are close to San Pablo Bay and downstream of the City of Sonoma and other areas prone to flooding. This decrease in discharge would have no effect on flooding on Sonoma Creek. Therefore, the change in discharge from SVCSD in Phase 1 would have a less-than-significant impact on flooding under both CEQA and NEPA baselines.

Napa SD

Compared to existing conditions (CEQA baseline), Phase 1 would provide 2,137 AFY of recycled water, with a corresponding reduction in discharge. Analysis of Phase 1 recycled water use and corresponding changes in discharge assumed 2020 inflow and discharge conditions for the WWTP, which would increase over time. When incorporated into projected 2020 flow conditions, Phase 1 this would reduce 2020 discharge by and estimated 2,137 AFY. Compared to the No Action Alternative (NEPA baseline), Phase 1 would reduce Napa SD discharge by an estimated 1,073 AFY.

Napa SD discharges into the Napa River close to San Pablo Bay and downstream of the City of Napa and other areas prone to flooding. This decrease in discharge would have no effect on flooding in the Napa River watershed.

Recycled water from Napa SD would be used in the MST area for agricultural and landscape irrigation. These uses are currently supplied from groundwater; therefore, to the extent that recycled water would eventually replenish some of the groundwater system, recycled water would not change surface water patterns. Recycled water would not substantially change surface water flows in the watershed. Phase 1 use of recycled water would have no effect on flooding in the Napa River watershed.

Alternative 1: Basic System (Program level)

Compared to existing conditions (CEQA Baseline), the Basic System projects would provide 83 miles of new pipeline, 2,158 HP of pumping capacity, treatment facilities providing 7.8 mgd of tertiary capacity, and 1,020 AF of storage. **Table 3.2-5** provides a summary of discharge change by WWTP. The Basic System would result in a total discharge reduction of 1,806 AFY compared to the CEQA Baseline. Compared to 2020 discharge conditions, the Basic System would result in an estimated total discharge reduction of 9,305 AFY from all of the WWTPs combined.

TABLE 3.2-5
BASIC SYSTEM DISCHARGE (2020) COMPARED TO CEQA NO PROJECT AND NEPA NO ACTION BASELINE

	Napa SD	SVCSD	Novato SD	LGVSD	Total	Salt Ponds
No Project (2002 Data)	5,515	2,805	5,267	1,906	15,492	0
No Project (2020) Discharge	7,402	4,334	8,406	2,768	22,911	0
Basic System Discharge	3,847	1,196	6,423	2,220	13,686	5,825
Basic System Discharge vs. 2002 Discharge	**-1,668**	**-1,609**	**+1,156**	**+314**	**-1,806**	**+5,825**
Basic System Discharge vs 2020 Discharge	**-3,555**	**-3,138**	**-1,983**	**-546**	**-9,305**	**+5,825**
No Action Discharge (2020)	6,338	2,693	6,574	2,257	17,863	3,257
Basic System Discharge	3,847	1,196	6,423	2,220	13,686	5,825
Basic System Discharge NEPA Increment	**-2,491**	**-1,497**	**-151**	**-38**	**-4,177**	**+2,568**

SOURCE: CDM, 2009

Compared to the No Action Alternative (NEPA Baseline), Basic System would provide 65 miles of new pipeline, 1,246 HP of pumping capacity, treatment facilities providing 7.3 mgd of tertiary capacity, and 955 AF of storage. The Basic System would result in an estimated total discharge reduction of 4,177 AFY from all of the WWTPs combined, compared to the No Action Alternative (NEPA Baseline).

The reduction in discharge under Basic System would be equivalent to and greater than the impacts discussed for Phase 1, in proportion to the facilities constructed under this alternative (see Chart 3.2-2, Basic System). A discussion of impacts by Member Agency is provided below.

The impacts associated with the Basic System would be equivalent to the impacts discussed for Phase 1 above for the Miller Creek/Gallinas Creek watershed, Novato Creek, and Sonoma Creek because increased recycled water use would not change the impacts to flooding. The Basic System also includes recycled water use in the Carneros area of the Napa River watershed. The

sections below describe the impacts from the Basic System that are in addition to those described above for Phase 1.

Napa SD

The Basic System would include recycled water use in the Carneros East service area and the provision of recycled water to Napa Salt Marsh. Compared to existing conditions (CEQA baseline), the Basic Alternative would reduce Napa SD discharge by an estimated 3,555 AFY compared to 2020 discharge conditions. Compared to the No Action Alternative (NEPA baseline), the Basic Alternative would reduce Napa SD discharge by an estimated 2,491 AFY.

Because Napa SD discharges close to San Pablo Bay and downstream of flood-prone areas, this decrease in discharge is not likely to benefit flooding on the Napa River. Therefore, the change in discharge from Napa SD in Phase 1 would have a less-than-significant impact on flooding under both CEQA and NEPA baselines.

As discussed above, the release of recycled water in the Napa Salt Marsh would not offset other supplies and therefore would not affect surface water flows. In the Carneros East service area, recycled water would replace existing uses of groundwater and surface water (Napa SD, 1995). These uses are primarily supplied from groundwater, imported surface water and some local surface water diversion. Use of recycled water use to offset surface water uses would provide some benefit to both local and imported surface water resources**.** Use of recycled water would allow some surface water to stay in creeks during the irrigation season of April through September, and could increase base flow. However, because of the summer timing of this offset, base flows are not anticipated to affect stream conditions relative to flood stage.

Alternative 2: Partially Connected System (Program level)

Compared to existing conditions (CEQA Baseline), the Partially Connected System would provide 139 miles of new pipeline, 3,454 HP of pumping capacity, treatment facilities providing 15.9 mgd of tertiary capacity, and 2,220 AF of storage. Provision of this amount of recycled water would result in a total discharge reduction of 4,803 AFY from existing conditions for all of the WWTPs (**see Table 3.2-6**). Compared to 2020 discharge conditions, the Partially Connected System would result in an estimated total 2020 discharge reduction of 12,222 AFY from all of the WWTPs combined.

Compared to the No Action Alternative (NEPA Baseline), Partially Connected System would provide 122 miles of new pipeline, 2,542 HP of pumping capacity, treatment facilities providing 15.4 mgd of tertiary capacity, and 2,155 AF of storage. The Partially Connected System would result in an estimated total 2020 discharge reduction of 7,174 AFY from all of the WWTPs combined, compared to the No Action Alternative (NEPA Baseline).

The Partially Connected System would include recycled water use in the Sears Point area. Compared to the Basic System, the Partially Connected System would increase the amounts of recycled water used, but the increase would not change the mechanisms of how the recycled water could affect flooding. The increase in recycled water would not increase the likelihood of

TABLE 3.2-6
PARTIALLY CONNECTED SYSTEM DISCHARGE (2020) COMPARED TO CEQA NO PROJECT AND NEPA NO ACTION BASELINE

	Napa SD	SVCSD	Novato SD	LGVSD	Total	Salt Ponds
No Project (2002 Data)	5,515	2,805	5,267	1,906	15,492	0
No Project (2020) Discharge	7,402	4,334	8,406	2,768	22,911	0
Partially Connected Discharge	2,657	0	5,851	2,181	10,689	2,933
Partially Connected Discharge vs 2002 Discharge	**-2,875**	**-2,805**	**+584**	**+275**	**-4,821**	**+2,933**
Basic System Discharge vs 2020 Discharge	**-4,745**	**-4,334**	**-2,555**	**-587**	**-12,222**	**+2,993**
No Action Discharge (2020)	6,338	2,693	6,574	2,257	17,863	3,257
Partially Connected Discharge	2,657	0	5,581	2,181	10,689	2,933
Partially Connected Discharge NEPA Increment	**-3,681**	**-2,693**	**-723**	**-76**	**-7,174**	**-324**

SOURCE: CDM, 2009

flooding impacts; therefore, the impact discussion for the Basic System in these areas is also applicable for the Partially Connected System. The new reuse area in the Petaluma River watershed is discussed below.

Novato SD/NMWD

Recycled water from Novato SD would be used within the Sears Point area of the Petaluma River watershed for agricultural irrigation. Most agricultural uses are supplied from groundwater (DWR, 1999); therefore, replacing groundwater with recycled water would not change surface water patterns. The Partially Connected System would have no effect on flooding in the Petaluma River watershed.

Alternative 3: Fully Connected System (Program level)

Compared to existing conditions (CEQA Baseline), the Fully Connected System would provide 153 miles of new pipeline, 5,021 HP of pumping capacity, treatment facilities providing 20.8 mgd of tertiary capacity, and 2,220 AF of storage. Provision of this amount of recycled water would result in a total discharge reduction of 5,949 AFY from existing conditions for all of the WWTPs (see **Table 3.2-7**). Compared to 2020 discharge conditions, the Fully Connected System would result in an estimated total 2020 discharge reduction of 13,368 AFY from all of the WWTPs combined.

Compared to the No Action Alternative (NEPA Baseline), the Fully Connected System would provide 135 miles of new pipeline, 3, 907 HP of pumping capacity, treatment facilities providing 20.3 mgd of tertiary capacity, and 2,155 AF of storage. Provision of this amount of recycled water would result in an estimated total discharge reduction of 8,320 AFY from all of the WWTPs combined (see Table 3.2-7).

TABLE 3.2-7
FULLY CONNECTED SYSTEM DISCHARGE (2020) COMPARED TO CEQA NO PROJECT AND NEPA NO ACTION BASELINE

	Napa SD	SVCSD	Novato SD	LGVSD	Total	Salt Ponds
No Project (2002 Data)	5,515	2,805	5,267	1,906	15,492	0
No Project (2020) Discharge	7,402	4,334	8,406	2,768	22,911	0
Fully Connected Discharge	2,657	0	4,706	2,181	9,543	3,085
Fully Connected Discharge CEQA Increment	**-2,858**	**-2,805**	**-561**	**+275**	**-5,949**	**+3,085**
Fully Connected Discharge vs 2020 Discharge	**-4,745**	**-4,334**	**-3,700**	**-587**	**-13,368**	**+3,085**
No Action Discharge (2020)	6,338	2,693	6,574	2,257	17,863	3,257
Fully Connected Discharge	2,657	0	4,706	2,181	9,543	3,085
Fully Connected Discharge NEPA Increment	**-3,681**	**-2,693**	**-1,868**	**-76**	**-8,320**	**-172**

SOURCE: CDM, 2009

The Fully Connected System, would introduce additional reuse in the Sonoma Creek watershed in addition to the areas included in the Partially Connected System. Compared to the reuse areas in the Partially Connected System, the Fully Connected System would increase the amounts of recycled water used, but the increase would not change the mechanisms of how the recycled water could affect flooding. The increase in recycled water would not increase the likelihood of flooding impacts; therefore, the impact discussion for the Partially Connected System in these areas is also applicable for the Fully Connected System. The new reuse area in the Sonoma Creek River watershed is discussed below.

SVCSD

Recycled water from SVCSD would be used within the Central Sonoma Valley area of the Sonoma Creek watershed for agricultural irrigation. Most agricultural uses are supplied from groundwater (DWR, 1999); therefore, replacing groundwater with recycled water would not change surface water patterns. The Fully Connected System would have no effect on flooding in the Sonoma Creek watershed.

Mitigation Measure

No Mitigation Measures are required.

Impact Significance after Mitigation: Less than Significant.

Impact 3.2.3: Increased storm runoff. New impervious surfaces for the NBWRP would result in an increase in storm runoff. (Less than Significant)

The project components would include treatment upgrades, pipelines, pump stations, and storage facilities. Treatment upgrades would involve installing new filters and process units at the existing WWTP facilities, therefore no new impervious surfaces would be added. Pipelines would be installed under ground, therefore following construction the areas would be restored to pre-existing conditions and there would be new impervious surfaces. Storage facilities would consist of open reservoirs, typically at existing disturbed sites, therefore no impact is expected. Therefore, impacts from treatment upgrades, pipelines, and storage facilities are not discussed further.

Impervious surfaces would be added as part of the proposed pump stations. Some pump stations would be constructed on existing WWTP sites, therefore the increase in impervious surfaces would be minor, if any, thus the runoff would be significant.

The sections below describe impacts that would occur from construction of new booster pump stations that could add impervious surfaces, which would increase the associated storm runoff.

No Project Alternative

The NBWRP would not be implemented under the No Project Alternative, therefore no impact is expected. For a discussion of the No Project under future conditions, see No Action alternative below.

No Action Alternative

Under the No Action Alternative, which includes consideration of future conditions, it is likely that a subset of water recycling projects would be implemented by the Member Agencies on an individual basis, without the benefit of regional coordination or federal funding.

For comparison to the Action Alternatives, it is estimated that the No Action Alternative would result in 1,067 AFY of water reuse, with a corresponding reduction in the amount of treated effluent discharged at each Member Agency WWTP (see Chart 3.2-2, No Action). Additionally, it is estimated that proposed facilities would result in an increase in impervious surface area, which is discussed in Impact 3.2.1. A discussion of individual Member Agencies is provided below.

LGVSD/NMWD

There would be no project facilities constructed under the No Action Alternative, therefore no impact would occur.

Novato SD/NMWD

The No Action Alternative would include a new 1,000-square foot booster pump station. Given that the pump station would be located within the change in the impervious surface would not be significant. However, Implementation of **Mitigation Measure 3.2.2** would ensure a less than significant impact.

SVCSD

Impacts would be associated with the approximately 1,000-square foot pump station in the SVRWP area. Refer to the discussion under Novato SD. Implementation of **Mitigation Measure 3.2.2** in the SVCSD service area would ensure a less-than-significant impact.

Napa SD

There would be no project facilities constructed under the No Action Alternative, therefore no impact would occur.

Phase 1 (Project level)

Compared to the CEQA Baseline, Phase 1 projects would provide 46 miles of new pipeline, 1,655 HP of pumping capacity, treatment facilities providing 4.3 mgd of tertiary capacity, and 65 AF of storage. Compared to the No Action Alternative (NEPA Baseline), Phase 1 projects would provide 28 miles of new pipeline, 743 HP of pumping capacity, treatment facilities providing 3.8 mgd of tertiary capacity, and no additional storage.

The runoff from the proposed facilities under Phase 1 would be equivalent to and greater than the impacts discussed for the No Action Alternative, in proportion to the facilities constructed under this alternative (Chart 3.2-1, Phase 1). A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

The impacts that would occur under Phase 1 would be equivalent to those discussed under the No Action Alternative and would include additional impacts associated with additional pump station. Please refer to discussion above.

Novato SD/NMWD

Refer to the impact discussion under Novato SD for No Action Alternative.

SVCSD

The booster pump stations for both the SVRWP and the Napa Salt Marsh Pipeline would be primarily constructed at the SVCSD WWTP, therefore as discussed above, the impact would be less than significant. Impacts related to the Napa Salt Marsh Restoration Project would be equivalent to those under the No Action Alternative.

Napa SD

Impacts associated with the MST area would include increased runoff from four booster pump stations located on Imola Avenue, Wild Horse Valley Road, East 3rd Avenue, and 3rd Avenue. Each pump station would have a footprint of approximately 1,000 square feet that would increase the storm runoff from the sites. Implementation of **Mitigation Measure 3.2.2** at the four pump stations in the MST area would ensure a less-than-significant impact.

Alternative 1: Basic System (Program level)

Compared to the CEQA Baseline, the Basic System projects would provide 83 miles of new pipeline, 2,158 HP of pumping capacity, treatment facilities providing 7.8 mgd of tertiary capacity, and 1,020 AF of storage. Compared to the No Action Alternative (NEPA Baseline), Basic System would provide 65 miles of new pipeline, 1,246 HP of pumping capacity, treatment facilities providing 7.3 mgd of tertiary capacity, and 955 AF of storage.

The runoff from proposed facilities under the Basic System would be equivalent to and greater than the impacts discussed for Phase 1, in proportion to the facilities constructed under this alternative (Chart 3.2-2, Basic System). A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

The impacts that would occur under Phase 1 would be equivalent to those discussed under the No Action Alternative and would include impacts associated with additional pump station. Please refer to discussion above.

Novato SD/NMWD

Refer to the impact discussion under Novato SD for No Action Alternative.

SVCSD

The Basic System would include additional pumping capacity as a part of the SVRWP. The exact site for this pumping has not yet been identified; however, preference would be given to disturbed sites to minimize impacts. The impacts would be less than significant with implementation of **Mitigation Measure 3.2.2** discussed above. Impacts related to the Napa Salt Marsh Restoration Project would be equivalent to those under the No Action Alternative, as pump stations for this pipeline would be located at the SVCSD WWTP.

Napa SD

The impacts that would occur under the Basic System would be equivalent to those discussed under the Phase 1 and would include impacts associated with additional pump stations. Please refer to discussion above.

Alternative 2: Partially Connected System (Program level)

Compared to the CEQA Baseline, the Partially Connected System would provide 139 miles of new pipeline, 3,454 HP of pumping capacity, treatment facilities providing 15.9 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Partially Connected System would provide 122 miles of new pipeline, 2, 542 HP of pumping capacity, treatment facilities providing 15.4 mgd of tertiary capacity, and 2,155 AF of storage.

The runoff from the proposed facilities under the Partially Connected System would be equivalent to and greater than the impacts discussed for the Basic System, in proportion to the

facilities constructed under this alternative (see Chart 3.2-2, Partially Connected). A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

Please refer to discussion above. The additional pump station would be installed at the WWTP, therefore there would be no additional impacts.

Novato SD/NMWD

Please refer to discussion above. The additional pump station would be installed at the WWTP, therefore there would be no additional impacts.

SVCSD

The Partially Connected System would include additional pumping capacity in the existing SVCSD reuse area, the SVRWP area, and Southern Sonoma Valley service area. The exact locations for the pump stations have not yet been identified, but preference would be given to already disturbed areas. The impacts would be less than significant with implementation of **Mitigation Measure 3.2.2** discussed above. Impacts related to the Napa Salt Marsh Restoration Project would be equivalent to those under the No Action Alternative.

Napa SD

The Partially Connected System would include additional pumping capacity in the Carneros East and MST service areas. The exact locations for the pump stations have not yet been identified, but preference would be given to already disturbed areas to minimize associated changes to drainage patterns. The impacts would be less than significant with implementation of **Mitigation Measure 3.2.2** discussed above.

Alternative 3: Fully Connected System (Program level)

Compared to the CEQA Baseline, the Fully Connected System would provide 153 miles of new pipeline, 5,021 HP of pumping capacity, treatment facilities providing 20.8 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Fully Connected System would provide 135 miles of new pipeline, 3, 907 HP of pumping capacity, treatment facilities providing 20.3 mgd of tertiary capacity, and 2,155 AF of storage.

The runoff impacts under the Fully Connected System would be equivalent to and greater than the impacts discussed for the Partially Connected System, in proportion to the facilities constructed under this alternative (see Chart 3.2-2, Fully Connected). A discussion of impacts by Member Agency is provided below.

The impacts associated with the Fully Connected System would be equivalent to the impacts discussed for Partially Connected System above in addition to the following impacts.

LGVSD/NMWD

Please refer to the discussion above. The additional pump station would be installed at the WWTP, therefore there would be no additional impacts.

Novato SD/NMWD

The Fully Connected System would include increased pumping capacity at Novato SD and LGVSD WWTPs. As in Phase 1, the pump stations would be on the WWTP site where most surfaces are already impervious. The impacts would be less than significant with implementation of **Mitigation Measure 3.2.2** discussed above.

SVCSD

The Fully Connected System would include additional pump stations at the SVCSD WWTP and in the Central Sonoma Valley, SVRWP area, and the existing SVCSD reuse area. The pump station at the WWTP would be on a site where most surfaces area already impervious. The exact locations for the remaining pump stations have not yet been identified, but preference would be given to already disturbed areas to minimize associated changes to drainage patterns. The impacts would be less than significant with implementation of **Mitigation Measure 3.2.2** discussed above. Impacts related to the Napa Salt Marsh Restoration Project would be equivalent to those under the No Action Alternative.

Napa SD

Please refer to the discussion above. The additional impacts would occur from the proposed pump stations in the MST area.

Mitigation Measure

Mitigation Measure 3.2.3: The Member Agencies will implement the following measures:

- Comply with the local storm drainage requirements;
- Incorporate site design features to control any site runoff onsite; and
- Install storm runoff, collection, and treatment system, as applicable, to control the runoff flow offsite.

Impact 3.2.4: Flooding - Sea level rise. Sea-level rise could affect operation of project facilities. (Less than Significant)

In recent years, the scientific community has generally reached consensus that climate change and sea level rise are likely to occur. California's position on climate change was formalized in Assembly Bill (AB 32), the California Global Warming Solutions Act of 2006, which states that: Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California.

While scientists agree that sea level rise is likely to occur in the future, the rate of sea level rise is uncertain. The CALFED Independent Science Panel used empirical models based on historic sea level rise to estimate a sea level rise ranging from 20 to 55 inches by 2100 (CALFED Independent Science Board, 2007). A sea level rise of this magnitude would impact areas that are involved in the NBWRP if no actions are taken to create flood protection structures (such as levees). The San Francisco Bay Conservation and Development Commission (BCDC) is in the process of developing a strategy to address sea level rise in the future (San Francisco BCDC, 2008). This strategy will identify urban areas that should be protected, other areas that would flood, and how to replace some of the tidal marsh that would be impacted. This strategy is not yet developed, therefore it is speculative at this point to describe which areas may be impacted.

The Department of Geosciences at the University of Arizona created the Environmental Studies Laboratory (DGESL) in 1999 to facilitate development of technology and research of past, present and future environmental variability. In response to concerns about climate change and sea level rise, the Department of Geosciences conducted research on factors that determine the degree to which a coastal area is susceptible to sea level rise. This discussion of flooding impacts as a result of sea level rise is based on review of the Department of Geosciences Environmental Studies Laboratory Climate Change map relative to the proposed NBWRP facilities. This analysis assumes a one meter rise in sea level as the worst-case-scenario, and identifies potential impacts to the NBWRP facilities.

Some portions of the action area could be impacted in the future, which would reduce the demand for the recycled water produced by the NBWRP. The timing and quantity of the changes in demand are uncertain.

Areas in Marin, Sonoma, and Napa Counties that would be susceptible to impact based on elevation and proximity to San Pablo Bay include:

- the eastern portion of Marin County, north of the community of Santa Venetia, south of State Route 37, east of U.S. 101 and the Railroad;
- areas along the Petaluma River, north of the City of Novato;
- areas along the southern portion of Sonoma Creek in Sonoma County; and
- the majority of Napa County, predominantly south of the Northwestern Pacific Railroad, west of the airport, and along the Napa River corridor.

This information is presented here in the interest of public disclosure, as it would be highly speculative to impose mitigation on the NBWRP for an event that is uncertain both in time and extent, and for which the NBWRP itself would not cause or measurably contribute. Water and wastewater agencies in coastal areas of California, including the Member Agencies will need to review potential future impacts to their facilities and protect them accordingly. Discussion of the analysis and impact from sea level rise is provided by Member Agency below. Facilities located outside of the potential impacted areas are not analyzed further, but a discussion of potentially impacted facilities is included.

No Project Alternative

The NBWRP would not be implemented under the No Project Alternative, therefore no impact is expected. For a discussion of the No Project under future conditions, see No Action alternative below.

No Action Alternative

Under the No Action Alternative, which includes consideration of future conditions, it is likely that a subset of water recycling projects would be implemented by the Member Agencies on an individual basis, without the benefit of regional coordination or federal funding.

For comparison to the Action Alternatives, it is estimated that approximately 18 miles of new pipeline, 912 HP of pumping capacity, treatment facilities providing 0.5 mgd of tertiary capacity, and approximately 65 AF of storage would be constructed by Member Agencies on an individual basis (see Chart 3.2-1, No Action).

Under future baseline (2020) conditions, sea level rise could occur. A discussion of individual Member Agencies is provided below.

LGVSD/NMWD

There would be no project facilities constructed under the No Action Alternative, therefore no impact would occur.

Novato SD/NMWD

The No Action Alternative would consist of installation of a pump station and portions of the Novato Urban Recycled Water Pipeline from the Novato SD WWTP north to Olive Avenue, then extend along Olive Avenue to serve areas north of Atherton and along Redwood Boulevard and San Marin Avenue west of U.S. 101. According to the DGESL, these facilities occur south of the projected impacted areas in the Rush Creek Marsh area, therefore would not be affected by a one meter rise in sea level**.** The existing Novato SD Tertiary Treatment Facility is located just north of SR 37, and would be at risk of potential impact as a result of a one meter sea level rise due to the topography, elevation, and proximity to San Pablo Bay.

SVCSD

Under the No Action Alternative, SVCSD would implement Alignment 1A, described in the SVWRP. No impact on NBWRP facilities from sea level rise is anticipated.

If a one meter rise in sea level occurs, the SVCSD Napa Salt Marsh Pipeline that extends from the SVCSD service area to the Napa Salt Ponds 7 and 7a is likely to be affected at the terminal point in the Napa-Sonoma Marshes Wildlife Area.

Napa SD

There would be no project facilities constructed under the No Action Alternative, therefore no impact would occur.

Phase 1

Compared to the CEQA Baseline, Phase 1 projects would provide 46 miles of new pipeline, 1,655 HP of pumping capacity, treatment facilities providing 4.3 mgd of tertiary capacity, and 65 AF of storage. Compared to the No Action Alternative (NEPA Baseline), Phase 1 projects would provide 28 miles of new pipeline, 743 HP of pumping capacity, treatment facilities providing 3.8 mgd of tertiary capacity, and no additional storage.

The sea level rise impacts to proposed facilities under Phase 1 would be equivalent to and greater than the impacts discussed for the No Action Alternative, in proportion to the facilities constructed under this alternative. A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

The existing storage tank near Palm Drive, the proposed pump station at the LGVSD WWTP, and all three options for the Novato Urban Recycled Water Pipeline extending from the LGVSD WWTP north to the South Novato service area near Hamilton Air Field would be at risk of potential impact as a result of a one meter sea level rise due to the topography, elevation, and proximity to San Pablo Bay.

Novato SD/NMWD

Review of the DGESL and the proposed Novato SD facilities shows that the proposed pipelines and pump stations in the vicinity of the Novato SD Davidson WWTP are proximate to, but not within the projected area that would be affected by a one meter increase in sea level.

SVCSD

Review of the DGESL Map shows there is minimal impact from a one meter rise in sea level to areas in Sonoma County. In the small area that would be affected, the impacts are concentrated along the banks of the Sonoma Creek. No impact to proposed facilities in the SVCSD is anticipated. Under Phase 1, impacts related to the Napa Salt Marsh Restoration Project would be equivalent to those under the No Action Alternative.

Napa SD

Projects under Phase 1 are located north of the inundated areas illustrated on the DGESL map; therefore they would not be affected by a one-meter rise in sea level.

Alternative 1: Basic System

Compared to the CEQA Baseline, the Basic System projects would provide 83 miles of new pipeline, 2,158 HP of pumping capacity, treatment facilities providing 7.8 mgd of tertiary capacity, and 1,020 AF of storage. Compared to the No Action Alternative (NEPA Baseline), Basic System would provide 65 miles of new pipeline, 1,246 HP of pumping capacity, treatment facilities providing 7.3 mgd of tertiary capacity, and 955 AF of storage.

The sea level rise impacts to proposed facilities under the Basic System would be equivalent to and greater than the impacts discussed for Phase 1, in proportion to the facilities constructed under this alternative. A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

There are no additional facilities to those discussed under Phase 1 proposed under the Basic System; therefore there are no additional impacts from sea level rise.

Novato SD/NMWD

Areas east of U.S. 101 and south of Highway 37 are potentially vulnerable to a one meter sea level rise; therefore, the portion of the Novato Urban Water Pipeline extending service to Sear's Point would be affected by a one meter rise in sea level.

SVCSD

There are no additional facilities proposed under the Basic System that would be affected by a one meter rise in sea level.

Napa SD

The DGESL data illustrates potential areas of inundation along the Napa River based on topography and elevation. The proposed pump station at the Napa SD WWTP and the north eastern portion of the Napa Salt Marsh Restoration Pipeline that extends through the Carneros East area from the WWTP southwest to Cuttings Wharf is vulnerable to impact as a result of a one meter rise in sea level based on topography, elevation, and proximity to the Napa River.

Alternative 2: Partially Connected System

Compared to the CEQA Baseline, the Partially Connected System would provide 139 miles of new pipeline, 3,454 HP of pumping capacity, treatment facilities providing 15.9 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Partially Connected System would provide 122 miles of new pipeline, 2, 542 HP of pumping capacity, treatment facilities providing 15.4 mgd of tertiary capacity, and 2,155 AF of storage.

The sea level rise impacts to proposed facilities under the Partially Connected System would be equivalent to and greater than the impacts discussed for the Basic System, in proportion to the facilities constructed under this alternative. A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD

The conveyance pipeline to Peacock Gap will not be affected by projected one meter sea-level rise.

Novato SD/NMWD

Portions of the proposed Novato Urban Recycled Water Pipeline extending north from the LGVSD WWTP north and east of Hamilton Air Field and through the Bel Marin Keys area in the Southern Novato service area, south of State Route 37, east of U.S. 101 will be affected by a one meter rise in sea level based on topography, elevation, and proximity to San Pablo Bay and adjacent wetland areas.

SVCSD

No additional impact from sea level rise on proposed facilities in the SVCSD service area is anticipated.

Napa SD

A portion of the Carneros East pipeline that extends east from the Napa SD WWTP may be affected by a one meter rise in sea level, based on topography, elevation, and proximity to the Napa River.

Alternative 3: Fully Connected System

Compared to the CEQA Baseline, the Fully Connected System would provide 153 miles of new pipeline, 5,021 HP of pumping capacity, treatment facilities providing 20.8 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Fully Connected System would provide 135 miles of new pipeline, 3, 907 HP of pumping capacity, treatment facilities providing 20.3 mgd of tertiary capacity, and 2,155 AF of storage.

The impacts of sea level rise under the Fully Connected System would be equivalent to and greater than the impacts discussed for the Partially Connected System, in proportion to the facilities constructed under this alternative. A discussion of impacts by Member Agency is provided below.

LGVSD/NMWD, Novato SD/NMWD, Napa SD

No additional construction is proposed in these service areas. No additional impact from a one meter rise in sea level is expected.

SVCSD

SVCSD would extend service north of the Sonoma Valley Recycled Water Service Area to the Central Sonoma Service Area and south to the Sear's Point area. According to DGESL data, these facilities will not be affected.

Mitigation Measure

> **Mitigation Measure 3.2.4:** Design of proposed facilities shall consider sea level rise potential, and shall include appropriate measures in facility siting and design to address potential impacts related to sea level rise, similar to those applied to facility installation within 100-year flood plains. Design measures may include, but are not limited to: facility siting, access placement, access vault extension above projected water elevation, water tight vaults, and site protection.

Impact Significance after Mitigation: Less than Significant.

3.2.4 Impact Summary by Service Area

Table 3.2-8 provides a summary of potential project impacts related to surface hydrology. The impacts analysis is separated by watershed, but Table 3.2-8 reclassifies impacts into Member Agency service areas. This organization will assist the agencies in approving the elements of the project within their jurisdiction because they will fully understand the impacts. Additionally, the analyses of the Alternatives specify the incremental impacts above Phase 1 or other alternatives. The tables below include all impacts in the impact finding.

TABLE 3.2-8
POTENTIAL IMPACTS AND SIGNIFICANCE – SURFACE HYDROLOGY

	Impact by Member Agency Service Areas			
Proposed Action	**LGVSD/ NMWD**	**Novato SD/ NMWD**	**SVCSD**	**Napa SD/ Napa County**
Impact 3.2.1: Changes in Drainage Patterns				
No Project Alternative	NI	NI	NI	NI
No Action Alternative	NI	LSM	LSM	NI
Phase 1	LSM	LSM	LSM	LSM
Alternative 1: Basic System	LSM	LSM	LSM	LSM
Alternative 2: Partially Connected System	LSM	LSM	LSM	LSM
Alternative 3: Fully Connected System	LSM	LSM	LSM	LSM
Impact 3.2.2: Flooding				
No Project Alternative	NI	NI	NI	NI
No Action Alternative	NI	LTS	LTS	NI
Phase 1	LTS	LTS	LTS	NI
Alternative 1: Basic System	LTS	LTS	LTS	LTS
Alternative 2: Partially Connected System	LTS	LTS	LTS	LTS
Alternative 3: Fully Connected System	LTS	LTS	LTS	LTS
Impact 3.2.3: Increased Storm Runoff				
No Project Alternative	NI	NI	NI	NI
No Action Alternative	NI	LSM	LSM	NI
Phase 1	LSM	LSM	LSM	LSM
Alternative 1: Basic System	LSM	LSM	LSM	LSM
Alternative 2: Partially Connected System	LSM	LSM	LSM	LSM
Alternative 3: Fully Connected System	LSM	LSM	LSM	LSM
Impact 3.2.4: Flooding - Sea Level Rise				
No Project Alternative	NI	NI	NI	NI
No Action Alternative	NI	LTS	LTS	NI
Phase 1	LSM	LSM	LSM	LTS
Alternative 1: Basic System	LSM	LSM	LSM	LTS
Alternative 2: Partially Connected System	LSM	LSM	LSM	LTS
Alternative 3: Fully Connected System	LSM	LSM	LSM	LTS

NI = No Impact
LTS = Less than Significant impact, no mitigation required
LSM = Less than Significant with Mitigation

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