CHAPTER 6: DESIGN FORMULATION

Overview

This chapter discusses the ways in which the authors have analyzed the data related in Chapters 1 through 5, in order to arrive at recommendations for a Parkway Vision Plan.

The chapter begins with a brief discussion of some of the principles and precedents that have had an impact on the formulation of this Vision Plan. Principles and precedents guide all phases of the design process, initially suggesting the most significant areas for fact gathering, then assisting in the formulation of specific issues and objectives, and pointing the way to appropriate design responses.

> The project goal for this Vision Plan is to reconnect people with the Lower Ventura River by providing opportunities for recreation, education and stewardship while protecting and enhancing hydrological and wildlife resources.

[FACING PAGE] FIGURE 6.1 *The Lower Ventura River looking south from Foster Park.*

The overall goal of this Vision Plan may be seen as the intersection of concerns for three subject areas — hydrology, ecosystems, and cultural resources (figure 6.2). Geomorphology, soils, and climate, discussed in Chapter 2, form the basis for existing resources in those subject areas — the resources themselves and the processes that have changed and continue to change them are discussed in Chapters 3 through 5.

In the Issues and Objectives section, these resources and processes are considered in light of the project goal. Issues may be seen as challenges to the attainment of that goal. These issues arise principally from the ways in which human activities have impacted natural resources and processes, but they also arise from human needs. The issues themselves are considered once again in light of the project goal, and for each issue a specific objective in furtherance of the project goal is determined.

The Opportunities and Constraints section applies several forms of suitability analysis, pointing out the location of

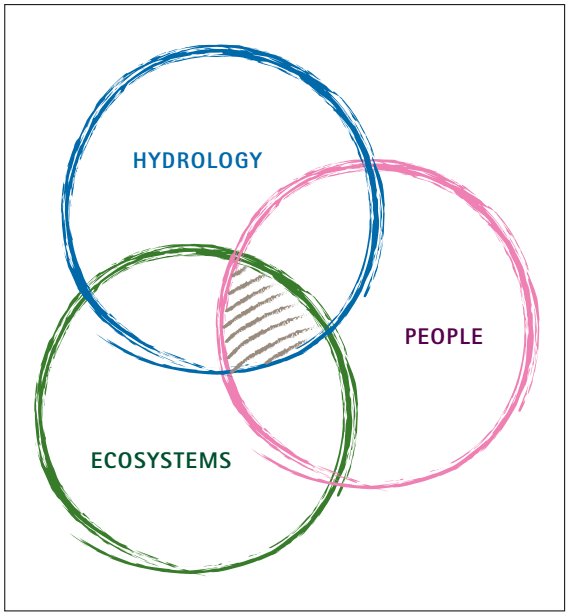


FIGURE 6.2. *The overall goal for this Vision Plan may be found at the intersection of three concerns.*

existing conditions in the proposed parkway area that will be significant to the achievement of specific objectives for creating the parkway. The location of these opportunities and constraints leads to the placement of the elements that appear in Chapter 7, Parkway Plan.

Site Selection looks for clusters of the most significant opportunities and constraints. These clusters suggest the best sites within the proposed parkway area for a more detailed exploration of design concepts for meeting objectives. These sites are discussed in Chapters 8 through 11.

Finally, the processes mentioned above culminate in charrettes, an intuitive group process that leads to specific design concepts. The results are a broad set of elements for the six mile proposed parkway corridor, and a more detailed set of design concepts for three smaller sites (figure 6.3).

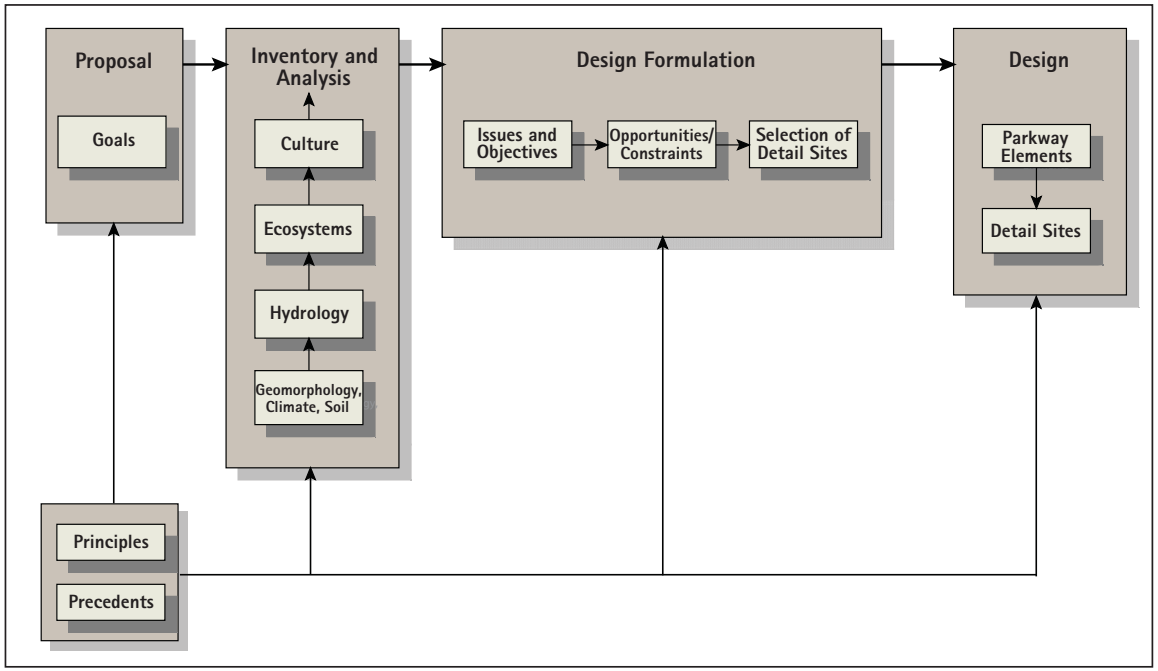


FIGURE 6.3 *Design formulation. The design formulation process is based on a project goal and an inventory and analysis of existing conditions. These elements lead to the identification of issues and objectives, opportunities and constraints for the parkway, and the selection of smaller sites for more detailed design. All of these stages are informed by principles and precedents.*

Principles

Thinkers and writers in the fields of landscape architecture, urban planning, ecology, and low-impact development have provided insights that form both an ethical framework and a practical road map for the formulation of this Vision Plan.

The Ahwanee Principles (2005)

The Local Government Commission (LGC) is a nonprofit organization of local elected officials, city and county staff, planners, architects, and community leaders who provide inspiration and technical assistance to local government leaders. Much of the LGC's work centers on The Ahwanee Principles, originally drafted at a conference in Yosemite Valley, California, in 1991 and later expanded. The Principles for Resource-Efficient and Livable Communities (LGC 1991) Principles for Economic Development (1997) and Water Principles (2005) were among the first concise guidelines for smart growth and sustainability, widely adopted and cited throughout the United States.

The Ahwanee Principles encourage the formation of communities that are compact and integrated with housing, stores, work places, schools, parks, and civic facilities within walkable distance (LGC 1991). Those communities should have well-defined edges formed by greenbelts such as agriculture or wildlife corridors that are permanently protected from development (LGC 1991). Wetlands, floodplains, recharge zones, riparian areas, open space, and native habitats should be identified, restored, and preserved (2005), and planners should preserve natural terrain, drainage, and vegetation wherever possible (1991). Planning at the regional level should include a continuous system of greenbelts and wildlife corridors (1991). This Vision Plan is designed to fulfill these goals for the Lower Ventura River and the City of Ventura.

Sustainable Sites Initiative (2008)

The Sustainable Sites Initiative (SSI) is a project of the American Society of Landscape Architects and the Lady Bird Johnson Wildflower Center with major funding from the United States Botanical Garden. This initiative has benefited from input from more than thirty experts from a wide range of stakeholder groups, working to enunciate principles for sustainable landscape design and to create measurable benchmarks and ratings systems for sustainability in outdoor sites. One of the objectives of the SSI is to incorporate landscape design more extensively into the existing, architecture-oriented LEED program of the United States Green Building Council (USGBC). Under the LEED program, developers receive recognition for "green" building after voluntarily meeting sustainability benchmarks.

The SSI draft guidelines and benchmarks identify 12 ecosystem services that are provided by landscape sites, services that include not only wildlife habitat and biodiversity but also the health and well-being of humans. The draft advocates over 50 specific practices for site selection, design, construction, and maintenance that enhance those ecosystem functions. For example, prerequisites for site selection decisions are the preservation of biodiverse habitat as well as important farmland soils, the safeguarding of the hydrological function of floodplains, and an emphasis on brownfields or greyfields for redevelopment (ASLA et al. 2008). Practices relating to hydrology include the daylighting of piped streams, restoration of stream banks and channels to healthy condition, avoidance of culverting even for small crossings, and the shading of water features to avoid overheating water (ASLA et al. 2007).

Practices recommended by SSI for the enhancement of human health and well-being include outdoor recreation opportunities, connection of outdoor sites to surrounding amenities and services, features for accessibility, safety, and wayfinding, the design of storm water management features to be a "landscape amenity," and the protection of cultural and historical features (ASLA et al 2008). This Vision Plan incorporates these practices for the Lower Ventura River, the City of Ventura, and Ventura County.

Saving Nature's Legacy: Protecting And Restoring Biodiversity (1994)

This leading text on preservation and management of biodiversity resources by Reed Noss and Allen Y. Cooperrider has as its guiding principle: protect biodiversity and let natural process operate while permitting compatible human use in suitable areas. This Vision Plan strives to accomplish this balance.

Restoring Streams in Cities: A Guide for Planners, Policymakers and Citizens (1998)

This comprehensive guide by Ann Riley is an introduction to river science and stream restoration with an extensive discussion of United States floodplain policy.

One of Riley's most important concepts is that even in urbanized environments where streams have little room for natural function, projects can be designed in a way that maximizes the environmental values of the resource. (Riley 1998). Recognizing that the floodplain often cannot be entirely restored in urban areas, the emphasis is on restoring "dynamic equilibrium" (a changing, self-sustaining natural regime as opposed to a static, engineered channel regime) to the bankfull channel and then taking appropriate measures to protect the floodplain from flood damage (Riley 1998).

Riley also advocates the regulation of land use to save existing natural streams, the employment of environmentally-sensitive stream channel maintenance practices, and the training of citizen stream restorationists who acquire expertise and then assist, and sometimes prod, governmental organizations into action to save natural streams from channelization. This Vision Plan develops a framework for action which will encourage public participation in preserving the wild character of the Lower Ventura River and in restoring those hydrological functions that have been impaired.

The Green Visions Plan for the 21st Century (Ongoing)

Since 2003, a partnership between local land conservancies and the University of Southern California has worked to promote habitat preservation, watershed function and people's access to open space. The result is a comprehensive set of publications and planning tools, often updated, that address the historical ecology and hydrologic assets of Southern California, the distribution of target species, and peoples' access to open space. This clearinghouse not only guides southern California decision makers but also informs the methodologies of those who would perform similar surveys in other regions.

The Green Visions Plan has been especially influential in documenting inequities that exist in the access of different Los Angeles County communities to recreation and open space. This Vision Plan emphasizes the potential for the proposed river parkway to improve access to open space for economically challenged neighborhoods in Ventura.

Design for Human Ecosystems (1985)

John Tillman Lyle's book was an early comprehensive approach to the then-new field of ecologically-sensitive landscape design. Inspired by Ian McHarg's pioneering work with suitability analysis, Lyle laid out a comprehensive philosophy, a practical sequence, and many detailed tools for ecosystemic design.

One central idea in Lyle's work is that every planning decision at any scale is impacted by, and has impacts on, what happens at a range of other scales from the global to the local. This leads to a necessity for understanding the relationship between every site and the larger world.

Another core value expressed in Lyle's book is that humans are part of nature and that their presence on the land can be *regenerative* – actively restoring and enhancing sustainability – rather than merely conservationist. Ecosystemic design takes into account the many flows of materials and energy into a design site, the ways in which those elements are transformed through natural and anthropogenic processes on the site, and the energy and material by-products that exit the site. By approaching an understanding of those flows, designers can envision human activities such as industrial production that actually complement and reinforce natural processes.

This Vision Plan creates a Ventura River Parkway Plan at multiple scales which seeks to be regenerative ecologically, socially, and culturally.

Precedents

Following are brief descriptions of several urban stream restoration or river parkway projects that have provided valuable perspectives for envisioning a parkway on the Lower Ventura River. Many precedents were consulted; the few described below have particular relevance because they involve an issue or issues that are critical to this Vision Plan.

Precedents such as these are valuable for both the positive and negative lessons that they teach. Any comparison with a project in another locale will address both similarities and marked differences compared to the context for this Vision Plan.

FIGURE 6.4 *The channelized Guadalupe River immediately upstream from its entry into a flood diversion structure and a new, unchannelized stream.*

Guadalupe River Park, San Jose, California (ongoing)

The Guadalupe River flows through the heart of downtown San Jose, with skyscrapers inhabiting the floodplain on one bank and a large urban park and sports arena on the other bank. Prior to this parkway project, the river had been completely channelized and landscape planners who desired to restore a more natural stream in this corridor had to accommodate a high risk of flood damage to the urban core of the city. The city reestablished a bankfull channel for an unchannelized stream with adjacent developed urban parks, and dealt with flood risk by creating an elaborately engineered underground bypass channel to carry occasional flood water away from the urban stream and the city itself.

Landscape planners created a river center at the confluence between the Guadalupe River and a smaller creek near the center of downtown. There, the concrete-channelized river enters an attractively landscaped park with interpretive materials that educate visitors about the dechannelization of the river, the flood bypass channel, and the importance of steelhead trout habitat. The park is centered on a basin where the concrete river dramatically transitions into a more intimate stream with riparian vegetation and walkways on its banks (figure 6.4). During flood events, high waters flowing into the basin are diverted over a concrete barrier into the underground bypass culvert (figure 6.5), while a smaller amount of water continues to enter the "natural" stream at the end of the basin.

Notable features of this project are the awe-inspiring way in which it directs visitors' attention to the process of "naturalizing" the river, and the sensitive way in which river forms are emulated in the design of a plaza that "points" to the confluence and walkways and the landscaped areas that emulate abandoned floodplain terraces. In addition, the parkway is notable for the fact that it makes the river the centerpiece of a network of urban parks and recreation areas that will continue to grow for decades: the "Great Park" of the city (San Jose Redevelopment Agency 2002). However, this project has been criticized for a highly

FIGURE 6.5 *Flood waters flow over a concrete barrier into a subterranean culvert. The "naturalized" stream, downstream from this structure, can be seen exiting on the left.*

engineered flood-risk solution that treats floodwaters as a problem to be hidden underground, with the end result being a stream that is incapable of overflowing its bankfull channel and therefore, not a natural stream. This undoubtedly resulted in part from the absence of available floodplain in this urban core, but observers have commented that by allowing the park network to double as an active floodplain, floodwaters could have been accommodated without shunting them underground (Ryan 2005).

The San Jose project is similar to this Vision Plan in that it attempts to balance the goal of bringing city dwellers into closer contact with a more natural river with the necessity of protecting an urban area that is already heavily developed on the floodplain. However, it is dissimilar in that, prior to the parkway project, the Guadalupe River was completely channelized in this area and highly constricted by urban development on both of its banks, with virtually no unobstructed floodplain left. The Lower Ventura River is in a much more natural state and has a natural floodway, which may suggest a markedly different design concept for this Vision Plan.

Nine Mile Run, Pittsburgh, Pennsylvania (July 2006)

More notable for its differences with the context of this Vision Plan than for its similarities, this effort to rescue what was once one of the most degraded rivers in the United States is nevertheless valuable for the lesson that it teaches, which is: Even where the function of a watershed has been severely modified by development, techniques that have their source in natural river function can work best.

FIGURE 6.6 *Nine Mile Run. Photo: Trust for Public Land.*

The Nine Mile Run, actually seven-and-one-half miles long, emanates from headwaters that have been entirely replaced by storm drain pipes buried under the eastern suburbs of Pittsburgh. The river is fed entirely by polluted storm water runoff, devoid of the natural sediment that would feed a natural river and reduce erosion. With its natural groundwater supply cut off by impermeable surfaces, the river ran almost dry in the summer. Storm water runoff from the same impermeable surfaces caused the river to flash flood in winter storms. The sediment-free water cut away at the river's bed, gradually digging a deeper and narrower channel so that flood waters, instead of overtopping the bankfull channel and dispersing on the adjacent floodplain, were growing increasingly rapid and violent within the channel itself, exposing sewer pipes that had originally been placed underground. The lower reaches of the river, above its confluence with the Monongahela River, flow through a narrow gap between two vast and biologically inert slag piles left over from a half-century of steel production (Harnik 2007).

When the city planned a residential development on the lower river, initial proposals called for putting the entire lower river into a pipe and burying it under the regraded slag, allowing a smaller, non-storm water flow to remain on the surface as an artificial stream (Harnik 2007). After neighbors and environmentalists protested that they wanted a "living stream" (Harnik 2007), a coalition of citizens, city officials and ecosystem restoration experts put together a new plan. They scaled back the residential development, reinstated a functional watershed for the river by setting aside 115 acres of parkland enclosing the lower river from

riverbank to ridge top, and began reconstructing a bankfull channel and adjacent floodplain system virtually from scratch, based upon emulation of natural river morphology principles. The aims were to widen the river channel and raise its elevation to approach the adjacent floodplain so that floodwater would be slowed and dispersed, and recreate a riffle-pool system that would nurture wildlife (Harnik 2007). Landscape planners hope that the result will be a reconstructed river that supports wildlife, enhances the new housing development, and safely transports flood water without pipes or tunnels.

The Nine-Mile Run project is mostly dissimilar from the context of this Vision Plan in that it concerns a river that was so seriously degraded that it had to be almost entirely rebuilt. However, it is similar in that it poses, within an urban context, the issue of whether the deleterious effects of *replumbing* on river ecosystems should be mitigated through more and more plumbing, or through engineered systems that emulate natural processes and attempt to jump start an ecosystem that will eventually sustain itself. Landscape planners for the Nine Mile Run, the largest river restoration yet attempted by the U.S. Army Corps of Engineers, have chosen the latter course. Critics have opined that the landscape supporting the Nine Mile Run may be too degraded to regain biological vitality and that "the jury is out" on the project (Harnik 2007), but the project will continue to provide valuable lessons for years to come.

Santa Clara River Parkway Project, Los Angeles and Ventura Counties, California (ongoing)

The Santa Clara River Parkway is notable for its geographical proximity, and the similarity of its hydrological and ecological resources to those of the Lower Ventura River.

FIGURE 6.7 *The Lower Santa Clara River. Photo: California Coastal Conservancy; Trust for Public Land.*

This parkway project, initiated by the California Coastal Conservancy in partnership with The Nature Conservancy, is also notable for its scope. The Santa Clara River has its mouth just five miles from the Ventura River mouth, but it flows for 116 miles and drains a watershed nearly seven times larger than the Ventura River (California Coastal Conservancy 2006).

Advocates for the project have acquired over 10,000 acres along 25 miles of the lower river and floodplain for restoration of hydrologic and habitat resources, enhanced flood protection and public access and education (California Coastal Conservancy 2006).

Apart from its size and scope, the Santa Clara River project is similar to the context of this Vision Plan in most respects. Like the Ventura River, the Santa Clara is an example of an arid southwestern river with low surface flows in the summer, winter flash flooding, a rich assortment of ecosystems, and many impacts from hydrological engineering, agriculture, and urban development (California Coastal Conservancy 2006). The project also shares many issues with this Vision Plan regarding public access and education, including:

- Balancing public access with sensitive ecosystems
- Whether and how to design visitor approaches to a river that is flashy, changeable, and surrounded by dense riparian vegetation
- Building public appreciation and stewardship for a wild river that does not fit the stereotypes that many people have about rivers.

The early stages of the project have centered on the Santa Clara River Parkway Floodplain Restoration Feasibility Study, a comprehensive inventory and analysis document that has provided valuable information about most of the subject areas that are discussed in Part 2 (Inventory and Analysis) of this Vision Plan.

The Santa Clara River was the subject of planning documents prepared by The 606 Studio in both 1995 and 2009.

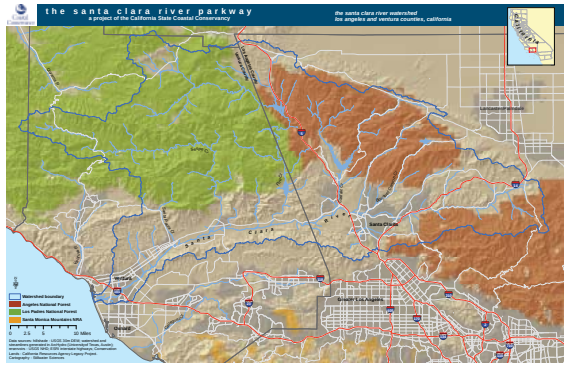


FIGURE 6.8 *The Santa Clara River Watershed. Map: Stillwater Sciences.*

Issues and Objectives

Subject Area	Goal	Issues	Objectives
Hydrology	**Protect and enhance river function**	Floodplain development has diminished the space available for natural river function.	Preserve and expand space for natural river function.
		Hydrological infrastructure has impaired river function.	Mitigate the impact of hydrological structures on river function.
		Water consumption diminishes instream flow.	Ensure adequate instream flow.
		Structures and activities adjacent to the Lower Ventura River are at risk of flood damage.	Protect parkway structures and activities from flood damage.
		The quality of surface water and groundwater is impaired.	Improve the quality of surface water and groundwater.
Ecosystems	**Increase biodiversity**	Diminishment and degradation of ecosystems within the project area has resulted in the reduction of the quantity and quality of ecosystem services.	Restore and enhance ecosystems.
		Unsustainable practices negatively impact biodiversity.	Enhance biodiversity by reducing harmful impacts.
		Habitat areas lack connection with each other.	Increase habitat connectivity.
		Invasive plant species limit native species .	Manage invasive species.
People	**Reunite people with the Ventura River**	There are insufficient opportunities for access and recreation along the Lower Ventura River.	Improve access to and recreation at the river.
		Many existing land uses degrade the river and reduce its value for visitors.	Minimize incompatible land uses near the river.
		Awareness of the river and its functions is lacking.	Increase cultural awareness of the river through formal and informal education opportunities.
		Increased public stewardship of the river is needed.	Encourage stewardship of the river.

FIGURE 6.9 *Issues and objectives.*

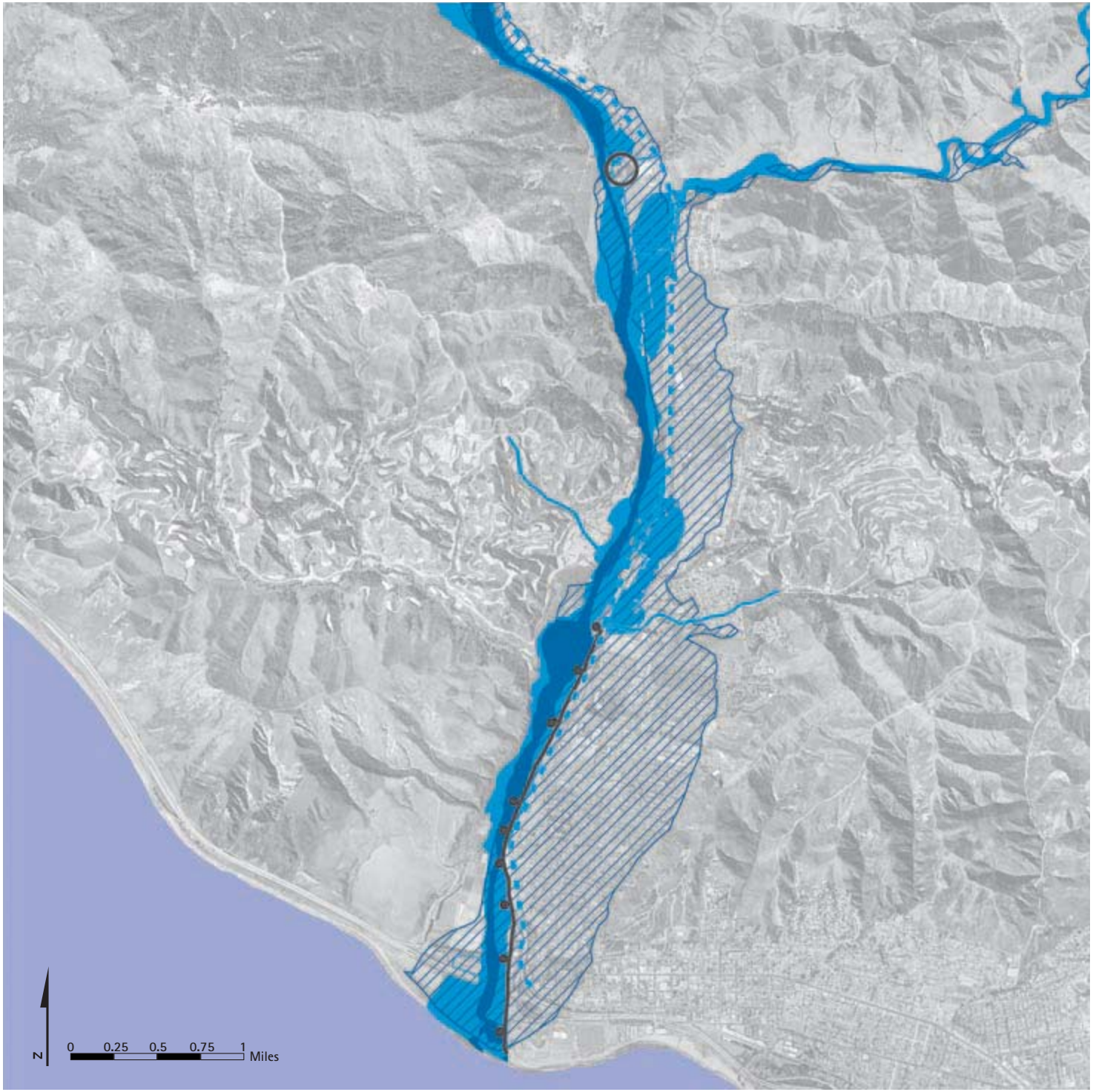
Opportunities and Constraints

The following section examines the location of opportunities for the achievement of various Vision Plan objectives as well as constraints upon the achievement of those objectives. To a great extent, these are intrinsic in the physiographic characteristics of the land (McHarg 1969). However, some opportunities and constraints also arise from patterns of human habitation or aesthetic values.

The suitability of a site for any specific purpose can be seen as a function of the opportunities and constraints that are present (LaGro 2001). Site analysis focusing on opportunities and constraints can range from simplified diagrams such as those shown here to complex suitability studies that employ many layers of information combined through Geographic Information Systems (GIS) technology. Here, opportunities and constraints are used to analyze the spatial arrangement of elements for a conceptual plan across the entire proposed parkway site in chapters 7 and 8, and also to find the best locations for more detailed site analysis and design in chapters 9 through 11.

Each of the four diagrams shown here vary in their approach according to their subject matter. Hydrology (figure 6.10) relies upon the combination of several criteria based on GIS data and field observations to estimate the location of areas where opportunities are present for meeting Vision Plan objectives such as groundwater recharge. The ecosystems diagram (figure 6.11) relies to a greater extent upon the identification of ecosystem zones and features that are well documented, while the cultural diagram (figure 6.12) focusses on features that are primarily based on personal observation.

All three diagrams have an impact on parkway design recommendations reflected in chapter 7. A fourth diagram, Site Selection (figure 6.13), is a composite that illustrates the relationship between these clusters of opportunities and constraints, compared to the sites that were selected for more detailed treatment in chapters 8 through 12.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HYDROLOGY

opportunities

- FEMA floodway – currently protected from development
- Wastewater treatment plant effluent augments instream flow
- Areas with low slope, permeable soil and underlying aquifers suitable for increased groundwater recharge
- Army Corps levee shields Westside communities from floods
- Outfall locations for potential bioremediation treatment of stormwater at river entry
- NS Neighborhoods appropriate for Low Impact Development measures for water conservation
- NS Neighborhoods appropriate for distributed storm water runoff treatment

constraints

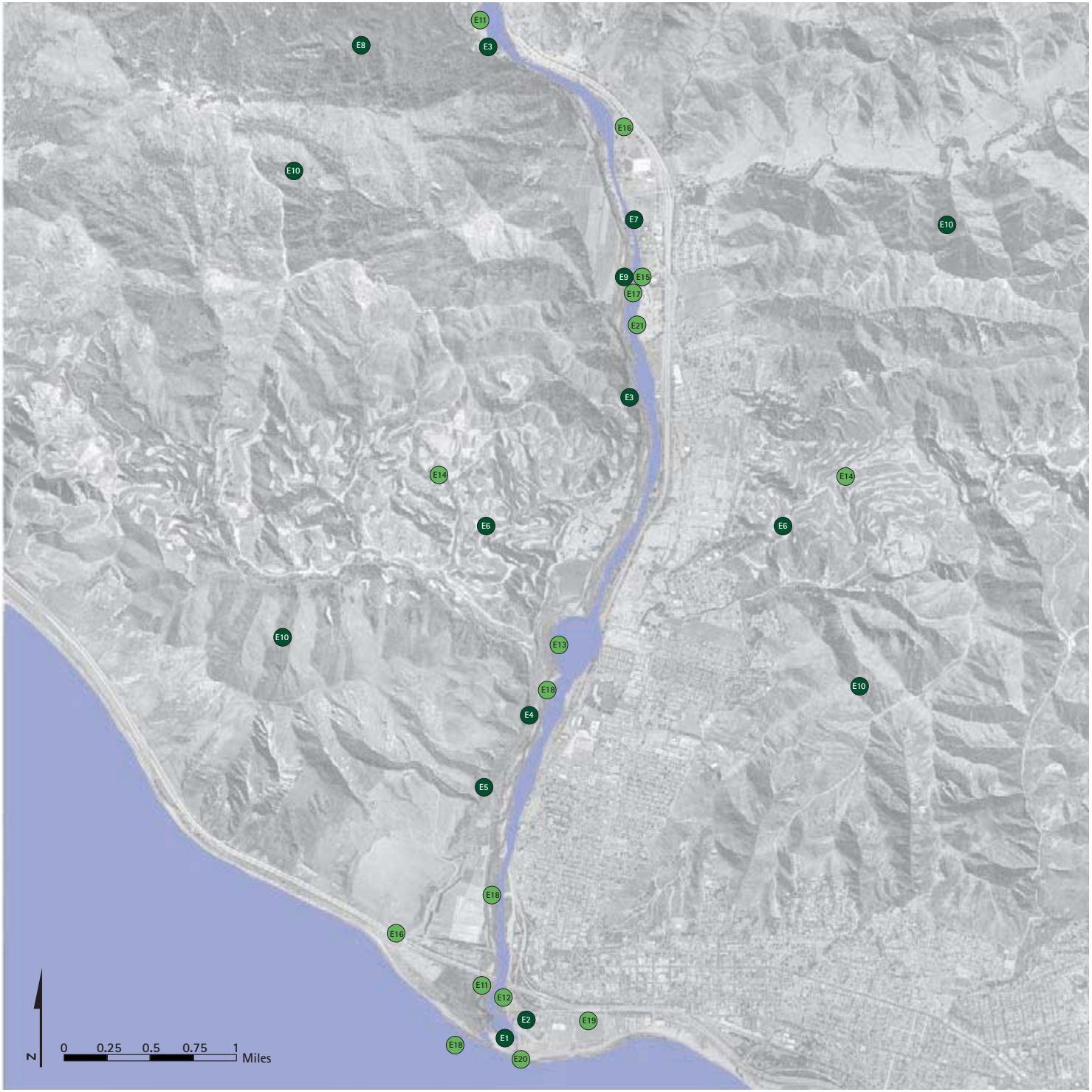
- Army Corps levee constrains river flow
- Highway 33 constrains river flow
- Wastewater treatment plant
  - encroaches on river floodway
  - releases effluent with excessive nutrients and temperature
  - some facilities at risk from 100-year flood
- FEMA one percent annual probability (100 year) floodplain
- Areas with structures in 100 year floodplain
- Tributaries with sections that are channelized/culverted or otherwise impaired near confluence with river
- Storm drains release untreated storm water runoff into Ventura River and estuary
- NS Localized soil contamination may limit groundwater recharge opportunities
- NS Localized groundwater contamination from prior industrial activities
- NS Matilija Dam blocks sediment flow to lower river
- NS Los Robles Diversion dam blocks some sediment and reduces instream flow
- NS Agricultural activities may impair water quality

NOTES:

1. Data presented here is solely for the purpose of illustrating potential approaches to meeting parkway objectives. Extensive field studies, beyond the scope of this Vision Plan, are required in order to obtain data usable for actual site design.

2. Some opportunities and constraints for meeting parkway objectives are located outside of the proposed parkway area itself and are not shown in this illustration. "NS" - not shown.

[FACING PAGE AND ABOVE] FIGURE 6.10 *Opportunities and Constraints – Hydrology. Orthophotography: CIRGIS.*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ECOSYSTEMS

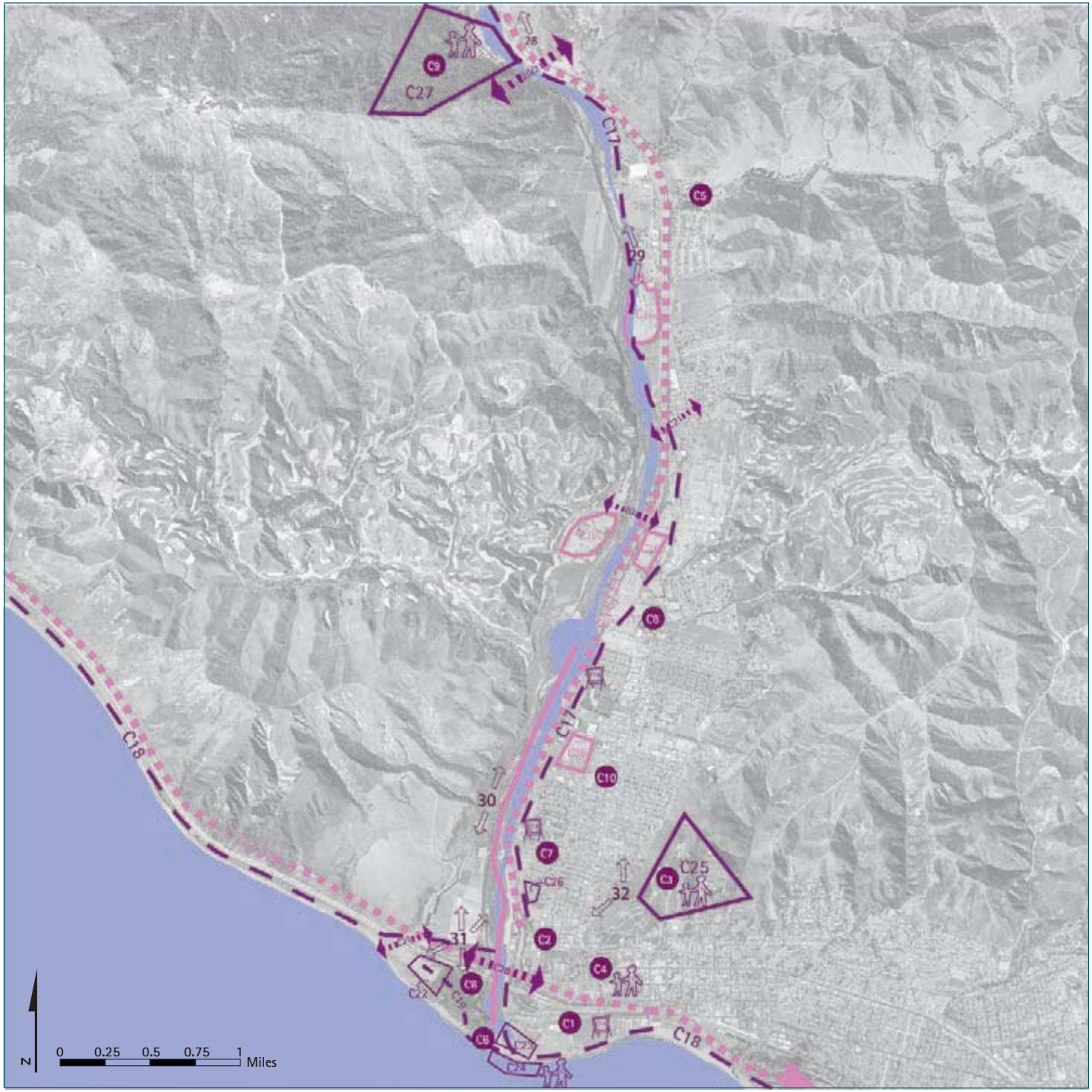
opportunities

- E1 Former location of historical wetland and estuary ecosystem
- E2 Small number of existing Fairgrounds structures increase potential to reconfigure site to accomodate ecosystem restoration
- E3 Suitable pools, glides, and riffles for steelhead trout, and extensive riparian canopy
- E4 Existing riparian habitat provides habitat for Least Bell's vireo and increases shade and cooling for steelhead trout
- E5 Site of recent ecological restoration
- E6 Remnant chaparral ecosystem
- E7 Oak woodland habitat provides nesting and breeding opportunity for Cooper's hawk
- E8 Existing black walnut woodland, a rare and imperiled natural community in California
- E9 Confluence of the main stem of the Ventura River and Cañada Larga tributary
- E10 Large areas of intact wildlands connect to National Forest and can support the range needs of species such as the bobcat

constraints

- E11 Invasive plant species infestation degrades estuary, wetlands, riparian, and river ecosystems and reduces ecosystem services
- E12 Levee flood control system limits boundaries of historical ecosystems and related ecosystem services
- E13 Excessive amounts of fine sediment in some sections of riverbed can reduce ability for fish to see and feed, and also degrade habitat for insects on which fish feed
- E14 Eroded hillsides, impacted sage scrub ecosystems, and fragmentation to surrounding wildlands
- E15 Channelization of the Cañada Larga tributary contributes to fragmentation of habitat and population fragmentation for the endangered California red-legged frog
- E16 Roads and highways fragment connectivity
- E18 Untreated urban runoff delivers contaminants and degrades marine, riparian, river, wetland and estuary ecosystems
- E19 Asphalt parking lot contributes to urban heat island effect
- E20 Diminished dune ecosystem reduces critically scarce habitat opportunities for the endangered California least tern and endangered Ventura marsh milk vetch
- E21 Unremediated and exposed brownfield site subjects surrounding ecosystem to contamination risks

[FACING PAGE] FIGURE 6.11 *Opportunities and Constraints — Ecosystems. Orthophotography: CIRGIS.*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CULTURE

opportunities

historical resources

1. Shishalop Village site (south end of Figueroa St.)
2. Ortega Adobe
3. Junipero Serra Cross
4. San Buenaventura Mission/historic Main Street
5. Aqueduct remnant
6. "Hobo Jungle" depression-era homeless camp
7. Simpson housing tract
8. E. P. Foster home
9. Foster Park stone gates and amphitheater
10. Ventura Avenue oilfield

social/public

12. Social nodes (existing popular gathering places)
13. Libraries/schools
14. Existing public art installations

circulation

15. Highway 33 — connections to Central, Northern California
16. Highway 1 — connections to Southern, Central Coast
17. Ventura River Trail: connections to Ojai Valley Trail
18. Omer Rains Trail: connections to Southern, Central Coast
19. Ocean's Edge Trail: Connecting Emma Woods and Seaside Park
20. Existing public bridges across Ventura River
20a. Potential public river crossing (bridge currently private)
21. Existing pedestrian/bike crossings under Highways 1 and 33

parks/recreation

22. Emma Woods State Park
23. Seaside Park
24. Surfers' Point
25. Grant Park
26. Westside Park
27. Other Parks

viewsheds

28. Foster Park riverbed view north into middle watershed
29. Cañada Larga confluence with Ventura River
30. West Bank Lower Ventura River
31. Main Street Bridge — views north and south
32. Grant Park overlook — view entire lower river

constraints

barriers to access

33. Highway 33 — barrier between Ventura and river corridor
34. Highway 1 — barrier between river corridor and beach
35. Levee — barrier between Ventura and river corridor

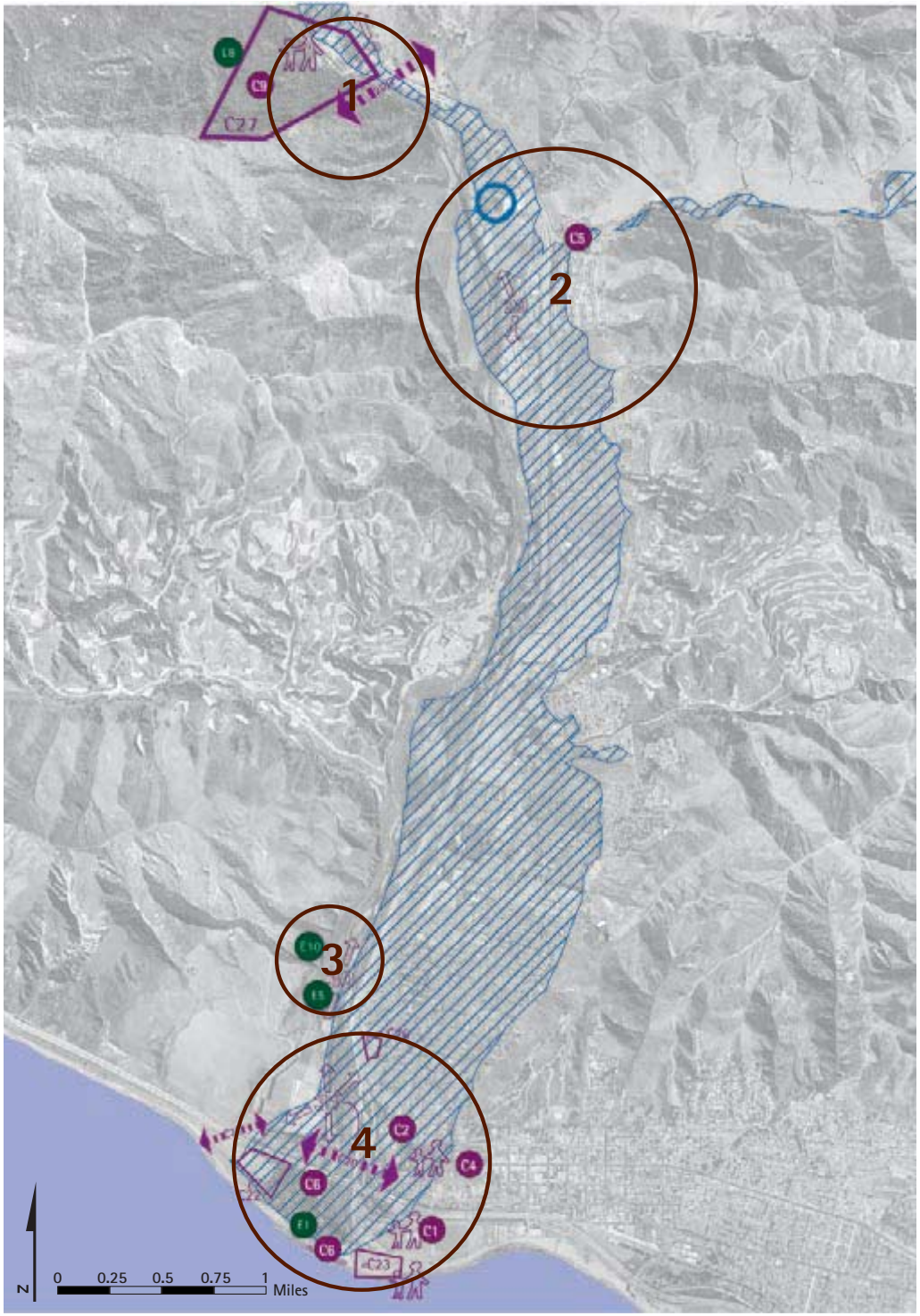
Not shown — posted "no trespassing" signs along riverbanks

incompatible land uses

36. Brownfields/grayfields

NOTES: Data presented here is solely for the purpose of illustrating potential approaches to meeting parkway objectives. Extensive field studies, beyond the scope of this Vision Plan, are required in order to obtain data usable for actual site design.

[FACING PAGE] FIGURE 6.12 *Opportunities and Constraints — Culture. Orthophotography: CIRGIS.*



OPPORTUNITIES — SITES

1. Foster Park

- Existing Black Walnut woodland, a rare and imperiled natural community in California
- Foster Park stone gates and amphitheater
- Existing popular gathering place
- Existing park
- Existing bridge (vehicle/bike/pedestrian across Ventura River
- Scenic viewshed north into mid-watershed

2. Cañada Confluence

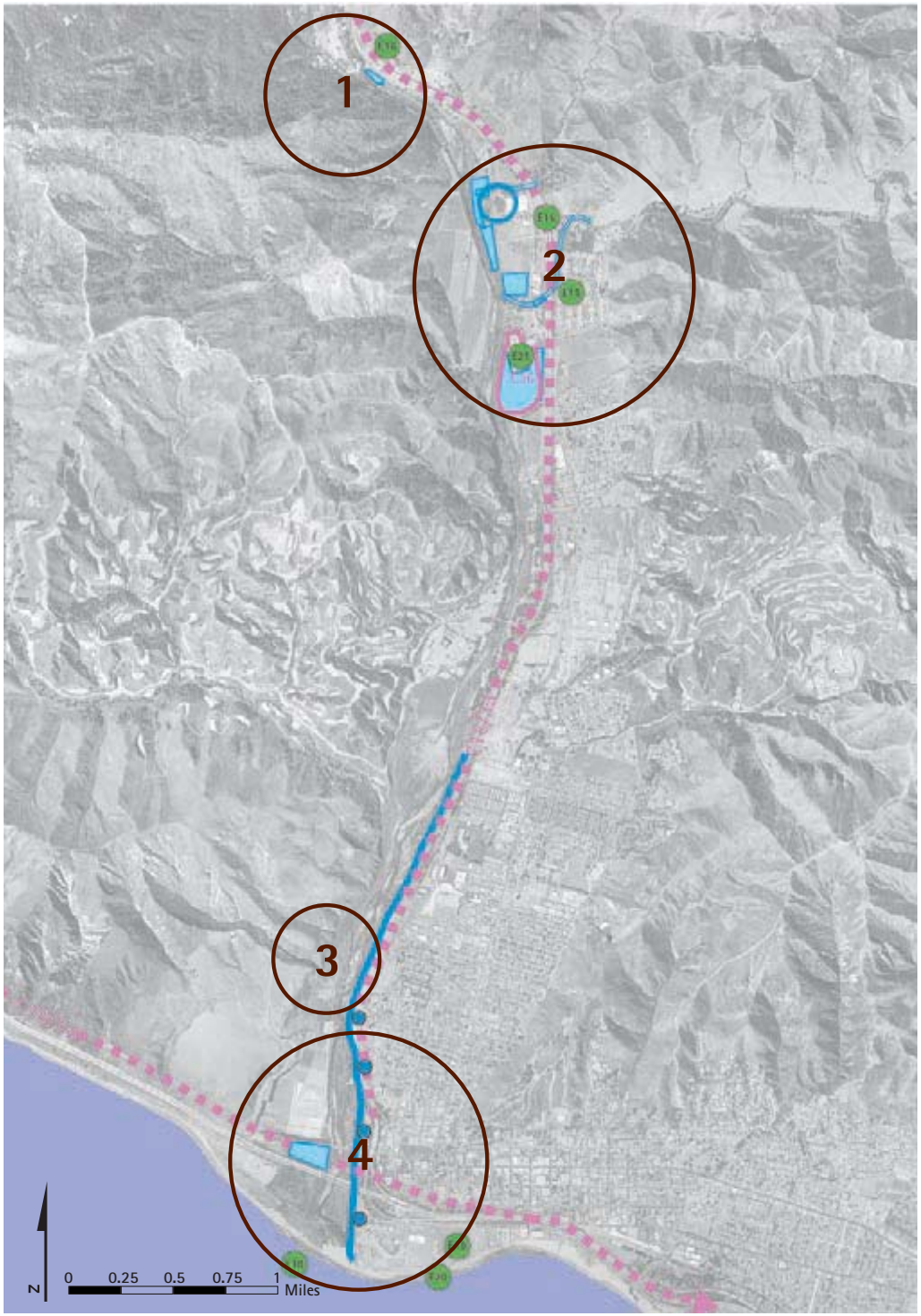
- Oak woodland habitat provides nesting and breeding opportunity for Cooper's hawk
- Confluence of the Ventura River and Cañada Larga tributary offers opportunity for connecting river to surrounding hillsides
- Historic resource — Spanish aqueduct remnant
- Scenic viewscape to the north and south
- Waste treatment plant effluent contributes to instream flow in Ventura River
- Areas with combination of flat slope, permeable soil and underlying aquifers suitable for increased groundwater recharge

3. Cottonwood Junction

- Site of recent ecological restoration
- Large areas of intact wildlands connect to National Forest and can support the range needs of species such as bobcat.
- Scenic views to north and south

4. Downtown Delta

- Areas with combination of flat slope, permeable soil and underlying aquifers suitable for increased groundwater recharge
- Former location of wetland and estuary ecosystem
- Historic resource — Shishalop Village site
- Historic resource — Ortega Adobe
- Historic resource — San Buenaventura Mission
- Historic resource — "Hobo Jungle" depression-era homeless camp
- Existing parks — Emma Woods State Park, Seaside Park, Westside Park
- Existing gathering spots — Surfers Point, Fairgrounds, Historic downtown
- Existing public crossings under/over Ventura River, Highways 1 and 33



CONSTRAINTS — SITES

1. Foster Park

- Structures in 1% annual chance (100-year) floodplain
- E16 — Roads and highways fragment habitat connectivity

2. Cañada Confluence

- Structures in FEMA 1% annual chance (100-year) floodplain
- Tributary with sections that are channelized and culverted near confluence with the river
- Waste treatment plant facilities in 100-year floodplain and effluent with excessive nutrients and temperature
- E15 — Channelization of Cañada Larga contributes to fragmentation of habitat and population fragmentation of steelhead, California red-legged frog and other species
- E16 — Roads and highways are barriers to connectivity of habitat and animal populations
- E21 — Unremediated and exposed brownfield site subjects surrounding ecosystem to contamination risks
- Unremediated brownfields incompatible with recreation

3. Cottonwood Junction

- NS — Riverbanks posted no trespassing

4. Downtown Delta

- E18 — Roads and highways fragment habitat connectivity
- E19 — Asphalt parking lot contributes to urban heat island effect
- E20 — Diminished dune ecosystem reduces critically scarce habitat opportunities for the endangered California least tern and endangered Ventura marsh milk vetch
- NS — Highway 33 — barrier between urban Ventura and river corridor
- NS — Highway 1 — barrier between river corridor and beach
- NS — Levee — barrier between Ventura and river corridor
- NS — Not shown - Riverbanks posted no trespassing

[FACING PAGE AND ABOVE] FIGURE 6.13 *Opportunities and Constraints — site selection. Orthophotography: CIRGIS.*

River parkways protect and restore riparian and riverine habitat.

California River Parkways Act of 2004
California Public Resources Code §5751(f)