Glossary and Acronyms

Many terms are explained in the Guide to the Data Layers (pages 7-11) and the County Overview (pages 13-28). Additional terms used throughout the Atlas are described here.

Alluvial: Relating to deposits made by flowing water. An alluvial fan is a geologic feature characterized be a fan shaped, flat/gently sloping area below a steep drainage and composed of rocks and other materials deposited by that drainage.

Anadromous: Describes fish that live in the ocean and return to fresh water to spawn.

Concrete Channel: See Page 11.

Constructed Earth Channel: See Page 11.

DEM (Digital Elevation Model): See Page 7.

Drop Structure: A drop structure is a constructed feature designed to dissipate the energy of a stream in a controlled manner to prevent undesirable erosion. Drop structures can take the form of a long slough with a drop or "waterfall" and constructed pool at the downstream end. It can also be just be a drop without other elements.

GIS: Geographic Information System is a general term used to describe a type of database. It may be colloquially explained as a computerized mapping system. GIS and related software are designed to store, manipulate and analyze geographic data. There are different types of software that can be used. The most common way to view GIS data is in map form.

GPS: Geographic Positioning System is a term used to describe the network of orbiting satellites that provide time and positional information. Historically, 24 satellites operated by the U.S. Department of Defense have been available to communicate with GPS units.

GPS Unit: The GPS unit is a device that receives signals from satellites and can use the signals to determine coordinates on Earth (latitude, longitude and altitude).

Hydrograph: A chart that plots the rate of water runoff against time. Additional information is provided on Page 24.

Hydrology: The science of the properties, distribution and impact of water.

Invasive plants: Plant species that crowd out other plant species. Invasive plants often spread rapidly and can dramatically change the ecosystem and habitat. Frequently, invasive plants are not native to the area and therefore thrive due to a lack of predators.

Natural Channel: See Page 11.

Orographic Rain: Refers to precipitation that occurs as a result of moist air traveling over increased elevation and cooler temperatures. As moist air rises on the windward side of a mountain, it cools. If the temperature drops to the dew point, condensation occurs, clouds form, and moisture is released.

Orthographic: Is used in the Atlas to qualify the aerial photographs (also called ortho-photos). It refers to the adjustment of photos to correct for the curvature of the earth. Both the color and the black and white photos used in this publication were orthographically corrected.

Parcel: Units of land that may be bought and sold.

Perennial: Used in the Atlas to refer to the type of water flow in a creek. A perennial creek normally flows year round. Most small creeks in Contra Costa County are seasonal, and have consistent flow only in the rainy season.

Projection: A mathematical model that transforms the locations of features on the earth's curved surface to locations on a two-dimensional surface. It can be visualized as a transparent globe with a light bulb at its center casting lines of latitude and longitude onto a sheet of paper. Every map projection distorts distance, area, shape, direction, or some combination thereof. All maps in this Atlas are projected using NAD 83 California State Plane III, Feet.

Rainshadow Effect: The phenomenon of more rain falling on the windward side of a hill or mountain and less falling on the leeward side. The leeward side is in the rainshadow.

Rancho: Ranch. A Large farm that includes grazing for livestock.

Raster: A GIS data structure that represents geographic features with a grid: rows and columns of square cells. Each cell contains an attribute value and location coordinates.

Riparian: Refers to the riverside environment. Riparian areas provide a link between the aquatic and terrestrial habitats and often have distinctly different vegetation than adjacent areas.

Riprap: See page 11.

Runoff: Water that is not absorbed into the ground and flows overland to a drainage.

Shapefile: A file format used to store geographic and attribute data in a Geographic Information System (GIS).

Sphere of Influence: See Page 15.

Substrate: Describes the material that composes the streambed (e.g. sand, gravel, cobble).

TIN (Triangulated Irregular Network): A technique for representing topography in a GIS. The land surface is represented with a series of contiguous, non-overlapping triangles. The vertices of each triangle are data points with x, y, and z values; elevation values at these points are interpolated to create a continuous surface.

Topography: The graphic representation of the surface features of a region on a map, indicating their relative positions and elevations.

Underground Channel: See Page 11.

Vector: A data structure that uses points. lines and polygons to represent geographic features. Attributes are associated with each feature (as opposed to a raster data structure, which associates attributes with grid cells).

Watershed: The simplest definition of a watershed is an area of land that drains precipitated waters to a given reference point, typically a confluence with another major creek or large water body.

Acronyms ACOE - U.S. Army Corps of Engineers CA DFG - California Department of Fish and Game CCC - Contra Costa County CCRCD - Contra Costa Resource Conservation District CCWD - Contra Costa Water District CCWF - Contra Costa Watershed Forum CEMAR - Center for Ecosystem Management and Research EBMUD - East Bay Municipal Utility District EBRPD - East Bay Regional Park District FEMA - Federal Emergency Management Agency HCP – East Contra Costa County Habitat Conservation Plan MHLT – Muir Heritage Land Trust SWRQCB – State Water Resources Quality Control Board U.S. EPA - U.S. Environmental Protection Agency UCC – Urban Creeks Council USGS - U.S. Geological Survey



Urban Limit Line (ULL): See Page 15

Watershed Size in Acres

- 93.556 Walnut Creek
- 60,066 Marsh Creek
- East County Delta Drainages 56,223
- 32,915 San Ramon Creek (tributary to Walnut Creek)
- 27,640 San Pablo Creek
- Alamo/Tassajara Creek (CCC portion only) 26.390
- 24,422 Brushy Creek (CCC portion only)
- 23,846 Mount Diablo Creek 20,863
- Kellogg Creek (CCC portion only) Pine / Galindo Creek (tributary to Walnut Creek) 18,525
- Las Trampas Creek (tributary to Walnut Creek) 17,238
- 16,063 Willow Creek and Coastal Drainages
- 13,059 San Leandro / Moraga Creek (CCC portion only)
- Grayson / Murderers Creek (tributary to Walnut Creek) 11,021
- Alhambra Creek 10,735
- 10.132 Kirker Creek
- Pinole Creek 9,705
- South San Ramon Creek (CCC portion only) 8,357
- West Antioch Creek 8,182
- 7.261 East Antioch Creek
- Wildcat Creek 6.848
- 6,657 Rodeo Creek
- 6,575 Carquinez Area Drainages
- 5.530 Baxter Creek
- 4,976 West Richmond Drainages
- 4.395 Cayetano Creek (CCC portion only)
- Peyton Slough 3,914 3,850
- Garrity Creek Refugio Creek 3,116
- 1,790 Rheem Creek
- Cerrito Creek (CCC portion only) 1,322

Length of Longest Branch of Creek in Miles

- 34.57 Marsh Creek
- Walnut Creek 28.74
- 25.34 Kellogg Creek (CCC portion only)
- 19.65 San Pablo Creek
- San Ramon Creek (tributary to Walnut Creek) 18.89
- 17.24 Mount Diablo Creek
- 13.43 Wildcat Creek
- 12.65 Pine / Galindo Creek (tributary to Walnut Creek)
- Brushy Creek (CCC portion only) 12.46
- Las Trampas Creek (tributary to Walnut Creek) 12.37
- 10.95 Pinole Creek
- 10.27 Alamo/Tassajara Creek (CCC portion only)
- Kirker Creek 9.43
- 8.87 Grayson / Murderers Creek (tributary to Walnut Creek)
- 8.35 Rodeo Creek
- 7.99 Alhambra Creek
- 7.87 East Antioch Creek
- 6.24 West Antioch Creek
- 6.16 Willow Creek and Coastal Drainages 4.76
- San Leandro / Moraga Creek (CCC portion only) South San Ramon Creek (CCC portion only)
- 4.67 Refugio Creek 4.52
- 3.67 Garrity Creek
- 3.64 Peyton Slough
- Cayetano Creek (CCC portion only) 3.44
- 3.36 Rheem Creek
- 2.87 Baxter Creek

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- Carquinez Area Drainages 2.86
- 2.44 Cerrito Creek (CCC portion only)

Total Channel Length Within Watershed in Miles

- 309.75 Walnut Creek
- 167.18 Marsh Creek
- 136.73 San Ramon Creek (tributary to Walnut Creek)
- 108.60 San Pablo Creek
- 100.99 Alamo/Tassajara Creek (CCC portion only)
- 79.95 Mount Diablo Creek
- 67.64 Kellogg Creek (CCC portion only)
- 64.10 Las Trampas Creek (tributary to Walnut Creek)
- 59.96 Pine / Galindo Creek (tributary to Walnut Creek)
- 53.81 San Leandro / Moraga Creek (CCC portion only)
- 48.08 Alhambra Creek
- 46.64 Pinole Creek
- 45.94 Brushy Creek (CCC portion only) 44.78 Willow Creek and Coastal Drainages
- 43.65
- **Kirker Creek** 31.64 Rodeo Creek
- 26.95 Carquinez Area Drainages
- West Antioch Creek 26.53
- South San Ramon Creek (CCC portion only) 26.24
- Grayson / Murderers Creek (tributary to Walnut Creek) 25.41
- 22.22 Wildcat Creek
- 14.44 Baxter Creek
- 14.14 Cayetano Creek (CCC portion only)
- 9.17 **Refugio Creek**
- 8.70 East Antioch Creek
- Peyton Slough 8.11
- Cerrito Creek (CCC portion only) 5.82
- Garrity Creek 4.10
- <u>3.36</u> Rheem Creek
- 1,350 Countywide

Average Annual Rainfall in Inches

- 28 San Leandro / Moraga Creek (CCC portion only)
- 27 San Pablo Creek
- Las Trampas Creek (tributary to Walnut Creek) 26

San Ramon Creek (tributary to Walnut Creek)

South San Ramon Creek (CCC portion only)

Alamo/Tassajara Creek (CCC portion only)

Cayetano Creek (CCC portion only)

Kellogg Creek (CCC portion only)

Brushy Creek (CCC portion only)

East County Delta Drainages

Willow Creek and Coastal Drainages

Pine / Galindo Creek (tributary to Walnut Creek)

Grayson / Murderers Creek (tributary to Walnut Creek)

- 24 Wildcat Creek
- **Pinole Creek**
- 23 22 Cerrito Creek (CCC portion only)

West Richmond Drainages

Carquinez Area Drainages

- 22 22 Alhambra Creek
- Baxter Creek
- 22 Rheem Creek

Rodeo Creek

Walnut Creek

Garrity Creek

Refugio Creek

Peyton Slough

Marsh Creek

Kirker Creek

Mount Diablo Creek

West Antioch Creek

East Antioch Creek

Countywide average

21

21

21

21

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<u>11</u>

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Appendix 1: Statistical Comparisons of Contra Costa Watersheds

Miles of Underground Channel (not including storm drains)			
36.05	Walnut Creek		
20.14	San Ramon Creek (tributary to Walnut Creek)		
9.93	Willow Creek and Coastal Drainages		
8.15	Baxter Creek		
7.80	San Pablo Creek		
7.49	Las Trampas Creek (tributary to Walnut Creek)		
7.30	Kirker Creek		
6.70	Mount Diablo Creek		
5.35	West Antioch Creek		
4.61	South San Ramon Creek (CCC portion only)		
4.56	Carquinez Area Drainages		
4.32	Alhambra Creek		
3.26	San Leandro / Moraga Creek (CCC portion only)		
3.16	Grayson / Murderers Creek (tributary to Walnut Creek)		
3.12	Cerrito Creek (CCC portion only)		
2.67	Pine / Galindo Creek (tributary to Walnut Creek)		
1.93	Pinole Creek		
1.39	Peyton Slough		
1.36	Marsh Creek		
1.33	Refugio Creek		
1.24	Garrity Creek		
1.14	East Antioch Creek		
1.07	Rheem Creek		
0.88	Rodeo Creek		
0.52	Alamo/Tassajara Creek (CCC portion only)		
0.28	Wildcat Creek		
0.14	Kellogg Creek (CCC portion only)		
0.12	Brushy Creek (CCC portion only)		
0.00	Cayetano Creek (CCC portion only)		

112.56 Countywide

Estimated Mean Daily Flow at Mouth in cfs

81.4 Walnut Creek

- 32.1 San Pablo Creek
- 28.3 Marsh Creek
- 27.1 San Ramon Creek (tributary to Walnut Creek)
- 23.4 East County Delta Drainages
- 16.5 Mount Diablo Creek
- Las Trampas Creek (tributary to Walnut Creek) 15.4
- 14.8 Pine / Galindo Creek (tributary to Walnut Creek)
- Willow Creek and Coastal Drainages 112
- Grayson / Murderers Creek (tributary to Walnut Creek) 10.6
- 10.4 Pinole Creek
- 8.2 Baxter Creek
- 7.9 Carquinez Area Drainages
- 7.7 Wildcat Creek
- 7.2 Alhambra Creek
- 7.0 Rodeo Creek
- 6.8 West Richmond Drainages
- 6.5 Kirker Creek
- 6.5 East Antioch Creek
- 5.4 Garrity Creek
- 5.2 West Antioch Creek
- Refugio Creek 4.2
- 3.7 Peyton Slough

Estimated 100-Year Flood Flow in cfs

25.600 Walnut Creek (downstream of confluence w/ Grayson) San Ramon Creek (near Rudgear Road) 13.100 10,000 Pine / Galindo Creek (at confluence with Walnut Creek) Marsh Creek (above Marsh Creek Reservoir) 5,740 5,110 Alhambra Creek (at Escobar) 4.170 Pinole Creek (at mouth) Wildcat Creek (at 23rd Street) 2.280 Rheem Creek (at BNSF railroad tracks) 1,060

Appendix 1

Estimat	ed Population by Watershed	Percent of Watershed on Urban Side of Urban Limit Line
339,100	Walnut Creek	100.0% East Antioch Creek
78,900	Pine / Galindo Creek (tributary to Walnut Creek)	100.0% Baxter Creek
72,400	San Ramon Creek (tributary to Walnut Creek)	100.0% Cerrito Creek (CCC portion only)
58,900	Grayson / Murderers Creek (tributary to Walnut Creek)	99.6% West Richmond Drainages
58,800	Willow Creek and Coastal Drainages	98.3% Refugio Creek
58,400	Baxter Creek	93.8% Grayson / Murderers Creek (tributary to Walnut Cree
47,100	San Pablo Creek	90.6% Garrity Creek
46,000	East Antioch Creek	85.4% Rheem Creek
42,300	Las Trampas Creek (tributary to Walnut Creek)	79.4% Peyton Slough
38,500	Marsh Creek	77.6% South San Ramon Creek (CCC portion only)
35,500	West Antioch Creek	75.5% Las Trampas Creek (tributary to Walnut Creek)
35,100	South San Ramon Creek (CCC portion only)	71.1% Walnut Creek
33,100	East County Delta Drainages	68.0% San Ramon Creek (tributary to Walnut Creek)
29,900	West Richmond Drainages	59.8% Willow Creek and Coastal Drainages
24,400	Mount Diablo Creek	55.4% West Antioch Creek
24,000	Wildcat Creek	47.9% Pine / Galindo Creek (tributary to Walnut Creek)
23,900	Garrity Creek	46.5% San Leandro / Moraga Creek (CCC portion only)
22,900	Kirker Creek	44.5% Kirker Creek
18,300	San Leandro / Moraga Creek (CCC portion only)	41.1% San Pablo Creek
15,700	Pinole Creek	39.1% Carquinez Area Drainages
15,400	Refugio Creek	37.3% Rodeo Creek
14,800	Alamo/Tassajara Creek (CCC portion only)	33.2% Wildcat Creek
14,200	Alhambra Creek	30.9% Mount Diablo Creek
13,900	Rheem Creek	29.5% Alamo/Tassajara Creek (CCC portion only)
13,300	Cerrito Creek (CCC portion only)	28.9% Pinole Creek
9,500	Peyton Slough	28.3% East County Delta Drainages
8,900	Rodeo Creek	28.1% Alhambra Creek
5,100	Carquinez Area Drainages	27.4% Marsh Creek
1,400	Kellogg Creek (CCC portion only)	8.0% Brushy Creek (CCC portion only)

- 900 Brushy Creek (CCC portion only)
- 100 Cayetano Creek (CCC portion only)
- 948,816 Population of Contra Costa County

Estimated Percent Impervious

- 65% **Baxter Creek**
- Cerrito Creek (CCC portion only) 65%
- East Antioch Creek 60% Garrity Creek 60%
- 60%
- West Richmond Drainages <55% Peyton Slough
- 50% Refugio Creek
- Rheem Creek 50%
- 45% Grayson / Murderers Creek (tributary to Walnut Creek)
- 35% South San Ramon Creek (CCC portion only)
- 35% West Antioch Creek
- 30% Kirker Creek
- 30% Pine / Galindo Creek (tributary to Walnut Creek)
- 30% Walnut Creek
- 25% Carquinez Area Drainages
- 25% Las Trampas Creek (tributary to Walnut Creek)
- Willow Creek and Coastal Drainages 25%
- 20% Mount Diablo Creek
- 20% Rodeo Creek
- San Pablo Creek 20%
- 20% San Ramon Creek (tributary to Walnut Creek)
- 20% Wildcat Creek
- 15% Alhambra Creek
- 15% Marsh Creek
- 15% Pinole Creek
- 15% San Leandro / Moraga Creek (CCC portion only)

Contra Costa County Watershed Atlas

- 10% Alamo/Tassajara Creek (CCC portion only)
- East County Delta Drainages 10%
- 5% Brushy Creek (CCC portion only)
- <5% Cayetano Creek (CCC portion only)
- <5% Kellogg Creek (CCC portion only)
- 35% Countywide average

- 1.0% Kellogg Creek (CCC portion only)
- 0.0% Cayetano Creek (CCC portion only)
- 43.4% Countywide ave. (not including tidal areas & Delta islands)

Percent of Watershed Planned for Parks and Open Space

- (including Public Watershed)
- Kellogg Creek (CCC portion only) 71.6%
- 67.0% Wildcat Creek
- 56.9% San Pablo Creek
- 52.4% San Leandro / Moraga Creek (CCC portion only)
- 49.3% Pinole Creek
- 47.6% West Antioch Creek
- Pine / Galindo Creek (tributary to Walnut Creek) 40.8%
- San Ramon Creek (tributary to Walnut Creek) 37.8%
- 36.4% Carquinez Area Drainages
- 36.2% Mount Diablo Creek
- 33.3% Marsh Creek
- 33.0% Alhambra Creek
- 31.5% Alamo/Tassajara Creek (CCC portion only)
- 30.6% South San Ramon Creek (CCC portion only)
- 29.3% Walnut Creek
- 28.7% **Refugio Creek**
- 27.5% Willow Creek and Coastal Drainages
- 24.4% Peyton Slough
- 22.2% Rheem Creek
- 22.0% Las Trampas Creek (tributary to Walnut Creek)
- 19.3% Grayson / Murderers Creek (tributary to Walnut Creek)
- 19.2% Garrity Creek
- West Richmond Drainages 19.0%
- 18.5% Rodeo Creek
- 16.8% Kirker Creek
- 13.1% East Antioch Creek
- 9.8% **Baxter Creek**

6.3%

<u>4.6%</u>

30.6%

- 8.9% Cerrito Creek (CCC portion only)
- 8.1% Brushy Creek (CCC portion only)

Countywide average

East County Delta Drainages

Cayetano Creek (CCC portion only)

303(d) List of Impaired Water Bodies with Associated Pollutants of Concern (POC) (2002 SWRCB).

Waterbody Name	Pollutant/Stressor
San Pablo Reservoir	Mercury
Mt. Diablo Creek	Diazinon
Pinole Creek	Diazinon
Pine Creek	Diazinon
Rodeo Creek	Diazinon
San Pablo Creek	Diazinon
Wildcat Creek	Diazinon
Walnut Creek	Diazinon
Marsh Creek Reservoir	Mercury
Dunn Creek	Mercury & Metals
Marsh Creek- Dunn Creek to Reservoir	Metals
Marsh Creek- Reservoir to San Joaquin River	Mercury & Metals

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