

4.7 HYDROLOGY AND WATER QUALITY

4.7.1 Issues

The DSP calls for development of vacant land within the planning area. As more development occurs, less pervious land will be available to absorb runoff. This could result in more runoff reaching area stormwater infrastructure and disposal points. Runoff during construction may contain elevated levels of silt, and runoff in the long term may contain elevated levels of urban pollutants.

4.7.2 Setting

Climate

The City has an average annual rainfall of approximately 24 inches, occurring mostly during the months of January, February, and March. Average high temperatures range from 58-83 degrees Fahrenheit (F), and average lows range from 38-52 degrees F.¹

Drainage

The watershed of the City includes the upland reaches that drain through Cotati and discharges into the Laguna de Santa Rosa, a tributary to the Russian River. The watershed comprises 10.42 square miles and is bounded by the Sonoma Mountains to the east, rolling hills to the south and west, and Rohnert Park to the north. Three primary creeks reside within the watershed: Copeland Creek, Cotati Creek, and Washoe Creek. All three sub-watersheds drain to the Laguna de Santa Rosa which then drains to the Russian River. The Laguna de Santa Rosa, west of the City, extends north and west towards Sebastopol, and acts to detain runoff heading towards the Russian River. The Russian River basin consists of 1,485 square miles, drained primarily by the Russian River. Several streams and tributaries traverse the basin including, locally, Washoe Creek and Gosage Creek.

The DSP planning area has no large natural standing bodies of water or any streams with continuous flow, although the northernmost part of the DSP is adjacent to the Laguna de Santa Rosa. Cotati Creek is a rectangular concrete-lined channel from Delano Park to Charles Street, but is a natural creek upstream of Delano Park. Cotati Creek intersects the planning area at Old Redwood Highway between Henry and Page Streets.

Stormwater can be managed several ways including constructed stormwater drainage systems and bioretention.² The majority of the planning area is paved, with few pervious surfaces available for natural filtration of stormwater. Stormwater is managed through a constructed stormwater drainage system. Stormwater in the downtown is conveyed via City-owned infrastructure, ranging in size from 12- to 48-inch piping, into discharge points primarily located on Copeland Creek, Cotati Creek, and Washoe Creek.

Existing Land Use and Coverage

¹ www.weather.com records for Cotati, California, accessed 06-08-06.

² Bioretention is a soil and plant-based stormwater best management practice utilized to filter runoff from developed communities.

Existing land uses in the planning area include a mix of commercially moved properties, vacant land, surface parking areas, streets, and multi-family and single-family housing. Vacant lots have mostly been graded to a varying degree, and are therefore mostly devoid of natural vegetation. Recent aerial photography shows the majority of the planning area is developed with impervious surfaces. The predominance of impervious surfaces prevents water from percolating into the ground, increasing the amount of runoff reaching the storm drainage infrastructure. Undeveloped land has a much higher rate of groundwater recharge. Existing urban development in the planning area is a source of pollution from vehicle oils and other chemicals that can be conveyed by storms and landscape irrigation flows.

Soils

The underlying soil types in Cotati have been classified by the Natural Resources Conservation Service (NRCS). The NRCS conducted a soil survey for Sonoma County. Based on the NRCS survey, there are three distinct types of hydrologic soils in Cotati. In the planning area, the soil type is primarily Soil Type C, which consists predominantly of soils with a high clay content, including clay loams and some shallow sandy loams.

Flood Hazards

Most of the planning area is classified as a protected zone (Zone C), meaning that it is not within the 100-year flood zone as determined by the Federal Emergency Management Agency (FEMA) (see Appendix 4.7-A).³ As shown in Figure 4.7-1, small portions of the 100- and 500-year flood zone extend onto properties at the northwest corner of the intersection of East Cotati Avenue and Arthur Street. Another small area of the 100-year flood zone extends into the back of a property fronting Commerce Avenue north of Wilford Lane where it abuts the Laguna de Santa Rosa. 100-year flood zones within the project area are classified as Zone AE, meaning that base flood elevations are determined specifically for individual sites or areas. A review of the FEMA flood map of the Downtown area⁴ shows that base flood elevations near the planning area range from 104 to 108 feet. Both of the small areas within the 100-year flood zone are confined to a narrow area along the Laguna de Santa Rosa. Cotati Creek is located in the southeast corner of the project area crossing Old Redwood Highway between Henry and Page Streets. Here, the flood zone is contained within the floodway boundary.

In the planning area, flooding is largely localized and a result of blockage or failure of local drain pipes or structures. Maintenance and effective emergency response are the primary means of dealing with localized flooding from areas of high flow or blockage. The City Public Works Department cooperates with the Sonoma County Water Agency (SCWA) to provide this service.⁵ SCWA, in conjunction with the City and the U.S. Army Corps of Engineers, is responsible for addressing major flood-related issues throughout the basin.

The City of Cotati is within Zone 1A of the SCWA Stormwater Management Plan.⁶ Major flooding is not likely within the planning area because improvements to streets and drainage systems are adequate to protect life and property. Currently the

³ Federal Emergency Management Agency. Flood Insurance Rate Map, City of Cotati, California. Map Revised December 5, 1996.

⁴ Ibid.

⁵ Ibid.

⁶ SCWA. Stormwater Management Plan. Pg. 4. October, 2002.

downtown area is served by a storm drainage system consisting of pipes with diameters ranging from 12 to 60 inches which ultimately drain to Copeland, Cotati, and/or Washoe Creeks.

Water Quality

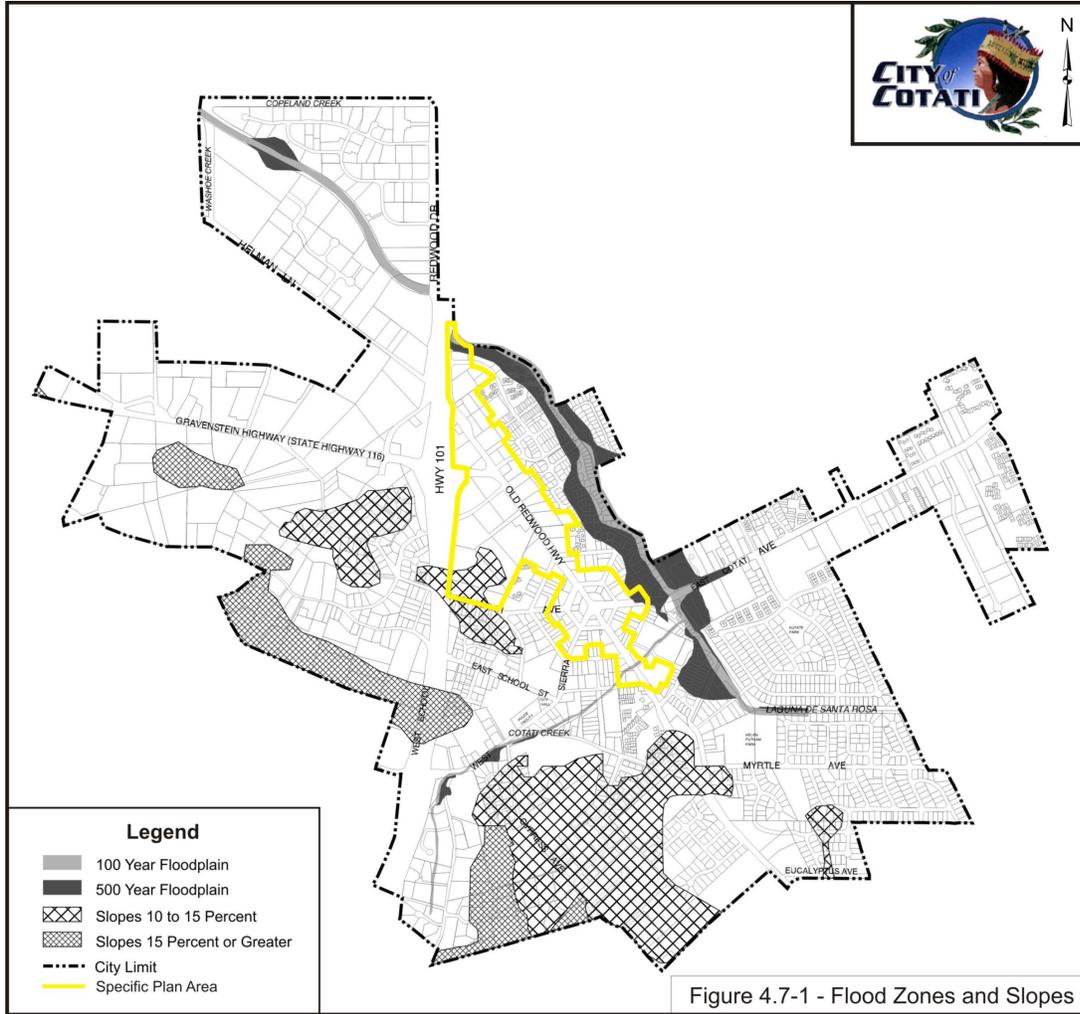
The City derives its water supply from a combination of local groundwater and imported water sources. Local groundwater exhibits very high quality with no contamination detected in City wells. Cotati is in the Santa Rosa Plain groundwater subbasin. The groundwater in the vicinity of Rohnert Park is characterized by sodium and calcium bicarbonate types at depths of over 150 feet.⁷ Overall the groundwater quality within the Santa Rosa Plain subbasin is good.⁸ For a more detailed discussion of water supply, see Section 4.14.

The North Coast Regional Water Quality Control Board (RWQCB) has designated the Laguna de Santa Rosa as an impaired water body primarily due to non-point source pollution by livestock waste, hillside development, and urban runoff.⁹

⁷ California's Groundwater, Bulletin 118. Santa Rosa Valley, Santa Rosa Plain Subbasin. Water Quality, pg. 3. 2/24/04.

⁸ Ibid.

⁹ State Water Resources Control Board. Workshop Session, Division of Water Quality. 8/6/97 and 2002 Clean Water Act 303d listing.



Source: FEMA FIR- Maps, 2005, City of Cotati

4.7.3 Regulatory Setting

Watersheds are protected by a number of federal, state and local laws and regulations, including, but not limited to:

- Federal Clean Water Act (33 U.S.C. § 1251 et seq.)
- State Porter-Cologne Water Quality Control Act (Cal. Water Code § 1300 et seq.)
- Section 1600-1607 of the State Fish and Game Code

These regulations are implemented by a number of federal, state and local agencies, including the SCWA, the U.S. Army Corps of Engineers, the California Department of Fish and Game (CDFG), and the State and Regional Water Quality Control Boards.

Federal Emergency Management Agency (FEMA)

FEMA is responsible for identifying and mapping floodplains, and development in these floodplains is subject to the requirements set forth in the Federal Insurance Program and reflected in local regulations.

Regional Water Quality Control Board National Pollutant Discharge Elimination System (NPDES) Program.

The NPDES Program, Phases I and II, addresses drainage in the context of water quality improvement. Under the program, specified jurisdictions and projects are required to adopt and implement Best Management Practices (BMPs), which may directly or indirectly address drainage concerns.

Each Regional Board is required to establish water quality objectives within the Basin Plan. The objectives define limits of water quality constituents, which are established for the reasonable protection of beneficial uses and the prevention of nuisance.

The protection of water quality in the region falls under the jurisdiction of the North Coast RWQCB. The RWQCB establishes requirements prescribing discharge limits and establishes water quality objectives through the North Coast Basin Plan. The upper and lower Russian River Hydrologic Unit and Laguna de Santa Rosa are included in this plan.

Cotati Stormwater Management Plan (City SWMP)

The federal Storm Water Phase II Final Rule required operators of small stormwater systems, such as Cotati, to obtain a stormwater NPDES permit. The Phase II Rule is the follow-up to the EPA Phase I NPDES Program, promulgated in 1990 as part of the federal Clean Water Act. The City prepared a *Phase II NPDES Storm Water Management Plan* (City SWMP) and in 2005, the North Coast RWQCB approved the City's General stormwater permit.

Sonoma County Stormwater Management Plan (SWMP)

The SCWA is responsible for overseeing an area-wide stormwater program. The Sonoma County Flood Control and Water Conservation Act of 1949 established the SCWA as a Flood Control and Water Conservation District. Eight geographic flood control zones exist under the SWMP. The City of Cotati lies within Zone 1A, which incorporates the Mark West Creek Watershed. The SCWA stormwater program, established by NPDES Permit Number CAU000228,¹⁰ requires post-construction BMPs

¹⁰ US EPA. Facility Detail Report. Accessed 6/26/07.

to be implemented for both private and public development and significant redevelopment projects.

Through its Revocable License Program, the SCWA limits the activities a private developer is allowed to undertake on Water Agency-controlled land. Provisions are in effect to protect the water quality of project areas. If a licensee fails to comply with the provisions required by the SCWA, the license may be revoked.

Water quality provisions include:

- Requiring seeding of bank-disturbing projects.
- Requiring erosion control mats for trenching work disturbing creek or channel banks if the work occurs after September 1st.
- Requiring that the work area be kept clear of trash and debris.
- Prohibiting the storage of material or equipment on SCWA rights-of-way.
- Limiting work to the timeframe between April 15 and October 15, unless CDFG approves work outside this time period.
- Prohibiting the placement of trench spoils on channel slopes.
- Requiring the applicant to re-shale the affected service roads.

The SCWA currently files a Notice of Intent (NOI) and complies with the NPDES General Construction Stormwater Permit when it undertakes a project that will disturb more than five acres of land. BMPs are implemented in flood control construction projects and erosion control inspection.

Cotati General Plan

The City of Cotati General Plan contains several goals and policies that address hydrologic issues. All projects under the proposed DSP are required to be consistent with these goals and policies. Applicable goals and policies include, but are not limited to:

Community Development

1.1.3 Continue efforts to eliminate flooding, by upgrading and expanding the storm drainage system.

Quality of Life

Objective 7.2 Protect the citizens from flooding, seismic activity, and other natural disasters.

7.2.1 New development or governmental action shall not compound the potential for flooding.

a) As part of the permit process, developers shall be required to make hydrological studies for all new developments as required by the City Engineer. Studies shall encompass the project site as well as the entire drainage area.

7.2.3 Adequate drainage and erosion control shall be provided during construction of all new developments.

Community Identity

13.1.4 Cotati's creeks and other biotic resources shall be protected from erosion, pollution and filling.

13.1.5 Culverts and other types of stormwater swales discharging into Cotati's creeks shall be designed to prevent erosion of the natural bed and bank material.

13.1.8 Development involving earth-moving shall not take place where excessive disruption of drainage patterns or excessive runoff will result.

Cotati Land Use Code

Regulations for planning and development near riparian areas exist in the Cotati Land Use Code, Chapter 17.50, Watercourse and Riparian Resource Protection:

17.50.030 Streambed Analysis Required.

Each planning permit application for a project that is subject to this Chapter shall include a site-specific streambed analysis prepared by a hydrologist, civil engineer, or other qualified professional approved by the City to identify the precise boundary/top of bank of the watercourse.

Individual projects under the DSP may require streambed analyses depending on the specific proximity to Cotati Creek.

Section 17.50.040 of the Land Use Code requires setbacks of development from the banks of watercourses. Item A requires that: *Each proposed structure shall be set back from the top of the bank of a watercourse by a minimum distance of 2.5 times the height of the bank or 30 feet, whichever is greater.*

There are several other provisions and requirements in Section 17.50.040 that may be applicable to individual projects under the DSP. As the details to individual projects are proposed, project proponents will be required to provide consistency in their plans with provisions in the Land Use Code.

Cotati Municipal Code

Title 15 Environment; Article V Provisions for Flood Hazard Reduction

Several sections exist under Title 15 which apply to the implementation of the DSP. Regulations include restrictions on construction within a designated special flood hazard area, which applies to small areas in the planning area, as described above. All development under the DSP must comply with regulations under the Municipal Code.

13.30.060 Water Conservation Ordinance. This section of the Municipal Code specifies various strategies to conserve water supplies. Implementation of this ordinance may indirectly address flooding and drainage/runoff concerns as set forth in this chapter.

Chapter 13.68 Stormwater Ordinance. The purpose and intent of the ordinance codified in this chapter is to ensure the health, safety, and general welfare of citizens, and protect and enhance the water quality of watercourses and water

bodies in a manner pursuant to and consistent with the Federal Clean Water Act (33 U.S.C. Section 1251 et seq.) by reducing pollutants in storm water discharges to the maximum extent practicable and by prohibiting non-storm water discharges to the storm drain system. (Ord. 759 §1(part), 2004). Following are relevant sections from this ordinance.

13.68.070 Requirements for reducing pollutants in storm water.

A. Any person engaging in activities that may result in pollutants entering the city's storm drain system shall undertake all practicable measures to reduce and/or eliminate such pollutants.

B. Any construction contractor performing work in the city shall implement appropriate best management practices to prevent the discharge of construction wastes or debris or contaminants from construction materials, tools, and equipment from entering the storm water system.

C. Persons owning, operating, or maintaining a paved parking lot, the paved areas of a gas station, a paved private street, road, or driveway and related storm water systems shall clean those structures as frequently and thoroughly as practicable in a manner that does not result in discharge of pollutants to the storm water system.

D. Every person owning or leasing property through which a watercourse passes shall keep and maintain that part of the watercourse within the property reasonably free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse. The owner or lessee shall not remove healthy bank vegetation beyond that actually necessary for maintenance, nor remove said vegetation in such a manner as to increase the vulnerability of the watercourse to erosion. The property owner or lessee shall be responsible for maintaining and stabilizing that portion of the watercourse that is within their property lines in order to protect against erosion and degradation of the watercourse originating or contributed from their property.

E. The occupant or tenant, or in the absence of occupant or tenant, the owner or proprietor of any real property in the city in front of which there is a paved sidewalk shall maintain that portion of the sidewalk in front of the property free of dirt or litter to the maximum extent practicable. Sweepings from the sidewalk shall not be swept or otherwise made or allowed to go into the gutter or roadway or any element of any drainage system, but shall be disposed of in receptacles maintained as required for the disposal of solid waste.

F. Each industrial discharger, discharger associated with construction activity or other discharger described in any general storm water permit addressing such discharges as may be adopted by the United States Environmental Protection Agency, the State Water Resources Control Board, or the California Regional Water Quality Control Board, North Coast region, shall provide the notice of intent, comply with, and undertake all other activities required by any general storm water permit applicable to such dischargers, and shall provide a copy of

the notice of intent and of each annual report pursuant to any general storm water permit to the superintendent of public works, and shall pay any associated monitoring and enforcement fees to the city that may be set by the city council. Each discharger identified in an individual NPDES permit relating to storm water discharges shall comply with and undertake all activities required by such permit.

G. Where best management practice guidelines or requirements have been adopted or published by the environmental protection agency, any state of California agency, any North Coast area agency, or the city, for any activity, operation or facility which may cause or contribute to prohibited discharges, every person undertaking such activity or operation or owning or operating such commercial facility shall comply with such guideline or requirement.

H. The superintendent of public works may require any business in the city that is engaged in activities which may result in prohibited discharges to develop and implement a storm water pollution prevention plan, which must include an employee training program. Business activities which may require a storm water pollution prevention plan include, but are not limited to, maintenance, storage, manufacturing, assembly, equipment operations, vehicle loading or fueling, or cleanup procedures which are carried out partially or wholly out of doors.

I. The city may adopt requirements identifying appropriate best management practices to control the volume, rate, and potential pollutant load of storm water runoff from new development and redevelopment projects as may be appropriate to minimize the generation, transport and discharge of pollutants. The city shall incorporate such requirements in any land use entitlement and construction or building-related permit to be issued relative to such development or redevelopment. The owner and developer shall comply with the terms, provisions, and conditions of such land use entitlements and building permits as required in the ordinance codified in this chapter. (Ord. 759 §1(part), 2004).

14.36 Erosion Control Ordinance. In 2004, the City adopted the Erosion and Sediment Control Ordinance as part of the City's Storm Water Management Plan. The purpose of the ordinance is to regulate construction-related activities on public and private property in order to control erosion and sedimentation.

Draft DSP Policies Related to Hydrology and Water Quality

The DSP offers objectives to manage stormwater quality. These objectives can be found on pages 3:49-3:50, and are outlined below.

Conservation Development

Establish a Plan that identifies and preserves natural features, greenways, parks and greens.

Education

Establish a graphic system with interpretive vistas that describe watersheds and the cyclic nature of rain water. Emphasis should be placed on the natural function of native plants in holding, filtering and cleansing water as it re-enters the water table and aquifers surrounding Cotati. Emphasis should be placed on encouraging wildlife habitat as appropriate.

Stormwater Best Management Practices (BMPs)

Minimizing environmental degradation resulting from runoff is enabled by integrating stormwater management throughout the entire system of streets, alleys, parks and greens. Cotati should seek to develop a system of water conveyance that directs water to above ground and subterranean filtration system, reducing the need for expensive underground pipes. This system mimics the natural cycle of stormwater and creates a more sustainable urban model. It can also incorporate the local collection of stormwater from roofs, streets, surface parking, sidewalks and green space with bioswales (open-air conveyance systems), and possibly, subterranean systems.

Stormwater BMPs use bioswales, rain gardens, pervious paving, cisterns, filter strips, runnels, and subsurface storage and infiltration systems.

Streets, Alleys and Parkways. Design parks, bioswales and parkways to accept street runoff as practical.

Parking Lots. Require all off-street parking lots to reduce the use of impermeable paving and to direct runoff from large storm events into vegetated swales and rain gardens placed on the perimeter and between parking lanes. Buildings with surface parking lots shall drain roof runoff to pervious paving, rain gardens or to cisterns placed on private property.

Greens, Parks, and Fields. Create low points in greens, parks and fields with subsurface detention beneath vegetated areas or surface detention to infiltrate water into the soil. Minimize the amount of non-porous surfacing in landscaped parks.

Landscape. Use native and drought tolerant species wherever appropriate. In public places, limit use of lawn to parks and active areas where its higher water requirement is worth the investment.

Private Residences. Encourage homeowners to landscape their private gardens in a sustainable manner by choosing water-conserving plants appropriate to their climate; by using permeable paving; and by installing bioswales and cisterns to infiltrate and/or harvest rain water.

Methods

All projects within the Plan area are required to comply with NPDES and the City of Cotati Sustainable Building Program. Two general options are available for addressing stormwater: Treatment and Release, or Collection and Re-Use.

Treatment and Release

Bioswale: A vegetated bioswale is composed of plants with a subsurface infiltration trench and is designed to detain and infiltrate water. Planted with native plants, bioswales reduce runoff volume, recharge groundwater, reduce sediment and nutrient runoff, and reduce off-site detention.

Vegetated Swale: Vegetated swales are planted areas that convey, detain, infiltrate and cleanse stormwater.

Native Landscaping: Native plants adapted to the region are often included with swales, rain gardens and other BMPs. They provide important wildlife habitat and preserve the natural character of Cotati.

Porous Pavement: Porous pavement infiltrates water into spaces between paving blocks or into pore spaces within the paving material. Water is collected in aggregate below the pavement where it moves into the soil or is conveyed to another detention area or the storm drain system.

Collection and Re-Use

Rain Garden: Planting areas designed to retain and detain runoff from parking lots and roofs. A gravel trench may be necessary in areas of poor soil permeability.

Cistern/Rain Barrel: Cisterns and rain barrels are large holding tanks used to collect and store rain water and/or gray water for irrigation and other non-potable uses.

Subsurface Detention: Subsurface detention methods collect and store water for infiltration and harvesting. Some methods are constructed in the field, such as aggregate trenches beneath swales and porous paving. Proprietary systems, such as Rainstore® by Invisible Structures Inc., can be placed beneath parking lots and can support traffic loads.

Stormwater Management Initiatives: The following incorporate the above policies and strategies into the Plan and should be considered during plan development:

a) Cotati Creek

Remove escaped exotics currently distorting flow and replace with native species.

Install interpretive signage describing watershed context and function.

b) Old Redwood Highway and East Cotati Avenue

Provide curb cuts at intervals along the median to allow for bioswale treatment and as 'flood irrigation' of the planted landscape. Plant the median with oaks that will subsist on winter rain water at maturity. Install permeable pavers in parking stalls for water percolation.

c) West Sierra Avenue

Install permeable material on parking stalls to allow water percolation.

Install curb cuts along sidewalks for stormwater run off to irrigate trees.

Direct surface runoff to rain gardens located in small tot lots and demonstration gardens at the corners of Sierra Avenue and La Plaza.

d) West Cotati Avenue

Install permeable material on parking stalls to allow water percolation.

Install curb cuts along sidewalk for stormwater run off to irrigate trees.

e) La Plaza

Install permeable material on parking stalls for water percolation.

*Install curb cuts along sidewalks for stormwater run off to irrigate trees.
Direct surface runoff to the center to allow for detention. Install a filtration system underneath the park to allow cleansing and groundwater recharge.*

f) Residential Streets

*Install permeable material on parking stalls for water percolation.
Install curb cuts along the sidewalk for stormwater run off to irrigate trees.*

g) Alleys

*Install permeable material on travel lane throughout alleys for water percolation.
Convey stormwater not absorbed by porous paving to vegetated swales and install overflow piping to storm drains or other detention systems.
Drain roof water through the adjacent landscape and into vegetated swales.*

4.7.4 Methodology

An analysis was conducted of parcels that could be developed under the DSP, with a resulting increase in impervious surfaces (see Appendix 4.7-B). Data for the analysis were derived from recent aerial photos analyzed alongside of the DSP Illustrative Plan. This information was used to determine the potential loss of groundwater recharge areas, and determine the amount of new surface area which would drain into the City's storm drain system. The Rational Method was used for hydrologic modeling.

La Plaza, in the center of the City, contains land that would be converted from impervious to pervious land, with the addition of lawn and landscaping where roads currently exist. The locations of parcels analyzed for appreciable decreases in recharge capacity can be found on Figure 4.7-2.

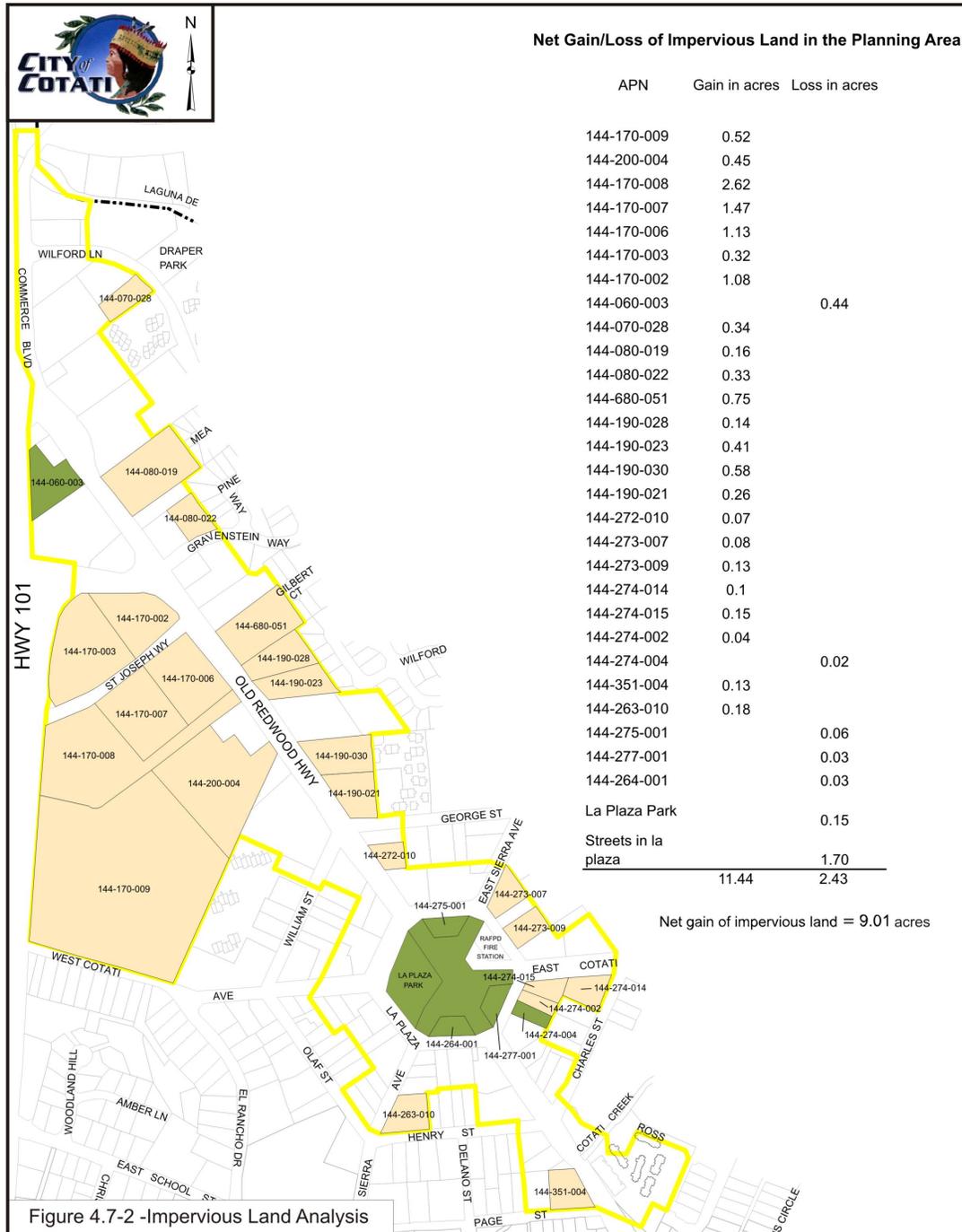
The City of Cotati completed the Final Storm Drain Master Plan in February 2002. This plan provided a detailed overview and analysis of the adequacy of the major storm drainage facilities in the City. It provided an identification of the capacity of the stormwater system, including current and future deficiencies. It included recommendations for upgrades required in the system to meet current and future projected needs. This information became the basis for the stormwater implementation plan in the DSP. The plan is available for review in City Hall.

4.7.5 Significance Thresholds

The project would have a significant effect on hydrology or water quality if it would:

- a. Violate any water quality standards or waste discharge requirements.
- b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

- d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- f. Otherwise substantially degrade water quality (determined to be significant if implementation of the DSP would not comply with surface water quality objectives established by the North Coast Regional Water Quality Control Board, as set forth in the Basin Plan).
- g. 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.
- h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- j. Inundation by seiche, tsunami, or mudflow.



4.7.6 Impacts

Less than Significant Impacts

The only watercourse that traverses the planning area is the channelized Cotati Creek, although the northernmost part of the DSP is adjacent to the Laguna de Santa Rosa. The DSP proposes no changes to alter the course of Cotati Creek or the Laguna. There are no natural or artificial barriers that direct drainage which will be altered as a result of the DSP; therefore, the DSP would not contribute to substantial erosion or increased flooding potential related to drainage changes (thresholds c and d). The DSP area is not within an area that would be affected by failure of a levee or dam, nor is it in an area that would be affected by seiche, tsunami, or mudflow (thresholds i and j).

With regard to groundwater (threshold b), as shown in Figure 4.7-2, implementation of the DSP would result in the conversion of approximately 11.44 acres of pervious surfaces to impervious surfaces, and the conversion of approximately 2.43 acres of impervious surfaces to pervious surfaces (with the net result of approximately nine acres increased impervious area). The green areas in Figure 4.7-2 represent the streets in La Plaza that would be converted to parkland. Tan-colored parcels indicate a change from pervious to impervious surfaces. Not every developable parcel is identified. The figure is intended to show where large alterations in coverage can be expected. The net gain of impervious land (9.01 acres) is approximately 15 percent of the total land area in the DSP planning area (59.5 acres) and less than one percent of the city's total area (965 acres).

The conversion of land in the DSP area from pervious to impervious surfaces would somewhat decrease the recharge capacity of the planning area. Although the local groundwater system is in balance (no overdraft condition has been documented), continuing development in the basin incrementally reduces the natural recharge capacity. The DSP, to the extent it converts vacant undeveloped land to impervious surfaces such as streets, parking, and rooftops, would contribute to this decline. However, as indicated above, the DSP includes landscape and other guidelines that require the use of porous pavement, bioswales and other methods to retain and infiltrate runoff water. Because the land area that will be made impervious is relatively small (as discussed above), and because the DSP includes measures to retain and infiltrate runoff water, this impact is considered less than significant.

Threshold (d) flooding is discussed in Impact Hyd-2 below.

With regard to stormwater (threshold e), the City's Storm Drain Master Plan Master Plan indicates that existing stormwater infrastructure is sufficiently dispersed and sized to accommodate current conditions, and no deficiencies were identified within the planning area. However, because buildout of the DSP area would result in approximately 9.01 additional acres of pavement, roofing, or other impervious surfaces, which would change the pattern and volume of runoff in the planning area, the adequacy of existing stormwater facilities were analyzed by Cotati consulting engineers Winzler & Kelly. The results of the analysis indicate that some infrastructure improvements to the stormwater system are required to accommodate the development anticipated in the plan and citywide. These improvements are shown in Figure 3.0-11 in the Project Description and are included

in the project. As part of DSP implementation, individual project proponents will be required to document sufficient stormwater capacity and infrastructure; necessary improvements shall be made prior to, or concurrent with, new development as required by Section 17.30.080 Public improvement requirements of the Land Use Code. Because the DSP includes stormwater improvements as part of the project, and because individual developer/applicants will be required to implement improvements as part of projects, this impact is considered less than significant.

Significant Impacts

Development of the DSP could result in two significant impacts related to hydrology and water quality, as described below.

Impact HYD-1: Construction activities will temporarily disturb soils and may pose a risk of release of sediment or other contaminants into local watersheds which may degrade water quality or violate water quality standards (thresholds a and f).

Land disturbance during grading, development, and other construction activity may increase the potential for erosion and deposition of sediment in surface water systems. Fuel and other hazardous materials present during construction (e.g., oil, paint, lubricants, cleaners, etc.) may spill and adversely affect water quality in local waterways.

Mitigation HYD-1: All projects proposed under the DSP shall be required to comply with City and state regulations regarding site runoff and water quality protection, including NPDES requirements and implementation of BMPs. These permits require development and implementation of a stormwater pollution prevention plan (SWPPP) during construction and use of permanent BMPs to address post-construction runoff.

Significance after Mitigation: Implementation of construction BMPs, a SWPPP (where applicable), as well as the measures provided in the DSP will reduce the amount of pollution from storm water runoff at project sites throughout the planning area to a less than significant level.

Impact HYD-2. A portion of the DSP planning area lies within the 100 year flood zone, which could subject people and structures to flood hazards (thresholds g and h).

A small portion of the 100 year flood zone extends onto properties at the northwest corner of the intersection of East Cotati Avenue and Arthur Street (Figure 4.7-1). Another small area of the 100 year flood zone extends into the back of a property fronting Commerce Avenue north of Wilford Lane where it abuts Laguna de Santa Rosa. Development in these areas, if not properly designed, could subject people and structures to flood hazards.

Mitigation HYD-2: All development within the 100 year flood zone shall be constructed in accordance with City of Cotati Municipal Code requirements for construction in special flood hazard areas (Title 15).

Significance after Mitigation: Implementation of Cotati Municipal Code requirements would result in construction appropriate for flood hazard areas, thereby reducing this impact to a less than significant level.

4.7.7 Cumulative Impacts

Implementation of the DSP would not make a cumulatively considerable contribution to any significant cumulative hydrological impacts in the region.

The existing cumulative impact is not significant. This conclusion is based in part on the conclusion in the EIR for the current Cotati General Plan. The General Plan EIR concluded that there would not be significant impacts to these resources.

The DSP's impacts are less than significant and it does not result in a significant cumulative impact. Specifically, the impact of the project will not make a cumulatively considerable contribution to the significant cumulative impact. Construction of projects under the DSP, in conjunction with other development in Cotati, will contribute to an increase in stormwater runoff and the potential for contaminants to be carried into local waterways. Cumulative development in the City would also contribute to increased runoff to stormwater infrastructure. The DSP contains policies and guidelines to address stormwater runoff and water quality, and includes stormwater infrastructure improvements to address capacity issues. In addition, state law and city regulations require stormwater management measures for construction and operation, and these regulations are specifically designed to address these potential impacts. Therefore, hydrology and water quality impacts related to the DSP would be adequately mitigated, and would not contribute to cumulative impacts in this category.

4.7.8 References

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